

**Getting a Grip: Utilizing Climbing to Address Generalized Anxiety Disorder**

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August 31, 2022

## Abstract

In 2015, the first quantitative research study was conducted on psychotherapeutic indoor rock climbing as an intervention for people with depression. Research has since continued, yet anxiety and specifically generalized anxiety disorder as well as outdoor rock climbing, have been remained unstudied within the field of therapeutic climbing. This in-depth literature review investigates the use of indoor and outdoor therapeutic rock climbing to address generalized anxiety disorder. A collection of qualitative, quantitative, theoretical, and historical resources and academic studies are reviewed to bring together elements of nature-based therapy, adventure therapy, mind-body therapy, and polyvagal theory as the theoretical backing to a therapeutic climbing program proposal to address generalized anxiety disorder.

The major findings amongst the various theoretical approaches reviewed and combined are several common therapeutic factors: relationship and trust, play, presence and mindfulness, safety and risk, and scalability. Also discovered are the many implications for practitioners to move forward in the field of outdoor therapeutic climbing in an ethical way. Unsettling and decolonizing the field of adventure and nature-based therapy, making outdoor programs and communities more accessible to marginalized populations, and working within the present environmental crisis, addressing ecoanxiety are all necessary directives.

*Keywords:* anxiety, climbing, therapeutic climbing, nature-based therapy, mind-body therapy, outdoor programs, generalized anxiety disorder

## Utilizing Climbing to Address Generalized Anxiety Disorder

Anxiety disorders are regarded as the most frequently occurring mental disorders, affecting one-third of the population throughout their lifetime (Martin, 2022; Zieliński et al., 2021). They are characterized by excessive fear and anxiety, resulting in behavioural disruptions (American Psychiatric Association, 2013). The American Psychiatric Association's DSM-5 (2013), outlines twelve unique disorders within the category of anxiety, which are often co-morbid with one another. Generalized anxiety disorder is regarded as one of the most common anxiety disorders, affecting 3-30% of the population (Martin, 2022; Spitzer et al., 2006) and is defined as “excessive fear and worry (apprehensive expectation) about a number of events or activities” (American Psychiatric Association, 2013, p. 222). Rates of anxiety have seen a rapid increase through the pandemic also increasing the demand for mental health support (Statistics Canada, 2020, 2021).

Concurrently, outdoor recreation has increased since the presence of Covid-19, which has been attributed to an inherent human desire to be more in touch with the natural world (Beery et al., 2021). Specifically, rock climbing has had an enormous rise in popularity (Zieliński, et al., 2021), which was mirrored by its inclusion in the 2021 Summer Olympics in Japan (Zhu et al., 2021). Although climbing came into existence in the 1880's, the explicit recognition of therapeutic climbing did not surface until 2015, when Luttenberger et al. released the first academic article proposing climbing (bouldering) as a form of psychotherapy. This article acted as a pilot study, to develop an eight-week group program utilizing psychotherapeutic techniques and interventions within the context of bouldering and to assess the effectiveness for participants with depression (Luttenberger et al., 2015). The collection of researchers behind therapeutic climbing are predominantly based in Germany and have produced

eight peer-reviewed articles between 2015 and 2021 studying bouldering psychotherapy for participants experiencing depression (Dorscht et al., 2019; Karg et al., 2020; Kratzer et al., 2021; Luttenberger et al., 2015; Luttenberger et al., 2021; Schwarz et al., 2019; Schwarzkopf et al., 2021; Stelzer et al., 2018). The focus of these articles ranges from comparing bouldering psychotherapy to cognitive behaviour therapy and physical exercise (separate and in conjunction), cost effectiveness in comparison to group CBT and the enhancement of perceived self-efficacy for participants. Dorscht et al. (2019), state that there is a need for new therapies to treat mental health disorders, especially in the face of stigma, to which therapeutic climbing is proposed.

Prior to the introduction of therapeutic climbing as a specific approach, adventure therapy (described in the definition section on page 6) is a therapeutic approach that would, at times, integrate rock climbing as an intervention (Bailey et al., 2019; Draper et al., 2008; Russell & Gillis, 2017; Villavicencio et al., 2021). Adventure therapy evolved from experiential education, most notably introduced by Kurt Hahn, the founder of Outward Bound, beginning in 1941 (Fletcher & Hinkle, 2002). Adventure was one of five core program components, included to inspire a passion for life. Since its inception, Outward Bound has grown into a worldwide organization. In academic research, adventure framed as a therapeutic concept first arose in 1979 (Fletcher & Hinkle, 2002; Gibson, 1979).

Adventure therapy (AT) is presently an unregulated field, meaning there is no specific set of credentials required to work within AT (Ritchie et al., 2016). Fletcher and Hinkle (2002), recognize the unique skillsets required to work in AT, separating the skills into two main categories: interpersonal and technical skills. Interpersonal skills are correlated with counselling, including active listening, effective communication (verbal and nonverbal), reflecting and

reframing, leadership, group dynamic management, and ethical decision-making. Technical skills are related to the specific adventure activity, including physical skill and knowledge, risk management, as well as competency in managing, teaching and guiding participants in this activity and environment. Fletcher and Hinkle (2002), recognize the breadth of these skillsets and suggest complementary facilitator pairing to fulfill complete skillset requirements.

Canada is recognized as being slower in its development of AT when compared with the United States, Australasia, the United Kingdom, and Europe (Ritchie et al., 2016). Development of AT has increased globally in the last two decades (Ritchie et al., 2016). This increase is reflected within Canada by the first Canadian Adventure Therapy Symposium being held in 2009, creating an effective place for sharing knowledge (Ritchie et al., 2016). Development is also marked by the production of Canadian academic literature related to AT increasing by nearly five times between 1995 to 2014.

As expressed, AT is an extensive and dynamic field which is under steady development (Fletcher & Hinkle, 2002; Ritchie et al., 2016). While climbing fits within this therapeutic approach, therapeutic climbing will be focused on specifically within this paper (Bailey et al., 2019; Draper et al., 2008; Russell & Gillis, 2017; Villavicencio et al., 2021). Elements from AT and nature-based therapy will be drawn upon to capture and convey beneficial elements of climbing outdoors in the treatment of anxiety. Throughout this paper, when climbing is referred to, it can be understood as the act of a person rock climbing and being supported by a belayer, in the case of roped climbing or a climber being supported by a spotter in the case of bouldering (Cox & Fulsaa, 2003; House & Johnston, 2017; Luttenberger et al., 2015). This climbing could occur indoors or outdoors, depending on several factors, including the degree of anxiety experienced by the client. The relationship of support between the climber on the rock and the

person on the ground is paramount for this activity to be therapeutic (House & Johnston, 2017; Luttenberger et al., 2015). The style of climbing utilized could range from bouldering to top-rope, to lead-climbing (all defined below), depending on the skill level and intensity of anxiety of the client (Cox & Fulsaa, 2003; House & Johnston, 2017; Luttenberger et al., 2015). Throughout this paper, when anxiety is referred to, it can be understood as generalized anxiety disorder, as defined in the first paragraph (American Psychiatric Association, 2013).

### **Definitions**

There are several terms which could be novel to the reader, in this case, a series of definitions of foundational terms found within this paper are included below.

#### ***Adventure Therapy (AT):***

As this field continues to grow and shift, so do the associated definitions. Commonalities found amongst the many definitions are an incorporation of mental, emotional, and behavioural engagement of clients through experiential means centered on adventure, intentionally designed, and facilitated by mental health professionals (Russell & Gillis, 2017).

#### ***Nature-Based Therapy (NBT):***

Recognizes inherent overlaps with adventure therapy in the aspects of intentional incorporation of adventure and risk into the therapeutic process. Nature-based therapy specifies facilitation by a qualified and registered practitioner while engaging and relating to the natural world. Nature is also recognized as co-therapist within this approach (Harper et al., 2019)

#### ***Nature as Co-Therapist:***

Acknowledges the natural world as a third entity to which the therapist and client are inextricably connected, acting as a resource, guide and context in which healing can occur (Harper et al., 2019)

***Eco-Anxiety:***

A non-specific and chronic fear of environmental destruction and collapse, especially regarding particular environments that support individuals (Panu, 2020).

***Climber:***

A person who engages with rock climbing in an indoor or outdoor setting, requiring the use of climbing shoes and dependent on the style, harness, and helmet as well (Cox & Fulsaa, 2003).

***Belayer:***

A person who is attached to the climber by the way of a rope, allowing the belayer to remove slack from the rope and arrest a fall, utilizing a belay device (Cox & Fulsaa, 2003).

***Spotter:***

A person positioned at the base of a boulder, to assist the climber bouldering to fall safely onto the crash pad below (Cox & Fulsaa, 2003).

***Bouldering:***

Climbing rock or artificial formations fairly close to the ground, utilizing crash pads at the base of the boulder for safety as opposed to ropes (Cox & Fulsaa, 2003; Luttenberger et al., 2015).

Another person(s) stands at the base to assist a safe fall, thus acting as a “spotter”

***Top-Rope Climbing:***

Involves both a climber and a belayer, attached to one another by a rope running through an anchor at the top of a climb (House & Johnston, 2017). As the climber progresses up the climb, the belayer removes slack from the system using a belay device. Should the climber fall, the belayer is able to arrest the fall and the climber will drop only slightly, with the stretch of the rope.

***Lead-Climbing:***

Climber and belayer are connected by the rope, as the climber moves their way up the route, they affix the rope to the rock using quickdraws to connect to pre-placed bolts or protection they add (House & Johnston, 2017). If the climber is to fall, they will fall double the distance plus the stretch of the rope they were above their last bolt or piece of protection.

The purpose of this paper is to explore the theoretical mechanics of applying climbing as a therapeutic tool to the treatment of generalized anxiety disorder. After positioning myself as the writer of this paper and working to mitigate my bias, the foundational concepts of rock climbing and those of anxiety are shared. Therapeutic climbing is introduced and then explored through the lens of AT and NBT as well as mind-body therapy and polyvagal theory. The weaving of theories reveals many interconnections which are expressed through a variety of common factors.

Implications for the field of counselling psychology are then shared highlighting the limits of talk therapy and the necessity of social justice, and decolonizing/unsettling the field of psychology. Eco-anxiety and environmental justice are also explored as extensions of the rise in generalized anxiety disorder and how the environmental crisis intensifies directives from social justice. Finally, responsibilities are suggested for practitioners in the field, especially those who work in a nature context.

The paper concludes with recommendations for practice expressed through a practical application of utilizing climbing to address generalized anxiety disorder. Assessment tools and practices are recommended. Considerations for the location of programming are expressed. Recommendations are provided for the makeup of the facilitator team. Finally, how a program can be compiled and offered through a blend of individual and group programming is shared.

### **Self-Positioning Statement**

The topic of how climbing can be utilized as a tool to address anxiety is very dear to my heart. Firstly, climbing is an activity I have dedicated a great deal of my life to in the last 11 years. It has provided me with purpose in times of challenge and disorientation, continually offering me an arena to grow within. It is a pursuit that has become paramount to the maintenance of my mental health. Pursuing climbing has helped me develop confidence and self-esteem through my early adult years. My close friends and community have mostly been established through climbing, connecting me to others with similar values and lifestyle.

At the age of 15, I gained the understanding that the natural world is a healing space and I vowed to share this with others. I had the privilege of being a participant on a 17-day backpacking trip with Outward Bound, during which I completed a 24-hour solo in a lush valley between mountains. My personal realization was that when I was immersed in nature, everything else in my life made sense, a profound realization in my teenagerhood. I have since spent 8 years working in the field of NBT and AT, utilizing climbing as an intervention to work with both youth and young men with addictions. It's ability to affect clients is often profound and stands out against other interventions (Furhauf et al., 2021; Hansen & Parker, 2009). In my experience, I have seen clients discover empowerment, forge conflictual relationships into positive bonds, and view themselves as capable beyond their prior conceived limits.

My belief in climbing's ability to affect others in a therapeutic capacity led me to co-found Dirtbabe Collective with two close friends. Within the first year and a half of the project's existence we have run two programs, a single-day, and a multi-day to support Indigenous women. These programs utilized climbing to teach participants to address other barriers in their lives as well as foster strong relationship to themselves, each other, the land, and their culture. These programs were open to any adult Indigenous woman and what we found was that the

incidence of anxiety amongst these participants sat at 90%. All our participants reported feeling empowerment, confidence, and an increase in self-esteem after scaling rock walls that previously appeared impossible to them.

That brief explanation aims to locate myself as a researcher within the world of therapeutic climbing and acknowledge my bias favouring climbing to address anxiety (Holmes, 2020). Throughout the research of this topic, I am seeking to explain the phenomenology of my lived experience and what I have witnessed in others engaging with therapeutic climbing (van Manen, 2017). My epistemological beliefs are revealed, in which I value the lived experience as holding great validity (Holmes, 2020). This belief is further exaggerated within the context of humans interacting with the natural world and each other. These bonds are as old as human existence and thus I believe them to be intuitive and strongly developed.

Seeking to locate myself in relation to the topic I am choosing to focus on, reveals that anxiety is within my own lived experience (Holmes, 2020). More readily, I have frequently encountered anxiety amongst those I work with. A personal belief is that anxiety is related to a disconnection between humans and the natural world, which is corroborated by my own lived experience. This lands me as an insider with an emic perspective within both populations of those with anxiety and those who rock climb (Creswell & Poth, 2018; Holmes, 2020).

Membership to the outdoor community is more readily available to those who are Caucasian, male, middle class, heteronormative, etc. (Warren et al., 2014). This position of privilege and membership is one that I pass as occupying. The inherently exclusive nature of climbing and mountain culture will be addressed within this paper. The lived familiarity I possess offers the advantage of understanding the intricacies of therapeutic climbing from both a

participant and facilitators role (Holmes, 2020). However, the role of an insider often complicates the process of bias mitigation through reflexivity (Holmes, 2020).

From this position of reflexivity, I must specifically acknowledge that the link I am proposing between polyvagal theory and climbing is not made anywhere in the literature, that I have found. Therefore, the connections and coherence between these modalities are being proposed solely by me through the writing of this project (Lowes & Prowse, 2001). This heightens the awareness I must exercise in my potentially altered interpretation of research. To offer transparency to the psychological underpinnings of these proposed connections, I share where they are informed from (Lowes & Prowse, 2001). Firstly, from my own lived experience of feeling the affect that climbing has had on my experience of anxiety and the role that connection and the nervous system plays within this process. Secondly, from my observation of clients engaging with climbing through AT. Finally, through recognizing strong thematic links between these separate areas of research.

### **Mitigating my Bias**

In addition to engaging with reflexivity, I have intentionally searched for research on the negative effects that climbing can have on its participants. Notably, I was unable to find any research that indicated that climbing has negative impacts on participants with anxiety. I did, however, find a great deal of research that states the negative impact climbing can have on the environment it takes place within. From cliff dwelling avian communities, to the affect that climbing chalk has on fern, moss, and other plant species, climbing impacts the environments within which it takes place (Covy et al., 2019; Hepenstrick et al., 2020; Lorite et al., 2017). From a cultural and historical perspective rock climbing has been recognized to negatively interact with historical sites that host Indigenous rock art (Gunn et al., 2020). In some places climbing

has been banned, largely due to the development process associated to sport climbing specifically (Gunn et al., 2020). These negative impacts indicate the responsibility that climbers and facilitators of rock climbing have, to both the natural environment that climbing takes place within as well as the cultural communities (often Indigenous) with whom the rock holds significance.

In my review of the literature, I was most interested to discover research that demonstrated adverse effects on the mental and emotional states of climbers. While I couldn't find any indication of negative psychological impact, I did locate literature that makes connections between the extreme nature of climbing and drug and behavioural addictions (Heirene et al., 2016; Roderique-Davies et al., 2018). Hierene et al., (2016) completed a series of semi-structured interviews with both high ability and average ability male rock climbers to establish whether withdrawal was experienced during abstinence from climbing.

In 2018, Roderique-Davies et al., took this investigation a step further and developed a tool, the rock climbing craving questionnaire (RCCQ), to quantitatively measure the degree of craving experienced by climbers and therefore the similarity to withdrawal experiences. Between these two studies, it was discovered that the withdrawal symptoms of anhedonia, craving and negative affect were experienced by climbers to varying degrees, dependent on their ability level (Heirene et al., 2016; Roderique-Davies et al., 2018). Three main factors were discovered through the development and validation of the RCCQ, which were termed: urge to climb, negative reinforcement, and positive reinforcement (Roderique-Davies et al., 2018). These factors mimicked symptoms present in withdrawal from drug and behavioural addictions. The urge to climb was understood as a craving, the need to alleviate negative feelings from not climbing was related to the desire to eliminate withdrawal symptoms, and delaying positive

effects associated to climbing was understood as anticipatory behaviour. The similarities between a climber's relationship to climbing holds similarities to an addict's relationship to substance or an addictive behaviour, a potential negative impact I had not accounted for (Heirene et al., 2016; Roderique-Davies et al., 2018). Interestingly, Roderique-Davies et al., propose climbing as a potential harm reduction activity or replacement therapy for those recovering from drug or behavioural addiction (2018).

Summarily, I acknowledge that I am deeply integrated in the social process that I am researching (Holmes, 2020). Both as a member of the communities being researched but also as a practitioner within the field. My intention is to integrate myself into this process in a way that will allow me to support others to access healing and transformation from a more informed place.

The following section is a literature review, serving to offer a foundational understanding of the concepts and theoretical approaches proposed within this paper. A short history of climbing is provided as well as an explanation of the mechanics and considerations of various climbing styles (House & Johnston, 2017; Zhu et al., 2021). Anxiety is explored as well as related to the practice of climbing (Bailey et al., 2019; Draper et al., 2008; Villavicencio et al., 2021). Next the tenets of therapeutic climbing, AT, NBT, mind-body therapy, and specifically polyvagal theory are explored through the lens of their application in utilizing climbing as a method to address generalized anxiety disorder.

## **Rock Climbing**

Rock climbing is an activity born from the initially scientific exploration-based pursuit of mountaineering (Zhu et al., 2021). As mountaineering objectives increased in difficulty, motivations broadened from exploration to include leisure, the drive of challenge, and even

increasing social status. These motivations reflected the bourgeois revolution and a newfound sense of freedom in the 19<sup>th</sup> century, afforded by wealth and access to leisure. The increase in difficulty was demonstrated by mountaineers traveling over steeper and more technical terrain to reach higher summits. This prompted the development of skills that are specific to rock climbing and a new subset of vertical pursuits were derived in the 1880's. Recorded history favours climbing to originate from England, Germany, Italy, and France, however there are many mentions of Indigenous guides that supported "first ascents" of mountains by Europeans around the world (Zhu et al., 2021). Zhu et al. (2021), note that Mont Blanc, the tallest mountain in the alps, was summited by two hill tribes in 1786. The following year Mont Blanc an ascent made by a team of 18 alpine guides was labelled as the beginning of modern mountaineering, an example of colonial attitudes in the mountains (Lowan-Trudeau, 2021).

Climbing is a multi-disciplinary sport with a wide range of options for engagement (Draper, et al., 2008). Climbing can take place indoors in climbing gyms or outdoors in a wide variety of mountainous settings (Nicita et al., 2018). The next main variant within climbing is the height of the climbing objective (House & Johnston, 2017). Shorter climbs that don't require the use of a rope are called boulders and falls are protected by crash pads. Next there is cragging, climbing that occurs on cliffs that range from 10 – 40 metres in height and require a rope to protect falls. Cragging can either be completed in a leading or top rope style. Top rope climbing takes place with an anchor at the top of a route that the rope runs through, connecting the belayer to the climber. As the climber moves up the route, the belayer keep the rope taught by removing slack from the system with the use of a belay device. If a climber is to fall, the belayer arrests the fall and the climber will not drop any distance beyond a slight stretch of the rope. Lead climbing, however, begins with both the climber and the belayer on the ground, connected by the rope. As

the climber ascends the route, they will either affix quickdraws to bolts that are pre-affixed to the rock anywhere from one to three meters apart (sport climbing) or they will place their own protection into the rock as suitable places are available (traditional, “trad” climbing). As they climb the climber clips their rope into these pieces of protection. Climbing above their last quickdraw or piece of protection, they risk taking a factor two fall, meaning they will fall at least double the distance they were above their last bolt. Beyond this, there is also multi-pitch and alpine climbing. For this paper, I will focus on bouldering, top-rope and leading, however I believe that multi-pitch and alpine climbing have huge therapeutic value available as they increase the level of real and perceived risk as well as the associated sense of accomplishment.

### **Anxiety**

The shared features of anxiety disorders, according to the DSM-5, are “excessive fear and anxiety and related behavioural disturbances” (American Psychiatric Association, 2013, p.189). The experience of anxiety results from excessive or unnecessary anticipation of a threat that may occur in the future (Coutinho & Dias, 2010). While at times this anticipatory behaviour can be adaptive, when experienced disproportionately to the threat, it can interfere in the ease of day-to-day life (American Psychiatric Association, 2013; Coutinho & Dias, 2010). Specific anxiety disorders that are within this grouping are: separation anxiety disorder, selective mutism, specific phobia, social anxiety disorder, panic disorder, panic attack specifier, agoraphobia, generalized anxiety disorder, substance/medication-induced anxiety disorder, anxiety disorder due to another medical condition (American Psychiatric Association, 2013).

This research project will centre on generalized anxiety disorder. Anxiety arises in response to threats in an individual’s environment, having physiological, behavioural, and cognitive affects (Bailey et al., 2019; Mallorquí-Bagué et al., 2016). The degree to which an

individual experiences anxiety is dependent on intensity, frequency, and duration (Mallorquí-Bagué et al., 2016). At lesser degrees of experience, anxiety has directive purpose in alerting an individual to threats in their environment, whereas increased intensity, frequency and duration of anxiety can interfere and disrupt an individual's daily life (Bailey et al., 2019; Mallorquí-Bagué et al., 2016). Anxiety that grows to this extent can be differentiated into two separate categories of somatic anxiety and cognitive anxiety (Bailey et al., 2019). Somatic anxiety is understood as the body's physical reactions to anxiety, such as an increase in heart rate (Bailey et al., 2019). Cognitive anxiety is the mental relationship to anxiety, such as having worried or intrusive thoughts (Bailey et al., 2019).

### ***Stress and Anxiety Related to Climbing***

As climbing gains acceptance by the general populace, the sports deep connection to the mental processes and habits of the mind has also been revealed (Ilgner, 2003; Zieliński et al., 2021). In 2003 Ilgner released the first published work acknowledging the mental components of rock climbing. Rock climbing is multi-faceted as it engages cognitive and physiological and somatic stress (Villavicencio et al., 2021). Anxiety is innately present in climbing and can reside within the mind, the body or in an individual's emotional response to physiological reactions (Bailey et al., 2019; Draper et al., 2008). House and Johnston, leading trainers in climbing and alpinism, distinguish between two types of fear that are elicited in these activities (2017). First, a primal fear of death and injury calls forth attention from the body and the mind. Fear of failure is the second type, as it threatens an individual's identity and perception of self. While one of these fears is subjective and the other objective, they correlate to anxiety if they manifest in an intrusive way hindering an individual's ability to climb. Physiological reactions to anxiety can be observed in the body of a climber through intensified muscle contraction, reduction in speed,

overly careful movement and limbs being held closer in towards the body (Bailey et al., 2019; Tukaiev et al., 2020). Internally, climbers report challenges with focus both mentally and visually as well as emotional regulation (Bailey, et al., 2019; Draper et al., 2008). Climbing gives individuals an opportunity to trade instant gratification and comfort for accomplishment-based satisfaction, achieved through hard work. Climbers learn how to move through stimulation that is uncomfortable to achieve this satisfaction.

### **Therapeutic Climbing**

In 2015, Katharina Luttenberger and colleagues out of Germany completed the first controlled study regarding climbing as an intervention to address mental health. They focused specifically on bouldering to address depression (Luttenberger et al., 2015). This pilot study sought to determine the effectiveness of integrating climbing into a therapeutic group program as well as to design a manual for such programs. The duration of the program was eight weeks, participants meeting weekly for three hours. Baseline measurements were taken before the program, a measure after the program completed (8 weeks) and again at 16, and 24 weeks. It was discovered through self-reporting on the Beck-Depression Inventory II, that participants experience of depression decreased by an average of 6 points, which is equivalent to the results of other 8-week group therapy programs. The sessions during the 8 weeks were designed to start with a mindfulness practice after which the theme of the session was shared. Psychoeducation on this topic was offered followed by bouldering activities that correlated to the theme. The therapists then supported small groups to work on routes during open time bouldering. A closing mindfulness practice was followed by time spent debriefing in the group about how to integrate skills learned.

The collection of researchers associated to this study have continued to research therapeutic climbing as a method to address depression, producing seven more peer-reviewed articles (Dorscht et al., 2019; Karg et al., 2020; Kratzer et al., 2021, Luttenberger et al., 2015, 2021; Schwarz et al., 2019; Schwarzkopf et al., 2021; Stelzer et al., 2018). Specific areas of study within these articles are, the reduction of depressive symptoms and long-term effects (Schwarz et al., 2019; Stelzer et al., 2019), comparisons of effectiveness between therapeutic climbing and cognitive behavioural therapy as well as exercise (Dorscht et al., 2019; Karg et al., 2020; Luttenberger et al., 2021). Finally, in depressed participants therapeutic climbing's ability to foster *self-efficacy* (Bandura, 1994), an individual's belief in their capacity to perform tasks in the achievement of specific goals, was observed (Kratzer et al., 2019).

In 2021, Furhauf et al., completed a qualitative study based on 30 experts from the fields of medicine, education, and psychology, investigating their perceived effectiveness of climbing as a therapeutic tool. Most of the individuals interviewed had experienced climbing in a therapeutic setting to inform their perspective. At a baseline, climbing has been proven to improve the psychological well-being of its participants. Study participants believe that anxiety is effectively addressed by therapeutic climbing as a treatment modality. Climbing offers clients a place to confront their fears and overcome them in a safe and guided environment, making progress achievable. The benefits associated with climbing are vast, clearly lending itself to a therapeutic application. Growth-mindset, self-esteem and resiliency are all cultivated through the act of climbing. Specifically, a growth-mindset indicates an individual's belief that abilities can be developed, rather than remain stagnant (Yeager & Dweck, 2020). There is an overall shift in mental state that occurs, affiliated to the commonly stated fact that climbing is a mental pursuit (Bailey et al., 2019)! This mental shift is denoted by an increase in concentration and focus,

supported by EEG data demonstrating higher activity in the frontal cortex (area of problem solving and top-down executive function) while climbing (Bailey et al., 2019; Furhauf et al., 2021). This enhancement of attention is attributed to the blend of both physiological and psychological involvement climbing channels towards a singular task. Direct feedback through falling is provided if a climber loses focus. Self-awareness is cultivated through this process which the participants of this study postulate is transferrable to into other areas. Autonomy, self-worth, and competence within the climber increase. This is mirrored in psychosocial enhancements such as fostering a sense of connection, collaboration, and respect with others. Some medical professionals interviewed believed that climbing could assist in the reduction of client over-medication.

### **Adventure & Nature-Based Therapy**

Adventure therapy has been given a general definition that incorporates mental, emotional, and behavioural engagement of clients through experiential means centered on adventure, intentionally designed, and facilitated by mental health professionals (Russell & Gillis, 2017). This vast engagement mirrors rock climbing, which when utilized in a therapeutic manner is a modality within AT (Bailey et al., 2019; Draper et al., 2008; Russell & Gillis, 2017; Villavicencio et al., 2021). Utilizing tenets from experiential education, a direct experience is followed by intentional reflection (Russell & Gillis, 2017). Reflection and debriefing are paramount for a clear and effective transference of the change process into other areas of a client's life (Fletcher & Hinkle, 2002).

As clients encounter challenge and problem solve, an experience of mastery develops (Russell & Gillis, 2017). This confronts their concept of self and provides opportunity to reorganize meaning of their experience and its implications. This is encouraged by the

interaction between real and perceived risk present in an adventure experience, a concept further expanded upon later in this paper (Fletcher & Hinkle, 2002). Client's ability to experience developmental gains is increased by feeling simultaneously supported and empowered, highlighting the importance of the interpersonal aspect AT (Russell & Gillis, 2017).

A novel physical environment is important to the process and can range from indoors to nearby nature to remote backcountry wilderness settings (Capaldi et al., 2015; Russell & Gillis, 2017). A wilderness setting is not required for climbing to affect a client therapeutically, however the benefits are clear (Capaldi et al., 2015; Luttenberger et al., 2015). Simply being in a natural setting has positive effects on individuals, increasing their hedonic well-being. It has been demonstrated that positive emotions increase, negative emotions decrease, and psychological resilience is bolstered by consistently interacting with nature (Capaldi et al., 2015). Beyond simply increasing positive emotions, spending time outdoors also increases an individual's eudaimonia. This is a subset of wellness that is based in purpose and agency. Bonaiuto et al. (2016) identify the interplay between flow experiences and identifying with a particular place. Flow state is regarded as an optimal experience that is characterized by energized focus, immersive involvement, and a positive aligned mental state (Csikszentmihalyi, 2000). This state is amongst the most gratifying experiences possible for humans (Csikszentmihalyi, 2000). An experience of this can be facilitated by complimentary pairing between task challenge level and an individual's abilities, applied to a continuous activity that is defined by a clear objective and provides instantaneous feedback. Climbing is recognized as a viable access point to flow state and inherently encourages identity with place (Bonaiuto et al, 2016; Csikszentmihalyi, 2000). Free-will and volition are also noted to increase with time spent in the natural world (Capaldi et al., 2015). Genuine expressions of self are co-occurring as an

individual's sense of their public presence holds less weight in nature. Additionally, emotional regulation, confidence, and social capacity are all seen to increase in the natural world. As expressed earlier, these skills and traits are also seen to increase during the act of climbing (Furhauf et al., 2021).

While most practitioners are reluctant to offer a definition to NBT for fear of limiting the practice there are several core elements (Harper et al., 2019). The concept, *nature as co-therapist* acknowledges the natural world as a third entity to which the therapist and client are inextricably connected, acting as a resource, guide and context in which healing can occur. This is certainly true during climbing as the cliff becomes an entity outside of the therapist and client that is integrated into the therapeutic process to address anxiety. The remaining elements are full-body engagement, play and risk, restoration and regulation, and bonding and belonging which will be expanded upon later.

### **Mind-Body Therapy**

Mind-body therapies acknowledge the inherent and active connection between the mind and body (Mallorquí-Bagué et al., 2016). There is bi-directional, cyclical connection between the mind's thoughts, perceptions, and feelings with the bodies experience of sensations, and states. Emotions are compiled through the interaction of the minds psychological state, the bodies physiological state and behavioural action. They influence and create one another and therefore to understand anxiety, both the mind and body must be considered. Climbing is an exemplary activity combining both the top-down and bottom-up processes incorporated into mind-body therapy (Sullivan et al., 2018). Top-down processes (using the mind to activate the body) can be initiated through intentionally focusing attention on a specific task, an important tenet of both climbing and AT (Luttenberger et al., 2015; Russell & Gillis, 2017; Sullivan et al., 2018).

Electroencephalography data from climbers demonstrates high neural activity in the frontal lobe, the executive function and thinking centre, during climbing (Bailey et al., 2019). Sullivan et al. (2018) note that psychological stress decreases and sympathetic nervous system activity calms as the top-down system is engaged. Bottom-up processes (using the body to activate the mind) can be initiated by intentional movement and breathing practices, both of which are integral to climbing (Bailey et al., 2019; Sullivan et al., 2018). Nervous system function and emotional wellness improve while using bottom-up processes (Sullivan et al., 2018).

Individuals can begin to engage in mind-body therapy through bringing *non-judgemental awareness*, an attentional quality to the present that is both curious and accepting, to their whole selves (Mehling et al., 2011). Becoming acquainted with bodily sensations, including both proprioception: the sense of our body position and movement, and interoception: perceiving sensations inside the body. Interoception also includes becoming aware of our body's interactions with thoughts, perceptions, and beliefs being produced by the mind. Finally, expanding this awareness to bodily states, such as nervous system arousal (Mallorquí-Bagué, et al., 2016). In Bailey et al.'s (2019) study of mental states of climbers utilizing EEG technology, inward attention came forward as a common experience of study participants. Inward attention is associated to awareness, mindfulness, and flow. This state of inward attention enables inhibition, an executive function of purposefully direct attention and dismissing information irrelevant to the task being performed. Inhibition is disrupted during anxiety, sacrificing neural efficiency.

The expanded awareness from mind-body therapy is associated to lessening psychological distress, specifically anxiety (Mallorquí-Bagué et al., 2016). When engaging in an accepting and non-judgemental attitude, an individual can fend off discomfort. In its place, reinterpretation of sensations, accurate emotional awareness and self-regulation are fostered.

This ability to reinterpret sensations and move beyond discomfort is explained further through the competing goal-driven and stimulus-driven attentional systems correlated to climbing (Bailey, 2019; Mallorquí-Bagué et al., 2016). The goal-driven attentional system is activated by the frontal cortex, channeling mental effort and concentration to overcome a difficult task (Bailey et al., 2019). The stimulation-driven attentional system engages the tempoparietal area of the brain, analyzing stimulus in the environment discerning relevancy for task completion. When anxiety rises, the sensation-driven attentional system overtakes the goal-driven attentional system. This shifts an individual's focus from completing the difficult task to withdrawing from stimulus creating discomfort and stress. Climbing engages each of these systems as the cliff or indoor wall provides stimulus interpreted by the climber to complete the task of problem solving to reach the top of climb. Each route (with appropriate challenge level for the climber) provides a distinct goal and tangible sensory input, bringing these two systems into balance. When used successfully, concurrent functioning is rewarded. When these attentional systems are out of balance, it will be made clear by a fall. From a mind-body therapy perspective, this concurrent process is labelled as self-regulation; consciously choosing equilibrium by shifting or selecting one's response in the face of threat (Sullivan et al., 2018).

### ***Polyvagal Theory***

Polyvagal theory (PVT) adds neuroception to interoception and proprioception, a bottom-up process, utilized in the subconscious detection of threat or safety (Sullivan et al., 2018). Before this information can be consciously processed by our frontal cortex, our neural detection has scanned and evaluated the environment for its level of risk (Poli et al., 2021; Sullivan et al., 2018). An individual's physiological state will reflect the level of threat detected through a process called neural reflexivity (Poli et al., 2021). Stephen Porges is credited for naming the

three levels of threat: safe, dangerous, life threatening, and three hierarchical systems that humans utilize when encountering a threat (Sullivan et al., 2018). The first system, and top rung of the ladder, to be activated is the social engagement system (SES), anatomically known as the ventral vagal system. The SES helps to promote safety through attuned connection to others (Lucas et al., 2016). While engaging in attuned social interactions, humans are more adaptable to low level threats encountered. Social attunement communicates safety through synchronous and reciprocal interaction, demonstrated by facial expressivity, welcoming body language and communicating with a soothing tone (Lucas et al., 2016). Hypervigilance is deactivated during attuned experiences with others. There is a regulation connection between the musculature of the face, respiratory system and the heart, communicating safety when in connection with others (Sullivan et al., 2018). The SES is relevant to both anxiety and climbing. Firstly, simply being in attuned connection with another person (ie. client with therapist) is enough to encourage a sense of safety. Secondly, climbing requires the presence of another person, either through spotting (for bouldering) or belaying (for top-roping and lead climbing) (House & Johnston, 2017). Communication is shared throughout the climbing process, offering the belayer an opportunity to activate the SES of the climber, conveying safety during an activity which inherently provokes anxiety (Bailey et al., 2019; House & Johnston, 2017; Sullivan et al., 2018).

The next system in the hierarchy is the mobilization system, anatomically known as the sympathetic nervous system (SNS) (Sullivan et al., 2018). When the ventral vagal complex is unable to secure safety through social engagement, this is the next response to threat, perceived at the level of “danger”. The SNS is in charge of mobilizing the individual into fight or flight behaviours when neuroception determines it is necessary, whether the threat may be real or imagined. Neural reflexivity instigates rapid physiological changes, shifting the individual away

from social bonding behaviour and towards readying themselves for action. Heart and respiratory rates will increase alongside muscle tone. Social attunement shifts towards displays of fear and anger in support of gaining defense from others or establishing safety for self and others. Porges shares that when this shift is made, especially in response to an imagined or disproportionate threat such as during anxiety, the best response to return to SES is intentional voluntary movement (2011). This movement gives an opportunity for the individual to utilize the energy made salient by the mobilization function of the SNS. Through this movement, an individual can access a resource that they have available to them, bringing them from the mobilization system back towards the SES.

Finally, the third system and bottom rung of the ladder is immobilization, prompted by the dorsal vagal complex (DVC) (Sullivan et al., 2018). This response is initiated when neuroception deems what is being encountered as “life-threatening.” This is the primordial threat response. Physiologically, muscle tone will decrease, heart rate and digestion will slow to reduce metabolic requirements. Internally, individuals could experience this as dissociation or a freeze state. This response readies an individual to be protected from pain or the possibility of death.

### ***Climbing as Related to Polyvagal Theory***

Polyvagal theory acknowledges that moving in a mindful way, such as during climbing, offers a neural exercise, strengthening the ability to regulate (Lucas et al., 2016). This regulation is accessed by shifting one’s physiological state through a blend of movement, social relating, and intentional focus. Engaging in movement that demands the full attention of the participant, such as when the goal-driven attentional system and sensation-driven attentional system is in balance, opens the gateway for embodiment and connective experiences (Bailey et al., 2019; Lucas et al., 2016). Climbing offers the ability to oscillate back and forth between attuned social

interaction and physical exertion. Alternating between these activities is recognized as a way to practice regulating the three hierarchical systems present in PVT (Lucas et al., 2016). Finally, Siegel, shares that when the brain is mindfully engaged with its surroundings, it is inherently relational, losing track of the idea of self, mirroring the experience *one-ness* experienced while climbing (Bailey et al., 2019; Siegel, 2007).

### **Common Factors**

After reviewing the interconnections between AT and NBT, mind-body therapy and PVT and their relationship to utilizing climbing as way to address anxiety, common themes have arisen. The themes that will be covered are relationship & trust, play, presence & mindfulness, safety & risk and finally, scalability.

#### ***Relationship & Trust***

The inherent relationality present in climbing has been noted as a major contributing factor in preparing youth for life's inevitable challenges (Hansen & Parker, 2009). Through climbing's unique nature of exposing individuals to height, while being kept safe by a belayer or spotter, trust, cooperation, and communication are naturally arising (Furhauf et al., 2021). The brain is deemed a "social organ," which naturally and subconsciously responds to social cues without effort (Lucas et al., 2016). From a polyvagal perspective, our brains are wired for both relationality and embodiment, both of which are present in climbing. These functions of the brain are interdependent and the increase in relationality increases mindfulness and vice versa. The interrelationship between these two functions is considered fundamental for people to flourish, making climbing inherently satisfying. A blend of being supported and empowered during AT, balancing the focus between relationship and individual agency, was reported to lead to the greatest progress for clients (Russell & Gillis, 2017). The individual is also given bountiful

opportunity to develop trust with themselves during climbing as they are invited to experiment with what they are capable of.

If climbing takes place outdoors, it is shown that the natural environment also positively impacts psychosocial development in participants (Bailey et al, 2019). The relational nature of the mind allows for connections to be made with the environment as well as people, further supporting individuals as they engage with climbing therapeutically (Lucas et al., 2016). Nature as co-therapist encourages the relational connection to nature as a third entity for both client and therapist, further bolstering support (Harper et al., 2019). Being relationally attuned to both the environment and the belayer (likely the therapist), assists clients in confronting anxiety while climbing (Bailey et al., 2019; Harper et al., 2019; Lucas et al., 2016). Proper debriefing will reveal to the client the necessity of a social support network as they confront anxiety in their daily lives (Fletcher & Hinkle, 2002; Russell & Gillis, 2017).

### ***Play***

Play is a hybrid state that can be accessed when an individual is able to move from their social engagement system merged with their mobilization state within their sympathetic nervous system (Harper et al., 2019; Porges, 2011). Play in a natural setting is considered one of the most effective ways to expand an individual's window of tolerance, as it blends co-regulation with human and nature (Harper et al., 2019). Both play and climbing alternate between movements that mimic fight/flight behaviour and attuned social engagement (Harper et al., 2019; Lucas et al., 2016). The playful and connective nature that shared movement engages acts as a neural exercise, strengthening an individual's ability to shift from activation associated with mobilization to calm associated with SES (Harper et al., 2019; Lucas et al., 2016). As climbing embodies a playful nature, joy and enjoyment are encouraged (Bailey et al., 2019, Furhauf et al.,

2021). These qualities stimulate well-being as well as the desire to continue engaging with climbing, leading to greater proficiency and satisfaction. Furhauf et al. (2021), noted that clients can enjoy the process of therapeutic climbing so much that they will choose to climb in their free time, continuing positive benefits.

### ***Presence & Mindfulness***

Simply looking at a natural landscape can invoke mindful presence (Lucas et al., 2016). Beyond this, we can experience mindful presence through attuning to another person or our bodies as we engage in movement. It is even possible to attune with the natural world, thus explaining the resulting mindful presence. Climbing is conducive to all these forms of attunement. Climbing is understood to be so engaging, facilitating high levels of focus such that climbers experience a sense of being merged with the activity, wholly present to its unfolding (Bailey et al., 2019). This type of movement is experienced as a being rather than a doing (Lucas et al., 2016). Movement of this nature can teach clients to develop awareness and then modify their behaviour to self-regulate. This change is made possible through learning to re-appraise sensory stimulus. Habitually, appraisal of sensation is completed quickly into broad qualitative categorization in reference to the self, typically “good” or “bad.” Then lenses of past subjective experiences are applied to the sensory stimulus. This leads to a highly inaccurate and subjective understanding of the world. Re-appraisal happens through mindful presence. This is created through a blend of focused attention and relaxation, commonly experienced while climbing (Bailey et al., 2019). This further explains how climbing can assist in the development withstanding discomfort. Embodied self-awareness is also seen to be induced through consistent conscious engagement with positive affect in relational experience such as in a therapeutic climbing relationship (Lucas et al., 2016).

### ***Safety & Risk***

The brain has evolved to protect humans from threat and the most basic human motivator is to achieve safety (Lucas et al., 2016; Porges, 2011). The first experience of safety upon entering the world is through the protection of a caregiver, conditioning humans to access safety through social engagement (Lucas et al., 2016). Harper et al., believe risk to be a developmental need, especially in the modern world (2019). Our evolutionary capabilities are out of sync with lives lived indoors, dictated by convenience and efficiency. Intentionally engaging with risk gives opportunities to activate mobilization of the SNS and move back to safety of the SES (Harper et al., 2019; Sullivan et al., 2018). Engaging in this process provides valuable insight to individuals, acting as a neural exercise in self-regulation ourselves between the three hierarchical responses to threat (Harper et al., 2019; Porges, 2011).

The interplay between real and perceived risk is a tenet of AT (Fletcher & Hinkle, 2002). Real risk is understood as exposure to threat or possible danger. Perceived risk is created through experiences that imply a feeling of danger but in actuality are quite controlled and safe. Climbing in the gym and top-rope climbing are excellent places for experiencing medium to high perceived risk and low real risk. Exposure to perceived risk prompts clients to engage mindful presence, attending to sensory input and learning and applying skills (Fletcher & Hinkle, 2002 & Harper et al., 2019). This process can elicit activation of the nervous system prompting opportunities for self-regulation. Pushing past perceived risk and into competence is an irreplaceable teacher of autonomy and self-efficacy.

### ***Scalability***

One of the biggest benefits to using climbing to address anxiety is the ability to scale the activity to the comfort and needs of each individual client (Luttenberger et al., 2015). There is

such vast variability of difficulty available in climbing, making it very possible to match a client to the right level of physical and psychological challenge. It is important to neither underwhelm nor overwhelm clients with climbing objectives. Challenge can be scaled through the physical challenge (grade) of the route. Striking the delicate balance between challenge level and ability, will contribute to the likelihood a client will experience flow, an optimal experience (Bonaiuto et al., 2016; Csikszentmihalyi, 2000). It can also be scaled through psychological means by increasing both perceived and real risk through the style of climbing utilized (House & Johnston, 2017; Fletcher & Hinkle, 2002). Novel physical environments can also contribute to this perception of exposure or psychological challenge (Capaldi et al., 2015; House & Johnston, 2017; Russell & Gillis, 2017). As clients experience success, progressively more challenging routes can be approached, increasing their sense of self-efficacy (Bailey et al., 2019). The progressive nature of climbing promotes continued participation and enjoyment.

### **Implications for Counselling Psychology**

It is important to seat the ideas offered above within the wider context of psychology and their interactions with social justice, environmental impact, and decolonization. Climbing is being proposed as an effective modality in which to address generalized anxiety disorder as it transcends the bounds of talk therapy, integrating the mind, body, social relationships, and environment (American Psychological Association, 2016; Luttenberger et al., 2015; Villavencio et al., 2021). While therapeutic climbing is just budding as a recognized treatment modality, it has historically fit within the wider catchment of AT and NBT, offering clients experiential access to agency, resilience, and empowerment (Harper et al., 2019; Russell & Gillis, 2017). Climbing naturally engages both top-down and bottom-up processes as it is an activity that bridges the mind and body, leading to improved nervous system function and emotional wellness (Sullivan

et al., 2018). When polyvagal theory is applied to climbing it is evident that climbing strengthens an individual's ability to regulate, through a mix of intentional voluntary movement and social engagement (Lucas et al., 2016; Porges, 2011). With these proposed combination of theories in mind, this section seeks to give greater context to shifting from solely relying on talk therapy to also incorporating mind-body therapy. With climbing taking place on the land, it is also important to address concepts such as solastalgia and ecoanxiety, social and environmental justice and the unsettling of ecopsychology.

### ***Reliance on the Mind***

The field of psychology, from a western perspective, has a long-standing reliance on cognition and conscious processing (Field, 2019). Accompanying this reliance is a denial of the co-occurring physiological experience and an integration of mind and body together (Field, 2019; Mallorquí-Bagué et al., 2016). Field (2019) argues that this integration of mind-body is extremely important within Western culture, which is prone to avoid or desensitize from emotional and physiological experiences. Awareness of and connection to emotional and physiological activation are proposed as foundational links to clients shifting patterned responses (Field, 2019). If numbing emotional and physiological experiences is common, activation could lead to confusion or shame within clients, stunting a cognitive therapeutic process (Field, 2019). Assisting a client to develop awareness of their present unfolding sensations and emotions can expand their self-understanding, which otherwise could be missed in talk therapy (Field, 2019).

The need for expanding beyond reliance on cognitive processing is demonstrated by the development of neuroscience-informed cognitive-behaviour therapy (Field et al., 2019). This emerging approach arose out of the gap between the empirically supported cognitive-behaviour therapy and growing research from neuroscience. Discoveries made through neuroscience

contradicted some foundational tenets of cognitive behavioural therapy (CBT), prompting integration. This new approach recognizes the necessity of first building rapport, assessing, and tending physiological responses, then addressing patterned responses (bottom-up brain approach) and finally linking the higher thinking centre and cognitive interpretation (linking bottom to top). This process then expands to dual processing, including top-down and bottom-up processes, for bi-directional input on an individual's experience (Field et al., 2019; Mallorquí-Bagué et al., 2016). This dual process is characteristic of mind-body therapies and as discussed earlier, required while climbing (Mallorquí-Bagué et al., 2016; Sullivan et al., 2018). This new development within the gold standard of therapy (CBT), acknowledges that incorporation of bodily sensations and physiological responses as necessary components in a client making therapeutic change (Field et al., 2019).

### ***Social Justice***

The field of psychology is ethically rooted in the concept of equal inherent worth of all humans prompting social justice as is stated in Principle I: Respect for the dignity of persons and peoples (Canadian Psychological Association, 2017; Warren et al., 2014). This indicates valuing each person non-discriminatorily regardless of their culture, race/ethnicity, sex, gender, age, socioeconomic status, sexual orientation, and physical or mental abilities. What is revealed when looking at the history of AT is that it is rooted in white colonialism: privileging heteronormative, white, cisgender male, able-bodied, middle to high socioeconomic status individuals (Rose & Paisley, 2012; Warren et al., 2014). At a baseline, the concepts of nature and adventure are understood differently depending on one's experience of privilege and oppression (Warren et al., 2014). Through Warren et al.'s (2014) comprehensive review of literature within the field of AT,

it is acknowledged that the concepts of nature and adventure are rooted within the dominant western view.

From the perspective of race and ethnicity, the natural environment being a place of sanctuary or refuge is a predominantly White belief and there are different social and collective memories tied to the outdoors for Black people (Warren et al., 2014). A Black social history of slavery, sharecropping agricultural practices, and lynching are potentially associated to the land. Warren et al. (2014), report that Latinos typically feel a lack of acceptance and experience discrimination in outdoor communities and programs. Both identity and cultural history affect BIPOC's ability to comfortably interact with the natural environment (Warren et al., 2014). People of color report a dichotomous sentiment, that they see spending time in the natural world as part of white culture, yet they also acknowledge a strong valuing for natural spaces with the desire to be more present there (Warren et al., 2014). To serve non-white populations, the constructed relationship to the concepts of nature and adventure must be understood and integrated so that participation is safe and meaningful (Warren et al., 2014).

The dominant belief that nature experiences are meant to take place in pristine environments with the goal of preservation rather than sustenance is also rooted in race and class (Ungar, 2003; Warren et al., 2014). Program facilitators typically express a bias which preferences immaculate wilderness spaces over urban natural areas (Ungar, 2003). This communicates to participants from at-risk populations that the places they have come from are of lesser value, creating increased marginalization (Ungar, 2003). The translation of experiences from wilderness settings has been shown to be ineffective without continuity of care once the participant returns to their home environment (Ungar, 2003). This can be addressed through methods such as expanding nature-based therapeutic experiences beyond one-off sessions

(Ungar, 2003). Harper et al. (2019), echo a concept of *nearby nature*, originally proposed by Kaplan (1992), referring to one or multiple plants and the spaces they create. Kaplan (1992) reminds us that the positive correlation between an individual's well-being and the presence of plants extends beyond all demographic divisions, whether it be gender, race, age, socio-economic status or physical ability.

Climbing is considered a lifestyle sport, which Wheaton (2004) explains as a sport which orients a participant's life and identity around the activity. Scarpa & Thiene (2005) acknowledge the role of socioeconomic status in climber's participation. A certain degree of wealth is required to participate in the sport as it requires a large quantity of equipment and training or mentorship, which can act as a barrier to entry (House & Johnston, 2017; Warren et al., 2014). Time is also a factor, as many climbers who become passionate about the sport choose to dedicate much of their time to improving, thus shifting their lifestyle (Wheaton, 2004). Climbing as a lifestyle sport encourages alternative cultural and social spaces, with progressive and adventurous values, expanding beyond normative concepts of masculinity and femininity (Wheaton, 2004; Rickly-Boyd, 2012). Contradictorily, misogyny and heteronormativity are also seen as embedded within lifestyle sports (Warren et al., 2014; Wheaton, 2004). This is exemplified through discrimination targeting women, two-spirited, lesbian, gay, bisexual, transgendered, queer, intersex, asexual and other nondominant expressions of gender and sexuality (Wheaton, 2004).

A greater focus has been placed on creating more access and comfort for women and girls in the outdoors (Warren et al., 2014). Valuing of females has produced homogenous and segregated programs focused on single gender experiences (McDonald, 2014; Warren et al., 2014). These programs have been shown to be supportive, leading to experiences of empowerment, competency, and physical capability (McDermott, 2004; Warren et al., 2014).

Other gender-identities and sexual orientations have not yet been included in this focus and simultaneously there is room to expand beyond single gender/sexual orientation programming (McDonald, 2014; Warren et al., 2014). This gap is evident in Warren et al.'s (2014), review of the literature, recognizing that transgendered experiences in the outdoors has received no acknowledgment. Contact theory refutes intergroup safety being created through a perpetuation of separation (Pettigrew et al., 2011; Warren et al., 2014). Pettigrew et al. (2011), state that building friendships between members of differing groups is amongst the most important for developing empathy. A two-step process may be necessary to create inclusion for individuals with identities in non-dominant groups. Firstly, offering segregated programming focusing on a single aspect of identity that may lead individuals to feel marginalized in climbing such as gender or sexual orientation (McDermott, 2004; Warren et al, 2014). Secondly, offering programming that honours the intersectional nature of identity and facilitates space to foster intergroup connection and relationship through climbing (McDonald, 2014; Pettigrew et al., 2011).

Social justice recognizes that the social location of an individual is comprised of an intersection of identities, as opposed to independent or isolated aspects of identity (Warren et al., 2014). The outdoor experiential field which adventure is seated within is slow to acknowledge intersectionality (McDonald, 2014; Warren et al., 2014). Where marginalized social identity is concerned, the outdoor field has been addressing and supporting isolated identities (McDonald, 2014; Warren et al., 2014). These issues of social justice within AT are relevant to acknowledge within all program design and individual session offerings. Warren et al. (2014), suggest that this be done through culturally competent program design and, inviting the intersectional identities of participants, with the purpose of inclusion. As mentioned above, offering a two-step approach of

segregated programming and intentional intergroup programming can meet participants in their potential experience of marginalization and resulting needs (McDonald, 2014; Pettigrew et al., 2011; Warren et al., 2014). Within these programs it is important to offer intentionally created space for participants to confront and reframe internalized marginalization (Warren et al., 2014). These open spaces of exploration invite participants to understand this oppression as injustice along with experiences of a different lived experience (Warren et al., 2014).

### ***Decolonizing/Unsettling***

The outdoors was and is colonized by settlers, displacing Indigenous people and their cultural and sustenance practices from the land (Jones & Segal, 2018; Warren et al., 2014). Decolonization requires centering Indigenous ways of knowing coupled with returned sovereignty and governance over their land (Jones & Segal, 2018). There are also far-reaching political, social, and systemic implications for the ways in which colonialism has shaped Indigenous peoples' lives. Unsettling is a necessary tandem process as it asks settlers to critically examine their position within the colonized system that enforces privilege. It invites settlers to work against ongoing violence and assist in repairing trauma incurred by colonization upon the land, people, and Indigenous culture. Unsettling is meant to be done in consult and collaboration with Indigenous peoples, empowering their perspectives and desires.

Due to AT and NBT's direct involvement with the land, a process of unsettling is integral to be in right relationship with both the land and its original people (Jones & Segal, 2018). It must be acknowledged that land access as it is now, has been made possible by the displacement and dispossession of Indigenous peoples. The intention behind nature-based practices is to assist people in drawing a closer relationship to the land they reside upon. This can be contentious as nature-based counsellors facilitate this connection with their clients, regardless of their race.

Jones and Segal (2018) offer many suggestions for practices to incorporate to continue to unsettle nature-based counselling. The first step is to learn about the local First Nations as well as the settler history. Engaging in relationship building with these Nations is also extremely important as it honours their historical and present-day presence. A relationship of support can be offered, should the Nation be interested. Territorial relationship between Indigenous people and the land should be acknowledged, whenever working on the land. This is merely a first step on the path to an action-based process. Alongside recognizing the land and its original people, the identity of the clinician in relation should also be expressed (ie. Third generation settler).

Nature-based therapy has the potential to maintain and fortify settler colonialism (Mitten, 2021). This can happen overtly or subtly through the projection of Eurocentric values onto nature and how therapy is facilitated in natural spaces (Mitten, 2021; Ward-Smith et al., 2020). Both the facilitator and the modality that is being interacted with to relate clients to the natural world can communicate Eurocentric values (Mitten, 2021). An Indigenized perspective would communicate that the land is a host of living beings in which to interact with. Applied to nature-based therapy, nature is as involved in the process of treatment as the therapist; nature as co-therapist (Harper et al., 2019; Mitten, 2021). The language used and the way in which nature-based therapy is conducted has the ability to communicate that humans and culture are separate from nature, and that nature is something to be used to heal and prove a position of power (Mitten, 2021). Intentionally communicating that humans and culture are connected to and a part of the natural world and that interacting with nature can be healing that disrupts colonial scripts (Mitten, 2021).

### ***Eco-Anxiety & Environmental Justice***

In 2003, Albrecht et al. (2007), proposed a new concept, solastalgia, developed in response to rising levels of distress people faced because of environmental destruction and climate change. Solastalgia can be understood as pain arising from the inability to find solace due to environmental change within one's own home environment. Solace captures both the physical and psychological ability to find comfort in times of challenge. While there are physical health threats (somaterratic illness) linked to environmental destruction such as pollution and contaminants, psychoterratic illness is the mental health issues that can arise as individuals' connection to a healthy home ecosystem is severed. Much like the global orientation to mental health, the psychological implications of climate change were not recognized until much after physical effects were acknowledged (Albrecht et al., 2007; Hayes et al., 2018). Connecting psychological distress to extreme weather events and natural disasters is obvious (Albrecht et al., 2007; Hayes et al., 2018; Kennedy & Witham, 2021). However chronic environmental stressors were not given the same weight by mental health professionals. Albrecht et al. (2007), conducted both qualitative (interviews and focus groups) and quantitative (community-based surveys) studies in two communities experiencing on-going environmental impact in the form of mining and drought. It was discovered that sense of place, identity, distress levels, belief in agency, and physical and mental health were all negatively impacted by the ongoing environmental change.

In the last few years, ecoanxiety has received a great deal of attention (Hayes et al., 2018; Kennedy & Witham, 2021; Wullenkord et al., 2021). Kennedy and Witham (2021) have drawn particular attention to children and youth, ranging from age 0 to 24, as climate change has always been a part of their lives. These individuals will be inordinately affected by climate change, whether it be through direct impact or being raised in a cultural climate of ecoanxiety. This is reflected in the increasing levels of mental health concerns related to climate change. When

determining the mental health of an individual, it is essential that we take note of the broader schema of health, incorporating both social and ecological determinants of health. Social determinants of health, as mentioned in the social justice section, observe an individual's intersectional social location and how this impacts their health. Ecological determinants of health view how environment and climate change impact an individual's access to basic needs such as water, food, housing, and natural resources. This more expansive eco-social view of health puts into perspective the increasing mental health challenges youth are experiencing. Youth report feelings of grief, fear, disempowerment, helplessness, hopelessness, worry, sadness, anger, and anxiety, as well as the belief the world could end in their lifetime. There is strong positive correlation between ecoanxiety and general anxiety (Wullenkord et al., 2021) which holds a great deal of relevance for the proposal of utilizing climbing to address general anxiety.

Climate change is often coupled with feelings of hopelessness and helplessness (Hayes et al., 2018; Kennedy & Witham, 2021; Wullenkord et al., 2021). These emotions result as the extensive impacts of climate changes contrasts to the minor and abstract actions available to address them (Hayes et al, 2018). It is relieving that the literature also offers approaches to alleviate experiences of ecoanxiety (Hayes et al., 2018; Kennedy & Witham, 2021; Wullenkord et al., 2021). Personal engagement with nature can reduce experiences of eco-anxiety and help individuals develop adaptive coping mechanisms (Kennedy & Witham, 2021; Wullenkord et al., 2021). Hayes et al. (2018), report that incorporating nature connection into therapeutic work is logical as it has positive effects on mood, quality of life, attention, cognition, sense of place and belonging, personal identity and inspiration. As individuals deepen their relationship to nature, an inherent desire to care for and preserve these natural spaces arises. Stewardship and personal participation in preservation work is also seen as another way to alleviate experiences of eco-

anxiety (Hayes et al., 2018; Kennedy & Witham, 2021). It is demonstrated that connecting with the community to engage in organized local activism that centres self-expression and creative solutions to climate change also alleviate ecoanxiety (Kennedy & Witham, 2021).

The present unfolding climate crisis further reveals and intensifies the many inequities present in our current social world (Kennedy & Witham, 2021). Environmental justice is yet another reminder of the oppression of marginalized groups, as it highlights that Black, Hispanic, and First Nation communities are more likely to be exposed to environmental dangers (Warren et al., 2014). They are also at greater risk of experiencing threat to health, food, water, housing because of climate and environmental changes (Kennedy & Witham, 2021). In addition, these racial groups are less likely to have access to outdoor leisure and recreation programming (Warren et al., 2014). Overall, it is important to recognize that climate change will disproportionately affect marginalized groups and has the potential to intensify their experience of ecoanxiety (Kennedy & Witham, 2021). It should also be highlighted that Indigenous people may experience deeper levels of impact as their land-based culture is also at stake within climate change (Middleton et al., 2020).

### ***Addiction***

Clear connections are present between the extreme nature of climbing and drug and behavioural addictions (Heirene et al., 2016; Roderique-Davies et al., 2018). Hierene et al., completed a series of semi-structured interviews with both high ability and average ability male rock climbers to establish whether withdrawal was experienced during abstinence from climbing (2016). In 2018, Roderique-Davies et al., took this investigation a step further and developed a tool, rock climbing craving questionnaire (RCCQ), to quantitatively measure the degree of craving experienced by climbers and therefore the similarity to withdrawal experiences. Between

these two studies, it was discovered that the withdrawal symptoms of anhedonia, craving, and negative affect were experienced by climbers to varying degrees, dependent on their ability level (Heirene et al., 2016; Roderique-Davies et al., 2018). Three main factors were discovered through the development and validation of the RCCQ, which were termed: urge to climb, negative reinforcement, and positive reinforcement (Roderique-Davies et al., 2018). These factors mimicked symptoms present in withdrawal from drug and behavioural addictions. The urge to climb was understood as a craving, the need to alleviate negative feelings from not climbing was related to the desire to eliminate withdrawal symptoms, and delaying positive effects associated to climbing was understood as anticipatory behaviour. The similarities between a climber's relationship to climbing holds similarities to an addict's relationship to substance or an addictive behaviour (Heirene et al., 2016; Roderique-Davies et al., 2018). Interestingly, Roderique-Davies et al. (2018), propose climbing as a potential harm reduction activity or replacement therapy for those recovering from addiction.

### ***Responsibilities***

Following is a short review of responsibilities of the clinician are proposed to address these implications. Firstly, as the field of psychology expands to acknowledge the importance of integrating the physiological experience into the therapeutic process, utilizing climbing to address anxiety aligns with this directive (Bailey et al., 2019; Field et al., 2019). Engaging with climbing in a therapeutic way integrates the dual top-down, bottom up process through awareness of proprioception, interoception and neuroception (Bailey et al., 2019; Mallorquí-Bagué et al., 2016; Mehling et al., 2011).

The many intersections of identity that clients embody must be brought to the forefront in the therapeutic relationship, case conceptualization, and creation of therapeutic goals (Arthur,

2018; Cormier et al., 2017). It is evident that the field of AT is rooted in privilege and dominant culture (Warren et al., 2014). With this awareness, it allows clinicians to recognize that the foundational concepts of nature and adventure will look different to each client. The worldview of this client must be at the centre point of any experience design, whether it be a progression through therapeutic climbing or simply sitting on the land.

Ongoing efforts towards decolonization and unsettling the fields of NBT and AT require direct acknowledgement of the land, its original peoples, and the history of colonization (Jones & Segal, 2018; Warren et al., 2014). Beyond this acknowledgment, action must be taken to actively participate in these necessary processes. Relationship building and reconciliation through collaborative and supportive connections with Indigenous communities is one place to start (Jones & Segal, 2018). Offering pro bono or financially assisted therapy or therapeutic programming (designed in collaboration with Indigenous folks) that is land-based is another small step. Finally, ensuring that the way in which nature-based therapy is conducted through use of language, modality choice and therapeutic framing refrains from colonizing natural spaces (Mitten, 2021; Ward-Smith et al., 2020).

Positive correlation between ecoanxiety and generalized anxiety offers insight into a potential contributor to the overall increase in anxiety (Wullenkord et al., 2021; Kennedy & Witham, 2021). The dominant and growing experience of ecoanxiety points positively to engaging clients with the land, whether it be through NBT or therapeutic climbing experiences for two predominant reasons. First is developing a more intimate relationship with the land is shown to alleviate experiences of anxiety and ecoanxiety, through emotional regulation and restoration (Bonaiuto et al., 2016; Harper et al., 2019; Kennedy & Witham, 2021). The second is that building relationship with the land is shown to inspire pro-environmental behaviour which is

the other main avenue for alleviation of ecoanxiety (Hayes et al., 2018; Kennedy & Witham, 2021). A responsibility to any facilitators working on the land is to model sustainable ways of interacting with the land and respectfully share this knowledge where it may be lacking (Harper et al., 2019; Kennedy & Witham, 2021). Finally, one of the themes that has come out of the literature is the empowerment that comes from being in groups addressing climate change (Kennedy & Witham, 2021). While therapeutic work with clients could take place one on one or in groups, assisting clients in connecting to these group climate change based resources is important (if interest is present). As individuals gain relationship to the land their place identity, feelings towards specific natural spaces, bolsters their own self-identity. Developing a positive relationship with a natural space promotes self-worth and development of a positive emerging identity, great assets against anxiety (Bonaiuto et al., 2016; Wullenkord et al., 2021; Kennedy & Witham, 2021).

### **Fundamental Next Steps for Research**

Proposing a combination of newer and unconventional therapeutic approaches means that there are gaps in the research. This section highlights the identified gaps in the research, critiques some existing research and highlights conflicting information present in research. The dominant central point of research gaps from what I have reviewed, pertains to utilizing climbing as a therapeutic tool through the lens of other therapeutic approaches, such as polyvagal theory.

While the creation of AT dates back to 1941, arriving in academic literature in 1979, therapeutic climbing is a newly framed concept in academia (Fletcher & Hinkle, 2002; Gibson, 1979). It was first proposed in the form of indoor bouldering by Luttenberger et al. in 2015, as a method to address depression. An 8-week manualized program was designed and offered as the basis of a quantitative research study. In 2019, an article by a similar group of authors compared

the effectiveness of *bouldering psychotherapy* to CBT and physical activation (Dorscht et al., 2019). This article reads like a proposal of the study, clearly outlining the various assessments and controls that would be used throughout the study to ensure validity, however no results are offered. The following year this same general group of authors published an article comparing bouldering psychotherapy to an exercise program (Karg et al., 2020). This study revealed significantly more effective change scores related to bouldering psychotherapy, on average moving participants from a moderate to mild depression scoring according to the Montgomery-Åsberg Depression Rating Scale (MADRS). The comparative exercise program influenced an average drop on the MADRS but not significant to move participants out of the moderate depression range. In 2021, this same general group of authors published an article comparing cognitive behavioural therapy to bouldering psychotherapy (Schwarzkopf et al., 2021). The general results were that bouldering psychotherapy is more costly but had a large effect on depression symptoms compared to the less costly CBT which had a medium effect. While the information that these articles provide is foundational and helpful, it does not explore roped climbing in any way and it leaves the contributing factors of effectiveness in bouldering psychotherapy unexplored.

Another article from 2021 by Furhauf et al., explores climbing as an add-on treatment option. Thirty professionals from the fields of medicine, education, and psychology (10 from each field) were selected for interview about their attitudes and expectations of therapeutic climbing. My critique of this study is that it includes professionals who have no experience with climbing whatsoever. The professionals with no experience of climbing were given a short 4 sentence explanation of therapeutic climbing to draw their opinions from. 47% of participants had theoretical experience with climbing and 40% had practical experience with climbing. While

the results of this study are favourable for therapeutic climbing, it appears as if it may lack validity.

Within this proposed inter-meshing of modalities, research that measures the presence of polyvagal mechanisms within climbing would be very beneficial. As Deb Dana, Stephen Porges and Peter Levine share (2020; 2011; 2010), when an individual is activated in the mobilization (sympathetic nervous) system, intentional movement can help them downregulate, releasing the energy made available. This is the very act of climbing, intentionally choosing specific movement during an activity that elicits a fear (mobilization) response (Bailey et al., 2019). Another method to assist individuals with the experience of mobilization is to return to social engagement after periods of SNS activation (Dana, 2020; Porges, 2011). This process is mimicked in climbing as once the climber completes a route or chooses that it is time to come down, they return to the ground where their belayer is, able to engage in a moment of social engagement (Dana, 2020; House & Johnston, 2017; Porges, 2011). Conducting research studies that apply polyvagal theory to this interaction within climbing could illuminate this masterful pairing.

Conflicting research confuses the level of familiarity that is optimal between a client and the environment for AT and NBT to take place. Russell and Gillis (2017) state that a novel physical environment is one of the factors that contribute to the formula of effectiveness of AT. Conversely, Ungar (2003) writes extensively about the alienation that can occur when an individual engages in transformative nature-based programming in pristine wilderness and then returns home to an urban environment. For example, Ungar (2003) proposes that further marginalization can occur for at risk youth when their home environment is othered from the

environment in which programming took place. This complicates the ability for participants to bring their learnings home with them.

Finally, further research about how various racial/ethnic groups relate to nature and adventure would be beneficial. As Warren et al. (2014) illuminates, these concepts are rooted in cultural and historical understanding. Examples of this are historical and collective memories Black people may have correlating nature to slavery rather than solace (Warren et al., 2014). Stelkia et al. (2020), share that spiritual connection to the land and ability to harvest food are of the greatest determinants of their health and well-being of First Nation's people. The drive for preservation and pristine untouched nature can disregard sustenance-based and ceremonial relationships with the land (Stelkia et al, 2020; Warren et al., 2014). Producing research that accounts for the ways in which differing racial and ethnic groups relate to nature and adventure would indicate how to make AT and NBT more culturally relevant to individuals outside of dominant identities.

### **Recommendations for Practice**

This section will act to integrate all the theories and therapeutic approaches proposed throughout this paper into one treatment design. Reviewed within this section is the necessity of assessment, considerations for location, and the components of a multidisciplinary team. The overarching program design is covered, highlighting the benefits of a mixed approach utilizing both individual and group sessions.

### ***Assessment***

Implementing assessment throughout the course of treatment will benefit the client, therapist, and effectiveness of treatment (Whiston, 2020). Initial assessment acts to establish where the client is at as they enter treatment, screening for severity of anxiety, suicide,

depression, violence, child abuse, substance abuse and mental status (Whiston, 2020). Utilizing climbing to address anxiety will not work for all clients, this is dependent on the severity of their anxiety and additional mental health disorders. Assessing each client in an objective and systematic manner during the intake process provides the necessary information to either confirm a fit for treatment or refer outwards (Whiston, 2020). Once fit for the program has been confirmed, further assessment will assist in the conceptualization of the client's problem.

Tools that will be utilized in the initial intake assessment in addition to an in-depth interview are the DSM-5 Self-Rated Level 1 Cross-Cutting Symptom Measure -Adult and the Level 2 Anxiety – Adult (PROMIS Emotional Distress – Anxiety – Short Form), see Appendix A (American Psychological Association, 2013a, 2013b). This will act to identify if the prospective client has any additional major mental health concerns to anxiety (American Psychological Association, 2013a). It will also act to establish the level of severity the client is experiencing (American Psychological Association, 2013b). Mild and moderate scores on the Level 2 Anxiety measure will be most conducive to engaging in the group therapeutic climbing aspect of treatment.

An additional assessment to complete before a prospective client is admitted into treatment is an interview that establishes their ecological identity (Harper et al., 2019). While there is no formal assessment tool to establish one's ecological identity, a clinical interview that focusses both on historical and present-day relationships with the natural world will establish a client's level of nature connection and motivation to be connected. There are three general ecological identities: averse, receptive, and connected. Averse indicates that a client has prior or present negative connotations to natural settings which could surface feelings of unsafety. Receptive indicates that a client has neutral to positive connotations to nature. They may have

minimal experience with nature but are motivated to engage. Finally, connected, indicates that a client already has a relationship with the natural world and likely recognizes their inherent connection to it. There are also three general categories for how one can interact with nature: vicarious (symbolic), indirect, or direct. Vicarious or symbolic interactions are ones that connect a client to a representation of nature, whether it be imagined or metaphorical. Indirect interactions include structured and curated physical interactions with nature such as through being in a manicured park. Finally, direct interactions are unmanaged experiences with wild spaces. Each ecological identity can be paired with these various ways of interacting with nature in an intentional way to meet the needs of the client. This has a high applicability to climbing as there is a range for how one can interact with this activity, whether it be in a climbing gym or on an exposed cliffside (Bailey et al., 2019; Luttenberger et al., 2015).

At the beginning of the treatment process a client will complete an Outcome Questionnaire - 45.2 (OQ-45), a self-reported measure that reports on general psychological distress, specifically in the areas of symptom distress, interpersonal relations, and social role (Levy et al., 2018). This will be accompanied by the Level 2 Anxiety – Adult (PROMIS Emotional Distress – Anxiety – Short Form), because the OQ-45 does not adequately report on anxiety symptoms but does indicate overall well-being (American Psychological Association, 2013b; Levy et al., 2018). These two tools will be administered at various intervals of the program, with the minimum being at the beginning, middle and end. This will indicate a client's baseline upon entry, give evaluative information during treatment and finally offer a measure at the end to establish whether progress was made (Whiston, 2020). It is important to note whether these various assessments have been normed to the cultural group membership of the client being assessed (Whiston, 2020)

### ***Location***

Location of the treatment program has a few factors to consider. Firstly, being in Canada, season and time of year is one of the biggest determinants of whether a therapeutic climbing program can happen inside or outside (Russell & Gillis, 2017). Depending on the specific location within Canada, a generous climbing season is April – October (House & Johnston, 2017). Secondly, indoor, or various outdoor locations will be appropriate depending on the ecological identity and level of anxiety a client experiences (American Psychological Association, 2013b; Harper et al., 2019).

### ***Multi-Disciplinary Team***

Utilizing climbing to address anxiety expands the factors that need to be managed within the therapeutic process. Furhauf et al. (2021), suggest that having a multidisciplinary team allows for the various factors present in the treatment to be addressed adequately. This team would include counsellors who are tuned into the therapeutic experience of the clients and climbing instructors or guides (depending on the setting) who are able to instruct and manage physical safety. The maximum number of participants preferred for the group component of this treatment program is six. This meets the guide to client ratio, requiring one climbing guide with the additional support of two mental health professionals (Association of Canadian Mountain Guides, 2019).

The Association of Canadian Mountain Guides (ACMG) is the Canadian professional training and certifying body of mountain guides and climbing instructors (Association of Canadian Mountain Guides, n.d.). Having instructors and guides trained to this rigour would ensure the utmost safety of the clients. The setting in which the program takes place will determine the level of certification required. If the program takes place in a climbing gym, an

ACMG certified climbing gym instructor would suffice to manage the climbing related risk present in the program. If the program was to take place outdoors at an easily accessible crag where clients are simply engaging in top-rope climbing, a top rope climbing instructor would be able to adequately manage the risk present managing a group in the outdoor setting while teaching top rope climbing and rappelling activities. Finally, a rock guide would be necessary for more technical terrain and if teaching clients how to lead climb was part of the desired and appropriate programming.

Having mental health professionals, such as clinical counsellors, therapists or psychologists facilitating the entirety of this program is greatly important (Furhauf et al., 2021). It is also vastly important that these mental health professionals have an intimate knowledge and experience with climbing so at no point are they asking a client to explore something therapeutically that they have not explored themselves (Harper et al., 2019). Integrative climbing knowledge is required alongside therapeutic knowledge and expertise, so the therapist can work from a place of competence (Canadian Psychological Association, 2017; Harper et al., 2019). Currently there is only one training program in the world at the Institute for Climbing Therapy (n.d.), located in Austria. This program is designed to support individuals in mental health and medical professions, bring their skillset into climbing. Each training is tailored to the specific needs of the participants, but the institute strongly recommends that everyone has a personal background and comfort with climbing. While clients may learn climbing technique and technical skills during therapeutic climbing programs, the overarching intent is therapeutic. This intent indicates that climbing is being engaged with as a tool to experience and internalize therapeutic experiences (Luttenberger et al., 2015; Russell & Gillis, 2017).

### ***Integration of Individual & Group Sessions***

To best utilize climbing to address anxiety, a blend of individual and group therapy is proposed. Depending on the individual needs of the client there are a few different ways that this could occur. The first step is for mental health professionals facilitating this treatment program to make initial contact with clients, discerning through assessment, who is a fit for the program. Determining the level and setting of climbing appropriate for the clients' therapeutic needs (ecological ID and level of anxiety) is a necessary component of this assessment (American Psychological Association, 2013b; Harper et al., 2019; Russell & Gillis, 2017; Whiston, 2020). After intake, counsellors will engage in individual therapeutic sessions with clients to gain an in depth understanding of the client's problems and needs. A co-occurring aspect of the individual client sessions is to share psychoeducation on polyvagal theory, focusing on the autonomic hierarchy (social engagement system, mobilization, and immobilization systems), neuroception, and co-regulation (Dana, 2020). Clients will be supported to establish their own autonomic landmarks, sets of indicators that they are in their social engagement system, mobilization, or immobilization system (Dana, 2020). Throughout individual sessions, clients will gain a clear understanding of specific aspects of their anxiety, developing a clear therapeutic goal, they hope to address through the program (Cormier et al., 2017). There is no rigid set of time that a client must spend in the individual treatment phase of the program and is determined by the individual needs of the client. The minimum number of sessions required to move through the process outlined above is three sessions, including the intake interview. If a client received a "severe" score on their Level 2 Anxiety – Adult (PROMIS Emotional Distress – Anxiety – Short Form), it is possible that a longer duration spent in individual therapy could prepare them to engage in the group component of the treatment program.

As mentioned above, an ideal number of participants for the group component of this treatment program is six. This allows for one climbing guide or instructor to oversee the climbing safety aspect of the program while two mental health professionals can tend to the psychological needs of the clients. For this paper, top-rope outdoor climbing will be explored as the setting in which the group component of treatment takes place. The group program component would occur once a week for eight weeks, each session 5-6 hours in duration (Luttenberger et al., 2015).

Each session will begin with an exercise focused on connecting to the ventral vagal (social engagement) system, bringing each member of the group into a sense of safety (Dana, 2020). This will typically be completed through an element of engagement with the land (Bonaiuto et al., 2016; Dana, 2020; Harper et al., 2019). This will lead into a check-in for participants to share how they are doing. Next a broader concept within polyvagal theory will be matched to climbing skill and taught to the group. There are five main areas within Polyvagal theory to assist in reshaping a client's nervous system response away from ingrained patterns (Dana, 2020). The abilities and needs of the group will dictate how the group moves through these five areas of focus with paired climbing and belaying skills throughout their eight sessions. Below is a chart that pairs the Polyvagal concept with the general climbing/belaying skill.

<b>Polyvagal Focus</b>	<b>Climbing/Belaying Skill</b>
<b>Befriend</b> – Learning to become aware of and tune into one's autonomic states and the accompanying stories	Bouldering & exploring with movement. What does moving on rock feel like? What is going on internally (sensation & story) in response to this movement?
<b>Attend</b> – Naming autonomic states and being able to track movement between different states, both subtle and obvious	Learning belaying skills. What happens internally when you are belaying and climbing at height? Can you track the movement between different states? Is there a correlation to the different activities?

<p><b>Shape</b> – Shaping the autonomic system away from habitual survival responses and intentionally into patterns of connection</p>	<p>Focusing on the climber/belayer relationship. How can the belayer demonstrate synchronous and reciprocal interaction with the climber (through facial expressivity, body language, vocal tone). How does this impact the experience of the climber?</p>
<p><b>Integrate</b> – Bring attention to new autonomic patterns that are emerging and how these are shaping pathways of resilience</p>	<p>Learning movement technique on rock. Encouraging intentional movement as opposed to automatic reactions.</p>
<p><b>Connect</b> – Focussing on connection. How do new autonomic abilities allow for creating safe connections?</p>	<p>Climber pushing themselves on a challenging route. Expressing needs to belayer, how they can support climber through this process.</p>

(Dana, 2020; Spear, 2003)

Each session will close with a focused reflection on what participants noticed during their climbing session and how this applies to their daily lives (Luttenberger et al., 2015). One takeaway will be identified at the end of each session for the client to implement where applicable until their next session. The breakdown of each session would be:

1 hour: Ventral vagal exercise and check-in

1 hour: Learning about polyvagal focus and accompanying climbing/belaying skill

2:15 hours: Time spent climbing and experimenting with polyvagal focus

45 minutes: Closing reflection and sharing.

These ideas are intended to support clinicians in the design and implementation of an experiential climbing program to address anxiety. Firstly, assessment is suggested to gain initial information on how to support clients through suitable program design (Whiston, 2020). Considerations for location and the necessity of a multi-disciplinary team is emphasized as the proposed programming covers a wide set of skillsets and dynamic environments (Association of Canadian Mountain Guides, n.d.; Furhauf et al., 2021). Overarching program design is

suggested, from how to work with clients both individually and in a group setting as well as session structure and the progression of group programming content (Dana, 2020; Luttenberger et al., 2015).

### **Reflexive Self Statement**

I have learned a lot through the writing of this project. I believed that engaging with nature and adventure had the capacity to help almost anyone, that it had the power to awaken connection, empowerment, inspiration, and the realization of agency. What I am grappling with most is that the concepts of nature and adventure that I have taken for granted as the foundation of the work that I have done and want to continue to do are rooted in privilege and colonization (Warren et al., 2014). It is hard to emphasize the depths to which this realization is confronting my worldview and the orientation (both lifestyle and therapeutic) I have dedicated my life to, thus far. I have been progressively confronting and dismantling the mentality of conquest that climbing was built upon (Zhu et al., 2021). This has been exceptionally important for me to address and integrate in the process of offering climbing programming for Indigenous women. I believe that with very mindful program design that centres the worldview of the population it is being designed for, impactful programming is still possible (Warren et al., 2014). It is essential to collaboratively design programs with the population they are intended for. The aspect of this realization that is really challenging me is how intersectionality is rarely accounted for in the outdoor industry outside of single marginalized identities, such as, just gender, sexual orientation, or race. When working individually with clients, honouring their social location is much more possible (Arthur, 2018; Cormier et al., 2017). However, this conflicts with the cost ineffectiveness of working with individuals, an important consideration in making services more accessible to the greater population.

Another source of tension for me is observing the ecological impact that climbing can have on the environment in which it takes place (Covy et al., 2019; Hepenstrick et al., 2020; Lorite et al., 2017). In light of the climate crisis and the accompanying eco-anxiety that is plaguing the human species, this environmental impact is challenging to ignore (Albrecht et al., 2007; Hayes et al., 2018; Kennedy & Witham, 2021). While there are more sustainable ways to interact with the environment, such as incorporating leave-no-trace practices, the reality is that increasing human traffic into the outdoors also increases impact (Beery et al., 2021). Ungar (2003), does offer the directive that adventure and nature-based programming should be taking place close to a client's home to foster connection with their local environment. This is also beneficial for limiting environmental impact by decreasing travel radius. Outdoor climbing is not available in all places so utilizing other resources such as the climbing gym or casting climbing aside and focusing on a client's connection to the land could be an adequate replacement, depending on the needs of the client (Harper et al., 2019).

## **Conclusion**

After reviewing and synthesizing the available literature, it is evident that climbing can offer a tangible and embodied practice of calming and regulating experiences of anxiety (Lucas et al., 2016). Regulation is encouraged through the presence of a supportive belayer or spotter activating the social engagement system of the climber (Lucas et al., 2016). Attunement with the land also offers a sense of connectedness and supportedness, promoting feelings of safety (Harper et al., 2019). Confronting the primal fear present within climbing acts as a neural exercise, utilizing intentional movement interspersed with reciprocal social connection, to move from a mobilization state back to social engagement (Dana, 2020; Porges, 2011). This neural

exercise allows for clients to have a lived and embodied experience of reshaping how their nervous system experiences safety (Dana, 2020).

This information can be utilized to offer engaging programming for clients experiencing anxiety, offered in a unique way, free from stigma attached to traditional therapy (Luttenberger et al., 2015). Offering programming that integrates engagement with the natural world fosters a supportive connection for clients that can be accessed at any time (in or outside of programming) (Harper et al., 2019; Kaplan, 1992). Programming that combines both individual and group practice gives ample opportunity for clients to conceptualize and experientially embody the skills they learn in nervous system regulation (Dana, 2020; Luttenberger et al., 2015). The engagement of both body and mind, activates bottom-up and top-down processes which initiates a greater sense of internal awareness, interoception (Mallorquí-Bagué et al., 2016). This fosters a reinterpretation of internal sensations, development of accurate emotional awareness and the ability to self-regulate (Mallorquí-Bagué et al., 2016). Beyond this, when a client is paired with the appropriate level of climbing challenge it is possible that a client could achieve flow state reaching an optimal experience (Bonaiuto et al., 2016; Csikszentmihalyi, 2000).

The importance of this work extends beyond individuals experiencing anxiety to the current environmental crisis and resulting environmental injustice (Kennedy & Witham, 2021). As individuals grow a deeper connection to the land, their desire to protect the land also increases (Harper et al., 2019). It is essential, as practitioners working on the land, we foster this sense of ecological responsibility as well as honouring the first people of these lands in a cohesive effort to unsettle nature based therapeutic practices (Jones & Segal, 2018).

## **Appendix A – Links to Tools Referenced**

### **DSM-5 Self-Rated Level 1 Cross-Cutting Symptom Measure -Adult**

<https://www.psychiatry.org/getmedia/e0b4b299-95b3-407b-b8c2-caa871ca218d/APA-DSM5TR-Level1MeasureAdult.pdf>

### **Level 2 Anxiety – Adult (PROMIS Emotional Distress – Anxiety – Short Form)**

<https://www.psychiatry.org/File%20Library/Psychiatrists/Practice/DSM/DSM-5-TR/APA-DSM5TR-Level2AnxietyAdult.pdf>

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