AN ASSESSMENT OF RESILIENCY AND WELLNESS OF THE CANADIAN RANGERS

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Abstract

The Canadian Rangers are not a widely studied population despite their exposure to potentially traumatic experiences associated with their active duty and past traumas. This study addresses the gap in the literature regarding the resilience and wellness of the Canadian Rangers. Specifically, the relationship between trauma exposure and mental health outcomes with moderating roles of protective factors (personal meaning, coping factors, social support) that may promote resilience and positive psychological outcomes. Furthermore, the role of cultural connectedness and sense of identity on mental health outcomes following trauma was examined among Indigenous Rangers. Participants (N=253) from Canadian Ranger Patrol Groups across Canada completed surveys that measured exposure to trauma, levels of social support, personal meaning, coping factors and outcomes of resilience, PTSD and depressive symptoms, in addition to cultural connectedness and identity among Indigenous Rangers (N=90). Bivariate correlations and moderation analyses indicated that greater endorsement of problem-focused coping, stronger social support and positive personal meaning were related to enhanced resilience and lower levels of trauma and depressive symptoms among the Canadian Rangers. Moderation effect of protective factors on the relationship between trauma exposure and mental health outcomes was identified. Furthermore, a three-way interaction was found between Indigenous status on trauma exposure, protective factors and mental health. None of the interaction effects were significant for cultural connectedness and sense of identity on trauma and mental health outcomes among Indigenous Rangers.

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AN ASSESSMENT OF RESILIENCE AND WELLNESS OF THE CANADIAN RANGERS

Introduction

First responders such as paramedics, search and rescue workers, police officers, and soldiers are regularly presented with traumatic situations, which can entail significant occupational stress-related injuries and elevated risk of trauma-related disorders (Javidi & Yadollahie, 2012; Reichard & Jackson, 2010). Operational stress injuries are defined as a broad range of psychological disorders that develop from duties performed on the job, impacting an individual's professional and personal life, including depression, anxiety and post-traumatic stress disorder (Veterans Affairs Canada, 2018; Senate Canada, 2015). Operational stress injuries often impact military personnel exposed to operational traumas (Norris et al., 2015). The Canadian Rangers, a subset of the Canadian Armed Forces Reserves, are considered first responders who conduct military operations in over 200 remote communities across Canada. The majority of their operations occur in First Nation and Inuit communities that experience high levels of depression, deaths by suicide, and mental health concerns due to their complex history, repeated states of emergency, environmental conditions, and lack of resources (Kumar & Tjepkema, 2019). Elevated mental health concerns within these communities are potential traumas the Canadian Rangers are exposed to as they are at times tasked to retrieve the bodies of those who died by suicide, sent on search and rescue missions, conduct disaster evacuations and handle crises within the community. Participation in military and rescue operations, in general, exposes personnel to a variety of intense and stressful situations that can significantly impact mental health and overall well-being (Castro, 2009). Given the high risk of exposure to operational stress among first responders, it would not be surprising if personnel experience psychopathological disorders; however, not all personnel report mental illness or operational stress injuries during their careers (Armstrong, 2011; Botha, Gwen & Pupora, 2015; Everly et al., 2014; SAMHSA, 2018). Many first responders display a healthy mental state despite

exposure to stress (Armstrong, 2011). First responders who function adequately despite the exposure to adverse traumatic events are considered to be resilient to the effects of traumatic operations resulting in positive mental health outcomes (Clompus & Albarran, 2016).

Resilience has been identified as an essential factor in contending with the adverse effects associated with trauma (Ungar, 2008). The common notion of resilience is the ability to overcome and bounce back from adversity and possibly grow in the face of an experience. The American Psychological Association (2014) defines it as "the process of adapting well in the face of adversity, trauma, tragedy, threats or even significant sources of stress" (p. 1). Resilience encompasses cultural, social, psychological and biological factors that interact with one another when perceiving and responding to stressful situations (Pietrzak & Southwick, 2011). Successful adaptation or dealing with the events may facilitate resilience and the ability to confront challenges (Rutter, 1985; Yehuda, 1999). However, traumatic experiences are also known to cause psychological disorders such as depressive disorders and post-traumatic symptoms if maladaptive coping methods are employed (Choi et al., 2015).

Currently, no research identifies protective factors of resilience that target interventions across the Canadian Ranger population who are exposed to trauma. This study addresses the gap in the literature regarding the resilience and wellness of the Canadian Rangers. Specifically, the relationship between trauma exposure and mental health outcomes with moderating roles of protective factors (personal meaning, coping factors, social support) that may promote resilience and positive psychological outcomes. This research will contribute to the gap in the literature by understanding which protective factors influence psychological outcomes after exposure to trauma and how they play a role in resilience and well-being. In addition, this information can better assist

the Canadian Armed Forces in preparing suitable approaches targeted to help members effectively handle traumatic experiences associated with their duties.

First Responders

First responders encompass a broad scope of professions, such as police officers, crisis responders, soldiers, and search and rescue personnel, who serve a significant role within a community during calamity by safeguarding the continuity of community capacities (Prati & Piertrantoni, 2010). Rangers serve and function in similar roles to traditional first responders by operating as a support mechanism for isolated communities during rescue and emergency operations. Despite the potentially traumatic events Rangers are exposed to during their service, there is limited empirical research dedicated to this population. Generally, researchers have explored how first responders stay resilient in the face of adversity to perform, and there is extensive literature on how first responders cope with their operational duties and remain resilient (Antony et al., 2020; Arnetz et al., 2008; Prati & Pietrantoni, 2010). Rangers would benefit from a deeper understanding of how previous traumas and their unique duties as first responders influence resilience. This study is designed to better inform the public about Canadian Ranger's perceptions of resilience and well-being and how these perceptions impact the population. In addition, this study will draw on literature from first responders to better understand how traumatic events faced during one's career can be integrated into this population. The goal is to contribute to a body of research that can aid in the governmental resources, programing, and skill development that build on strengths and resources that address vulnerabilities within isolated communities.

This study will identify the protective factors that influence the resilience and wellness of the Canadian Rangers despite the risks associated with trauma by addressing the following research questions:

1) What protective factors promote resilience among Rangers by buffering them against negative mental health outcomes associated with exposure to traumatic experiences?
2) Among Indigenous Canadian Rangers, do those who strongly identify with Indigenous culture and have higher levels of connectedness to the community have more positive mental health outcomes following trauma exposure?

The purpose of this research is to evaluate Rangers' resilience and well-being through the moderating role of protective factors (social support, personal meaning and coping factors) after exposure to trauma. Although the Canadian Rangers program is not an Indigenous program, many Rangers identify as Indigenous. As such, a secondary analysis of only Indigenous Rangers will assess protective factors of cultural connectedness and sense of identity in hopes of identifying a positive relationship between trauma and well-being.

Conceptual Framework and Research Models Of Resilience

Resilience requires exposure to multiple risk factors of trauma or hardship and focuses on the strengths after adversities and healthy development despite the risk of exposure (Glantz, 2002). These strengths are referred to as protective factors, which serve to moderate the relationship between trauma exposure and negative mental health outcomes. Protective factors can be categorized as internal factors (coping styles and personal meaning) and external such as social support mechanisms (Sandler et al., 2003).

Garmezy et al., (1984) proposed three models to describe the moderating roles of factors that contribute to the relation between stress with the ability to overcome adversities. The three models are the challenge model, the compensatory model, and the protective factor model. The challenge model suggests that moderate risk factors can allow for adaptation; the compensatory model sees risk factors and compensatory factors work independently to predict an outcome; and

the protective model looks at the interaction between risk and protective factors to reduce negative outcomes (Ledesma, 2014). The resiliency framework used in this study is the 'Protective Factor Model' for the theoretical framework being analyzed, as it recognizes the impact of exposure to risk and the ability to overcome them. The protective factor model yields the most empirical support for resilience (Fleming & Ledogar, 2008; Liu, Reed & Fung, 2020; Masten & Barnes, 2018). This model argues that protective factors interact with risk factors, reducing the overall negative outcome and the ability to bounce back following a stressor (O'Leary, 1998). Researchers propose that the protective model describes the protective mechanism of overcoming risks as an interactive process where variables potentiate the effect of the outcome on resilience (O'Leary, 1998; Rutter, 1987). The protective factor model of resilience is unlike the other two models of resilience as it not only refers to the outcome of resilience but also incorporates the process of overcoming the risks (Zimmerman, 2005). Since Rangers are exposed to multiple risk factors of trauma through their operational duties, applying this protective factor model suggests that protective factors may reduce the negative mental health outcomes associated with trauma and promote well-being.

The Canadian Rangers

The Canadian Rangers emerged in 1947 to become a hallmark of Canadian sovereignty in the North and coastal areas (Lackenbauer, 2021). The Canadian Rangers' official mission is considered to be "the eyes and ears of the North" serving in more than 200 communities across Canada (Lackenbauer, 2005). Rangers provide patrols and detachments for national security and public safety missions in hard-to-reach northern and coastal areas of Canada that cannot be economically or conveniently accessed by other Canadian military detachments (DND/CAF Ombudsman, 2019). The Canadian Armed Forces rely on Rangers' knowledge of the land, leveraging their experience in navigating and surviving within these regions and lean on the

Rangers to assist in military operations within these unique and isolated communities. In addition, their activities contribute in a multitude of ways to promoting collective and individual resilience in hard-to-reach communities by acting as a support mechanism for community members and amongst one another. The Rangers' active duties include their roles in search and rescue operations, body locations, community disaster relief and evacuations, and supporting sovereignty missions and operations (DND/CAF Ombudsman, 2019). Rangers are only considered on duty and compensated when in training or when authorized by their chain of command. Nevertheless, Rangers are expected to maintain their roles and responsibilities outside of contracted work hours and daily activities. In this sense, Rangers are never truly off duty or adequately compensated for their efforts, which may affect their overall well-being.

The assessment of resilience and wellness of the Canadian Rangers is essential due to the lack of qualitative analysis, empirical data and past research on this population. By understanding how risks associated with previous traumas and operational duties in hard-to-reach areas impact mental health outcomes, this research can inform the Canadian Armed Forces and the public on potential mitigating factors for traumatic events. Furthermore, this research provides a better understanding of how protective factors are leveraged among this population with limited support services that allow them to potentially thrive in such an environment.

Allostatic Load, the Stress Response and Resilience

Understanding the relationship between stressful stimuli and the biological ramifications of the stress response mechanism will provide important insight into the physiological risks associated with trauma and the implications for resilience (Logan & Barksdale, 2007). Homeostasis is the maintenance of optimal physiological and psychological states in the body that preserve biological functioning, which fluctuates depending on environmental factors (Modell et al., 2015). Perceived

stressful stimuli can change multiple biological variables such as oxygen levels, hormone release, blood pressure, pH levels, temperature and many other variables that disrupt homeostasis (Logan & Barksdale, 2007). This deviation of resting physiological states is termed "allostatic load" in response to stressful stimuli (McEwen & Stellar, 1993). Deviation from the body's optimal homeostasis can take a heavy toll on an individual if exposed to chronic stress. Allostatic load represents the biological response to handling or coping with a stressful event (McEwan, 2003). Successful allostasis is reflective of effectively overcoming stressful stimuli through resilient qualities (Logan & Barksdale, 2008). Thus, evaluating proposed protective factors that mitigate the negative effects of trauma on the relationship between trauma exposure and resilience indicators provides insight into successful allostasis among the Rangers.

Post-traumatic stress and major depressive disorder

Symptoms of traumatic stress can occur following exposure to a traumatic event or shortly after (American 4 Psychiatric Association, 2000). For some individuals, symptoms may become aggravated, resulting in long-term psychiatric disturbances such as post-traumatic stress disorder (PTSD) or major depressive disorder (MDD) (Brown et al., 1999; Ehlers & Clark, 2000). PTSD is classified as a pathological response to adversity or trauma, producing negative symptoms and hyperarousal of re-experiencing the event (American Psychiatric Association, 2013). MDD is diagnosed by distinct changes of mood that are characterized by irritability or sadness, with the addition of psychological changes lasting longer than 14 days (Belmaker & Agam, 2008). Acute or chronic stress related to traumatic events can be correlated with depressed mood in individuals, which can be causative of MDD (Belmaker & Agam, 2008). Trauma increases vulnerability and comorbidity with physiological and psychological disorders (Witworth et al., 2005). One study indicated that chronic exposure to traumatic events led to 32% higher prevalence rates of PTSD in

first responders compared with the general population (Fullerton et al., 2004; Kolkow et al., 2007). However, not every first responder will display indicators of PTSD and depression following traumatic experiences (Breslau et al., 2000; Heinrichs et al., 2005). Interestingly, a study assessing American Army medics exposed to war trauma observed lower rates of PTSD and depression in comparison to other military trades (Kolkow et al., 2007). It was posited that medics' protective factors, roles and responsibilities may allow for more psychological resilience than other soldiers in different trades (Walker et al., 2016). Evidence suggests that modifiable predictors (protective factors) previously used to detect PTSD and depression revolve around personality, several coping strategies, social support, and resilient qualities (Wild et al., 2020). Although trauma exposure is related to negative mental health outcomes, protective factors moderate this relationship by reducing the risk of developing psychopathological disorders (Walker et al., 2016). In this study, I examine possible protective factors that influence the relationship between traumatic experiences and negative mental health outcomes such as depressive symptoms and indicators of PTSD in the Ranger population.

Factors Promoting Resiliency

Protective factors that promote resilience can serve as a buffer for positive mental health outcomes in high-risk populations (Lee et al., 2014; Leppin et al., 2014). Some factors that can enhance resilience and reduce vulnerability are a social support network, familial connections, ties to the community, and coping strategies among first responders (Meredith, 2011). In addition, those first responders who successfully overcome traumatic events with an acute activation of the stress response mechanism and efficient deactivation when the stimuli have passed demonstrate resilient tendencies (Walker et al., 2016). The primary analysis in this thesis examines the relationship among the factors that promote resilience in the Rangers (coping factors, support, and personal

meaning), which may play a moderating role in the relation between exposure to trauma and mental health outcomes (resilience, trauma and depressive symptoms). A secondary analysis will assess the role of cultural connectedness and sense of identity among Indigenous Rangers, which may moderate the relationship between trauma and mental health outcomes. Resilience interventions that target these modifiable predictors provide a promising approach to protecting the health of at-risk populations such as the Rangers.

Factors promoting resilience: Personal Meaning

Resilience develops due to the intrinsic or extrinsic capacities that emerge when an individual overcomes a trauma (Richardson et al., 1990). Following Connor and Davidson's (2003) theory of resilience, incorporating interpersonal qualities allow individuals to successfully overcome stressful situations. Interpersonal qualities are linked with dimensions of psychological well-being (such as personal meaning) through social ecologies, which reinforce resilience following trauma (Southwick et al., 2014). Social ecology is the overarching idea that an individual's strengths, skills, and overall psychological well-being plays a protective role in the way stressors are perceived and handled in situations (Coulombe et al., 2020). Personal meaning involves the process of psychological coping, which informs the appraisal of the significance of life events, including stressful circumstances (Park 2010). It is posited that personal meaning has a bearing on life satisfaction and overall psychological well-being after trauma (Park 2010; Park & Folkman, 1997). Furthermore, positive personal meaning involves the process of appraising stressors as an opportunity for growth and learning (Folkman, 2008).

Individuals who are faced with traumatic life events yet uphold positive personal meaning are less likely to be affected by the event and can cope and recover better than those who have lower meaning (George & Park, 2017; Winger *et al.*, 2016). Strong personal meaning has been

linked to satisfaction of life, happiness and reduced anxiety, substance use and suicide attempts (Schnetzer *et al.,* 2013; Sinclair *et al*., 2016; Steger *et al*., 2009; Steger & Kashdan, 2007). Personal meaning is a factor that may protect first responders exposed to trauma against the development of post-traumatic stress symptoms in PTSD (Fisher *et al*., 2020). Enabling first responders to adapt faster after traumatic events; rather than dwelling on the event, it facilitates the ability to look towards the future and overcome adversities (Blackburn & Owens, 2015; Lazarus & Folkman, 1984; Simon & Marcussen, 1999; Thoits, 1991; Turner & Avison, 1992). This ability to move forward and overcome trauma may reduce the likelihood of psychological distress and psychopathology. Furthermore, personal meaning can moderate the relationship between stressors and depression (Reynolds & Turner, 2008). Where, the relationship between stress and depression is more severe among those who have lower personal meaning and constitutes to less successful resolution following trauma (Reynolds & Turner, 2008).

A study conducted on humanitarian relief workers deployed overseas in response to a crisis indicated personal meaning changed the relationship between exposure to traumatic situations and resilience (Brooks *et al.,* 2015). In this study, personal meaning incorporated an individual's purpose in life (a sense of purpose in the mission) and their positive relationships with others during deployment. Those with strong personal meaning displayed higher levels of resilience and fewer psychopathological disorders after their mission than their counterparts (Brooks et al., 2015). Moreover, several studies of rescue workers reported that psychological growth and personal meaning moderated the relationship between traumatic events and psychological benefits resulting in a more meaningful mission (Bakhshi et al., 2014; Soliman et al., 1998; Wang et al., 2013; Yang et al., 2010). Participants indicated that personal accomplishments, improved self-esteem, and purpose in their lives contributed to lower negative mental health outcomes following exposure to

traumatic events. Based on these findings, the expected relationship of strong personal meaning will moderate the relationship between trauma and positive mental health outcomes among Rangers.

Factors promoting resilience: Social Support

Positive social support can enhance resilience in adversities and protect against negative mental health outcomes such as trauma-related psychopathology (Ozbay *et al*., 2007). A large body of research indicates that social support can protect against the negative effects of exposure to traumatic events in war veterans, natural disaster survivors, and even those exposed to sexual abuse (Brancu *et al.,* 2014; Bruwin *et al*., 2000; Shumn *et al*., 2006). In addition, strong social support and positive relationships with others enhance outcomes of self-esteem, sense of competence, and feeling of connectedness, reducing negative impacts following adversity (Ehlers and Clark, 2002, Guay *et al*., 2006). A meta-analysis of first responders found that strong social support offsets the relationship between traumatic events and negative outcomes (Prati & Pietrantoni, 2010). Furthermore, a review of 2,647 studies of PTSD found that having poor social support was predictive of PTSD, and positive support was predictive of recovery from depression (Ozer *et al*., 2003; Brugha *et al*., 1990). Thus, the effectiveness of strong social support acts as a buffer against adversities and serves as a protective factor enabling positive mental health outcomes.

Research on military personnel has identified that multiple protective factors can play a role in moderating the psychological impact associated with military operations (Armstrong, 2011). These factors are associated with morale, unit cohesion, and leadership; all essential factors in strong social mechanisms (Maddison *et al.*, 2017). For military personnel, social support stems from and is sustained via a positive collective relationship with brothers and sisters in arms (unit cohesion), competent leadership (commanding officers), and the community (Adler *et al*., 2011). Unit cohesion is considered a form of a social support and is often studied in the context of a

moderating role between trauma exposure and stress reactions among rescue personnel (Campise, Geller & Campise, 2006; Castro, 2009). The vital role of unit cohesion and leadership as a form of social support was observed with Chinese military members, indicating that these social relationships are protective against the evolution of mental illnesses such as anxiety, depression and PTSD (Zang *et al.*, 2017). Similar findings were observed with Canadian soldiers, indicating that those who experienced higher levels of unit cohesion displayed lower levels of stress and psychopathological disorders on traumatic missions (Izzo *et al.*, 2000). Military personnel who uphold strong supports or unit cohesion tend to report lower rates of operational stress injuries and enhanced resilience in the face of adversities (Izzo *et al.*, 2000).

Strong and supportive social support and unit cohesion can be pivotal for military personnel's overall well-being and resilience when faced with trauma. This study investigates social support as a protective factor buffering against the negative mental health outcomes associated with exposure to trauma. The expected relationship with the Ranger population is that high levels of social support in the face of traumatic events will diminish the relationship between trauma and mental health outcomes.

Coping in the Face of Adversity

Being resilient in the face of adversity can depend significantly on coping with stressors, which can ultimately reduce psychopathological disorders such as anxiety, depression and PTSD (Folkman and Moskwits, 2004). Coping strategies are influenced by appraisals of a situation and reflect the cognitive and behavioural changes one evokes to manage external or internal stress (Algorani & Gupta, 2021). Generally, coping strategies involve two primary techniques, approach strategies (confrontation of the situation or reaction to the stressor) and avoidance strategies, where one avoids the problem by distracting themselves (Arble et al., 2017). Of these two techniques,

three coping styles are commonly referred to as problem-focused, emotion-focused, and avoidance-focused. Problem-focused coping involves attempts to alter stressors by actively solving the problem to diminish the negative impact (Folkman and Moskwits, 2004). Emotion-focused coping entails individuals attempting to reduce distress through their emotional responses, and avoidance-focused coping involves avoiding the stressor rather than handling or mitigating the problem (Folkman and Moskwits, 2004). All coping processes are employed to respond to a stressful event but can be utilized to different degrees (Doleza, 2021; Klein, 2009).

The literature indicates that resilient individuals are more likely to adopt successful coping strategies such as cognitive reappraisal and problem-focused coping (de la Fuente *et* al., 2021; Shepherd et al., 2017; Tugade & Fredrickson, 2004; Wu *et al*., 2020). Longitudinal studies evaluating PTSD in first responders and the relationship between coping and resilience found higher levels of resilience and well-being among participants who adopted problem-focused coping than avoidance and emotion-focused coping (Arble & Arnetz, 2017; Fitzpatrick, 2020; Thompson et al., 2018). Conversely, the use of maladaptive coping styles (emotion-focused and avoidance-focused coping) in the face of trauma has been associated with psychological illness and reduction in resilience, while problem-focused coping is positively related to resilience (Anisman, Merali, & Hayley, 2008; Campbell-Sills, Cohan, & Stein, 2006; Mulligan, 2011). A cross-sectional study on ambulance workers found emotion-focused coping factors such as rumination, wishful thinking, dissociation and suppression, employed as a response to a traumatic event, were predictors of PTSD symptoms (Clohessy & Ehlers, 1999). Overall, coping factors can change the relationship between trauma and psychological outcomes such as resilience and psychopathology (Renck et al., 2002). This study aims to evaluate the putative vulnerabilities in Rangers by examining the relationship between trauma exposure and mental health outcomes moderated by coping strategies. Suppose

Rangers uphold successful coping styles such as problem-focused coping; It is expected that this will moderate the relationship between trauma exposure and mental health outcomes by diminishing the extent to which negative outcomes are evident.

Secondary Analysis- Factors promoting resilience: Sense of Indigenous Identity and Cultural Connectedness

First responders' sense of culture includes a sense of belonging and emotional connection within the community, which constitutes a protective factor amongst rescue personnel (Pietrantoni & Gabriele, 2008). Therefore, understanding the relationship between trauma and mental health outcomes, cultural connectedness, and strength of Indigenous identity will provide important insight into these protective factor within Indigenous Rangers.

Cultural values and beliefs can significantly affect an individual's perception of a traumatic event and how one reacts to it (Kalmanowitz & Ho, 2017). Culture is defined as providing individuals with a sense of identity and connectedness to where we come from (Nastasi et al., 2017). Cultural connectedness relates to individuals who have a cultural relationship that provides a sense of identity, belonging, or meaning to what they have experienced in their lives (Work, 2014). The ability to connect with others through cultural modalities during traumatic events such as wars, oppression, stigma or even socioeconomic conditions can be a protective factor of resilience following adversities (Work, 2014). Shared traumatic events in common with a group or a community can act as a buffer against stressors, reinforce resilience and promote positive mental health outcomes (Kirmayer et al., 2009). Multiple studies have identified cultural identity, cultural engagements, and positive affiliation to moderate positive mental health outcomes among the Indigenous population (Chandler & Lalonde, 1998; Carrier et al., 2022; Kral & Idlout, 2009; Mushquash et al., 2021). Furthermore, a strong sense of identity has been shown to significantly

change the relationship between trauma and mental health outcomes such as resilience among marginalized groups (Han et al., 2016). A mixed-methods study on Indigenous Elders showed that a strong identity with their cultural beliefs, values and "heritage" allowed for resilient qualities after colonization, suggesting that a sense of identity served as a protective factor following lifetime trauma (Wexler, 2014). The literature indicates that having a strong cultural affiliation enhances a sense of purpose, identity, and cultural connections and can act as a predictor of improved resilience and well-being following trauma (EchoHawk, 1997; Minore, Boone, Katt, & Kinch, 1991; Luthar & Zigler, 1991; Tatz, 2001; White & Jodoin, 2004; Ungar *et al.*, 2005).

Indigenous Rangers tend to serve in the community where they reside from adolescence to adulthood, where community values, culture, beliefs and practices are shared among themselves and their community members. The present study explored whether the sense of Indigenous identity and cultural connectedness serves as protective factors among Indigenous Rangers. The expected relationship of strong cultural connectedness and a sense of identity will be related to more positive mental health. In addition, it is expected that these factors would moderate the relationship between traumatic events and mental health.

The Present Study

The present study investigates protective factors that promote resilience among the Canadian Rangers by buffering them against negative mental health outcomes associated with exposure to traumatic experiences. It was expected that previous traumatic events and trauma associated with active duty would be associated with poor mental health outcomes, but that these relationships would be moderated by protective factors, including perceiving the availability of a social support, personal meaning and coping styles. In addition, among Indigenous Rangers, it was possible that identity-based protective factors (cultural connectedness and sense of Indigenous

identity) would further moderate the relationships between trauma exposure and mental health. The hypotheses of this study were as follows:

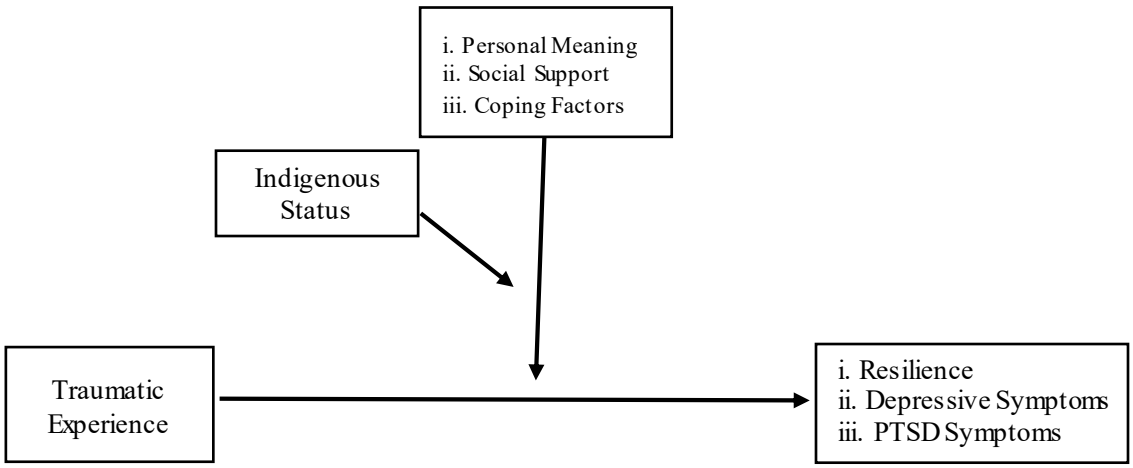
H_1: Trauma would be related to lower levels of resilience, and more severe depressive and posttraumatic stress symptoms.

H_2: Protective factors such as coping strategies, personal meaning and social support would moderate the relationship between trauma and mental health outcomes. Specifically, among those who endorse problem-focused coping (but not emotion-focused or avoidance-focused) strategies, perceive strong support, and indicate strong personal meaning, the negative mental health outcomes associated with trauma exposure would be attenuated. Among those who do not endorse such coping methods, do not perceive personal meaning, and have low levels of perceived support, the relationship between trauma exposure and poor mental health would be negative.

H_3: Indigenous status would moderate the moderation effect of protective factors on the relationship between trauma exposure and mental health outcomes (three-way interaction). Although unclear, it is expected that the relationship between trauma exposure and mental health indices will differ among Indigenous and non-Indigenous Rangers who profile for the same protective factors implicated for both groups.

Figure 1

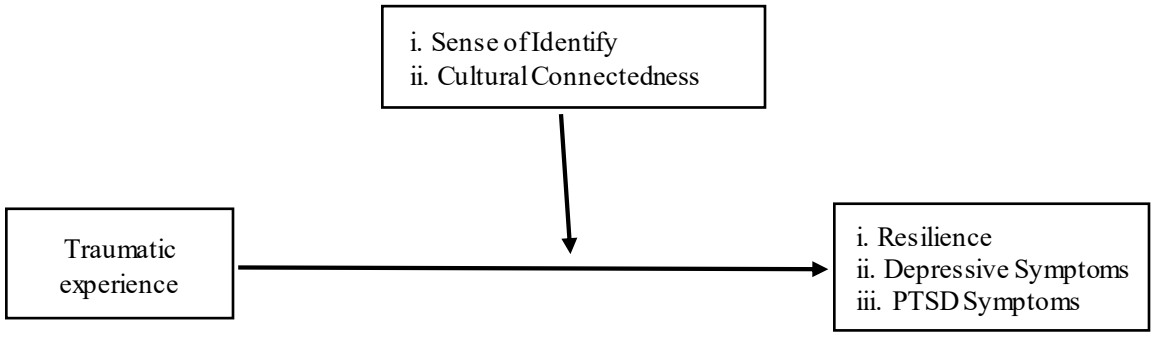
Conceptual Diagram: The Influence of Moderators on the Relationship Between Traumatic Experiences and Mental Health.



H_4: Among Indigenous Canadian Rangers, cultural connectedness and a sense of identity would buffer the relationship between trauma and negative mental health outcomes (two-way interactions). Specifically, among those who strongly identify and have strong cultural connections, the negative effects of trauma exposure on mental health outcomes would be attenuated.

Figure 2

Conceptual Diagram: The Influence of Moderators on The Relationship Between Traumatic Experiences and Well-being on Indigenous Rangers.



Method

Participants

The Canadian Rangers were recruited during their Class B Service (See Appendix E for clarification of Class B service) from all five Canadian Ranger Patrol Groups across Canada. The inclusion criteria required participants to be over the age of 18 years, currently enrolled as a Canadian Ranger and be fluent in English. It is unclear as to how many Rangers were informed about the study since it was published on social media. However, a total of 339 participants accessed the online questionnaire; with 86 participants excluded from the final analyses due to missing information (less than 89% of the survey completed) and low response quality (same responses on all items in a questionnaire). The final sample was 253 participants with the following characteristics listed below (**Table 1-2)**.

Table 1

Canadian Ranger Participants Demographic Information

	Number (n)	**Percentage (%)**
Gender		
Male	194	76.7%
Female	57	22.5%
Two-spirited	1	0.4%
Did not identify	1	0.4%
Self-reported cultural group		
Indigenous	90	35.6%
Non-Indigenous	163	64.4%
Age		
18-24	8	3.16%
25-34	22	8.70%
35-44	66	26.09%
45-54	73	28.85%
55-64	53	20.94%
65-74	30	11.86%
85-older	1	0.40%
Geographical Location*		
1 CRPG	50	19.76%
2 CRPG	6	2.37%
3 CRPG	23	9.09%
4 CRPG	50	19.76%
5 CRPG	122	48.22%

Note: (N=253)
**1st Canadian Ranger Patrol Group (Nunavut, Yukon Territory and Northwest Territories), 2nd Canadian Ranger Patrol Group (Québec), 3rd Canadian Ranger Patrol Group (Ontario), 4th Canadian Ranger Patrol Group (British Columbia, Alberta, Saskatchewan and Manitoba), 5th Canadian Ranger Patrol Group (Newfoundland and Labrador)*

Participants were then categorized by cultural identity and sex differences for those exposed and not exposed to active duty (**Table 2**). Due to the low number of female participants, the study did not pursue analyses assessing the moderating effects of gender.

Table 2

Exposure to Active Duty by Cultural and Sex Differences

Active Duty	Male				Female			
	Indigenous		Non-indigenous		Indigenous		Non-indigenous	
	N	%	N	%	N	%	N	%
Exposed	40	72.7	65	47.8	19	65.5	2	7.7
Not exposed	15	27.3	71	52.2	10	34.5	24	92.3

Procedure

The data were collected from 29 July 2020 to 29 October 2020. Due to the COVID-19 pandemic, volunteer participants were recruited via social media platform, Facebook, and through correspondence from their Commanding Officers. The recruiting form indicated that the study would assess the impact of stressful events on resilience and wellness among Canadian Rangers. In addition, it informed participants that the online questionnaire would measure the evaluation of resilience, trauma, stressors, stress management, spirituality, social support, and sense of identity (Appendix D). Once participants accessed the Qualtrics platform, they were presented with an informed consent page that required clicking a checkbox prior to consent to the study and be provided with the questionnaires; Demographic questions, Ryff Scale of Psychological Well-being, Center for Epidemiologic Studies Short Depression Scale, Adult Resilience Measure-Revised, Survey of Coping Profile Endorsements, Traumatic Life Events Questionnaire – revised, Impact of

Event Scale-Revised, Modified 10-item Connor-Davidson Resilience Scale, and the Native Wellness Assessment (only administered to Indigenous participants) (Appendix A).

Ethical approval

Carleton University Research approved all procedures in the current study (Appendix A) and the DND/CAF Social Science Research Review Board (SSRRB) (Appendix A). Carleton University Project Clearance # 112185 SSRRB CAF Ethics Clearance # 1879/19F, date of Clearance: 26 March 2020.

Measures

Demographic information. Participants indicated their gender, age, level of education, income, marital status, the type and location of duty, years of service, service type, and rank.

Personal Meaning. The measure of psychological well-being (Schmutte and Ryff, 1997) was used to assess personal meaning, as it tapped into six factors that taken together could be viewed as reflecting personal meaning in life: autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance. Each of 18-items was answered on a six-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). A principal components analysis was conducted on the 18-items, and based on eigenvalues greater than one, it was determined that they tapped into a single factor. Responses were summed to create a single score with a possible range from 18–126 with higher scores reflecting greater personal meaning (Cronbach's $\alpha = 0.84$).

Center for Epidemiologic Studies Short Depression Scale (CES-D 10). The CES-D 10 (Andersen et al., 1994) is a self-report tool designed to screen for depressive symptoms consisting of 10 behavioural items (e.g., I had trouble keeping my mind on what I was doing). Participants rated the frequency of occurrence of each item from 0 (rarely or none of the time (less than 1 day))

to 3 (all of the time (5-7 days)). A total score was created by summing responses, such that scores could range from 0-30 with higher scores indicating more severe depressive symptoms (Cronbach's α=0.85).

Perceived social support. The Adult Resilience Measure-Revised (ARM-R) (Jefferies et al., 2018; Liebenberg & Moore, 2018) was used to derive an index of social support. This scale includes five socio-contextual components, but for the purposes of the present study, scores were derived from one subscales, namely a 10 items tapping into social support (eg., people like to spend time with me). Responses were rated using a Likert scale ranging from 1 (Not at All) to 5 (A Lot). Items for this subscale, respectively were summed, such that higher scores indicated greater perceived social support subscale (ranging from 10-50; Cronbach's α=0.89).

Survey of Coping Profile Endorsement (SCOPE) – 27 Version: The SCOPE 27 assessed how individuals cope and handle problems or stressors in their lives in recent months (Matheson & Anisman, 2003). This self-report coping survey consists of 27-items rated on a 5-point Likert scale ranging from 0 (not at all) to 4 (totally) to indicate the extent to which respondents used a particular behaviour to cope with stressors. Responses to these items were averaged to create 12 distinct coping methods that were subjected to a principle components analysis to determine overarching coping styles. Three factors were extracted based on eigenvalues greater than one. Following a Varimax rotation, factor loadings of greater than .5 were used to form the three coping subscales. These included three coping strategies that reflected emotion-focused coping (rumination, wish, denial, self-blame, blame others, emotion expression), problem-focused coping (problem solving, cognitive restructure, active coping, social support), and avoidance-focused coping (passive acceptance, avoidance). Two coping methods (humor and religion) were excluded because they had weak factor loadings on all three components. The mean score of each subscale was calculated such

that higher scores indicated a greater endorsement of the coping strategy used (emotion-focused coping (Cronbach's α=0.84), problem-focused coping (Cronbach's α=0.80), avoidance-focused coping (Cronbach's α=0.55)).

Traumatic Life Events Questionnaire – Revised (TLEQ-R): A modified version of the TLEQ-R was used to measure the exposure to previous traumatic events (Kubany *et al.,* 2000). This version assesses exposure to 5 potentially traumatic events (e.g., Serious shock, discrimination, unexpected loss of a loved one, observing a loved one in distress, physical or sexual assault). Participants indicated whether a particular event happened (yes (1) or no (0)). A score was obtained by summing the total number of events an individual had experienced, such that the higher the score, the higher more types of trauma were experienced.

Impact of Events Scale- Revised: The impact of events scale-revised is a 22-item self-report tool measuring an individual's subjective response to traumatic events (Weiss and Marmar, 1997). It assesses PTSD symptoms of hyperarousal, intrusion, and avoidance. Each item is rated on a 5-poing Likert scale ranging from 0 (Not at All) to 4 (Extremely), indicating the distress experienced in the past seven days associated with the most distressing event reported in the TLEQ-R scale (self-defined by the participant). A total summed score was obtained ranging from 0 to 88, with higher scores reflecting higher levels of distress (Cronbach's $\alpha = 0.95$).

Exposure to Active duty: Participants were asked if they were exposed to active duty during their lifetime as a Ranger and exposure in the past year. Exposure to active duty entailed search and rescue missions, body location patrols, community evacuations missions, and natural disaster evacuation missions. Participants listed the number of exposures for each mission they participated in, and were given a score of 1 for each exposure. The number of exposures were counted to create a score reflecting exposure to trauma during active duty, ranging from 0-5

Participants who were not exposed to any missions were scored (0) for no exposure; a little over half of the sample was exposed to active duty traumas (51.4%). Due to the highly skewed nature of the responses, this independent variable was treated as a dichotomous variable.

Connor–Davidson Resilience Scale (CD-RISC): The Connor–Davidson Resilience Scale (CD-RISC) assesses an individual's resilience in terms of their self-perceived ability to endure hardship (Connor & Davidson, 2003). It comprises 10 behaviours (eg., I was able to adapt to change) that participants rated how true the following statements are in consideration of the last month in the last month using a 5-point Likert response scale, ranging from 0 (Not True at All) to 4 (True Nearly All the Time). Ratings were summed, such that the higher the score, the higher the resilience (Cronbach's $\alpha = 0.90$).

Native Wellness Assessment (NWA): The Native Wellness Assessment is a self-report tool was developed by the Thunderbird Partnership Foundation, and provides an index of the overall wellness and cultural intervention practices of respondents in terms of their cultural beliefs, identity, values, and attitudes, connections to community and family and relationships (Thunderbird Partnership Foundation, 2015). Participants respond to each item using a Likert-type scale ranging from 0 (Do Not Agree) to 4 (Strongly Agree), with an addition of an I Do not Know (DK) option. This scale was administered *only to Indigenous Canadian Rangers*. A scree plot derived following a principle components analysis suggested two factors. Following a varimax rotation, factor loadings greater than .5 were used to form the two subscales, with one comprising cultural connectedness (15 items, such as I use cultural ways such as ceremonies, food, and medicine for cleansing and healing), and the second reflecting a sense of identity (9 items, such as it is important to me that I learn, speak and understand my Indigenous language). Scores for each were created by summing

responses (cultural connectedness range from 5-90, Cronbach's $\alpha = 0.95$); identity scores ranged from 3-54; Cronbach's $\alpha = 0.93$).

Statistical Analyses

To assess the relationships among the independent, moderating and outcome variables, bivariate correlations were explored, along with t-tests assessing differences associated with exposure to active duty and Indigenous status. Moderation analyses were conducted in SPSS using the PROCESS Macro v4.0 (PROCESS model 1 for two-way interaction and model 3 for three-way interaction) using a bootstrap estimation approach with 5000 samples (see Hayes, 2012) to assess the relationships between Indigenous status, indicators of trauma (previous trauma and exposure to active duty) and mental health outcomes (resilience, depressive and PTSD symptoms), along with the moderating roles of protective factors (personal meaning, coping and social support), each in separate analyses. All continuous variables were centered. If the interaction was significant, simple slope analyses were conducted at 1 *SD* above and below the mean of the moderating variables. It should be noted that only 51% of the sample was exposed to active duty and so participants were categorized as having either been exposed to active duty (1) or not (0).

For the subsample of Indigenous rangers, the same procedures were performed using moderation analyses described above in PROCESS model 1 (two-way interactions) to assess the relationship between indicators of trauma (previous trauma and exposure to active duty) and mental health outcomes (resilience, depressive and PTSD symptoms), along with the moderating roles of cultural connectedness and sense of identity, each in a separate analyses.

Results

Main analysis

Assessing the relations among the variables

Bivariate correlations were examined to assess the relationships between indicators of trauma, moderators and outcome variables. The relationship between trauma and outcome variables indicated that more traumatic events was significantly related to higher depressive levels (r=.21, p=.001) and PTSD symptoms (r=.30, p= <.001). The relationship between more traumatic events and resilience was not significant (r=.10, p=.14). Looking at the relationship between trauma and the moderators suggested that more traumatic events was significantly related to greater endorsement of emotion-focused coping (r=.26, p=<.001) and lower social support (r=-.14, p=.027), but not with problem-focused coping (r=-.19, p=.003) and greater personal meaning (r=-.50, p=<.001).

As seen in Table 3, participants who were Indigenous reported significantly more previous traumatic life events than non-Indigenous participants. For moderating variables, participants who were Indigenous reported significantly lower personal meaning, higher emotion-focused coping, lower social support than non-Indigenous participants (all ps<.05). Differences in problem-focused coping and avoidance-focused coping were not significant. Participants who were Indigenous reported significantly more depressive symptoms and higher levels of PTSD symptoms (all ps<.05). There was no significant difference for resilience (**Table 3)**.

Table 3

M and SD for All Independent, Dependent, and Moderating Variables by Indigenous Status

Variables	Indigenous Status*	*n*	Mean	SD	t	*p*
Traumatic life events	Yes	85	3.33	1.31	4.993	0.000
	No	160	2.46	1.30		
Personal Meaning	Yes	85	96.01	14.52	-3.954	0.000
	No	162	103.15	11.26		
Emotion focused coping	Yes	84	2.63	0.75	2.550	0.011
	No	160	2.37	0.76		
Problem focused coping	Yes	84	3.36	0.90	0.191	0.839
	No	160	3.34	0.72		
Avoidance focused coping	Yes	84	2.69	0.81	0.984	0.326
	No	160	2.59	0.72		
Social Support	Yes	85	38.82	7.75	-3.617	0.000
	No	162	42.20	5.23		
Resilience	Yes	83	36.88	7.51	-1.684	0.093
	No	159	38.45	6.52		
Depressive Symptoms	Yes	84	16.92	5.75	2.128	0.034
	No	163	15.35	5.35		
PTSD Symptoms	Yes	83	42.85	17.00	4.278	0.000
	No	154	33.56	13.77		

**Note: Yes reflects Indigenous participants and no reflects non-Indigenous participants*

There were no significant interactions between exposure to active duty, moderators and mental health outcomes in the whole sample. However, there were significant differences on outcomes and moderators as a function of exposure to active duty for Indigenous participants only. Indigenous participants who were exposed to active duty reported significantly higher PTSD symptoms, higher avoidance-focused coping, lower personal meaning, and lower social support than those who were not exposed to active duty (all *ps*<.05). Simple effects can be found in the exposure to active duty section.

Despite the fact that the present study did not pursue analyses assessing the moderating effects of gender, preliminary analyses explored the relationship between gender and dependent

variables. Findings from the t-test and ANOVA indicated that females experienced more exposures to active duty than males (Cohen's d=.495) (**Table 3**), and higher PTSD symptoms (Cohen's d=.521). Unfortunately, the sample size of women in the present study was limited, and so such analyses would not have sufficient power to detect differences and were no longer explored.

The relationship between previous trauma and mental health and the moderating role of protective factors

Previous Trauma and Resilience

In the conduct of the analysis assessing whether personal meaning moderated the relationship between previous trauma exposure and resilience, none of the interaction effects (including those associated with Indigenous status) were found to be significant. Rather, as seen in the correlations, only the relationship between personal meaning and greater resilience (b = 0.33, SE = 0.96, p<.001) was significant. Indigenous status did not moderate the relationship between previous trauma exposure and resilience, nor any moderating effects on personal meaning.

When analyzing whether coping factors (each in separate analyses) moderated the relationship between previous trauma exposure and resilience, as noted earlier, lower problem-focused coping (b=7.52, SE=1.63, p<.001), higher emotion-focused and avoidance coping were significantly related to lower resilience. None of the coping factors moderated the relationship between trauma exposure and resilience. Moreover, Indigenous status did not moderate the relationship between trauma and resilience, nor did it interact with any coping strategies to moderate their relationships with resilience.

Social support did not moderate the relationship between previous trauma exposure and resilience, nor were these relationships moderated by Indigenous status. However, greater social support was significantly related to higher resilience (b=.49, SE=.06, p<.01).

Previous Trauma and Depressive Symptoms

The interaction between previous trauma and personal meaning in relation to depressive symptoms was significant, b=-.05, SE=.013, p<.001. Simple effects analyses indicated that at the mean and 1 SD below the mean on personal meaning, more traumatic events was related to more severe depressive symptoms (ps<.01) were significant. At 1SD above the mean, there was no significant relationships between previous trauma and depressive symptom. None of the interaction effects with Indigenous status were significant.

When analyzing whether coping factors (each in separate analyses) moderated the relationship between previous trauma exposure and resilience, as noted earlier, lower problem-focused coping, higher emotion-focused and avoidance coping were significantly related to more severe depressive symptoms. All coping factors moderated the relationship between trauma exposure and depressive symptoms and none interacted with Indigenous status. Specifically, there was a significant interaction effect between emotion-focused coping and trauma (b=.93, SE=.27, p<.01). At the level of 1SD above the mean of emotion focused coping, more previous traumatic events were significantly related to more severe depressive symptoms (b=.96, SE=.28, p<.01). There were no significant relationships between trauma and depressive symptoms at the mean levels or 1SD below the mean of the emotion-focused coping. Similarly, problem-focused coping moderated the relationship between trauma and depressive symptoms (b=-.81, SE=.26, p<.01). At mean levels or at lower problem-focused coping (1SD below the mean), those who experienced more traumatic events had more severe depressive symptoms (ps < .01). No significant relationship between trauma and depressive symptoms was identified at 1SD above mean levels of problem focused coping. Avoidance-focused coping also moderated the relationship between trauma and depressive symptoms (b=.74, SE=.35, p=.03). At mean levels or with higher avoidance-focused

coping (1SD above the mean), those who experienced more traumatic events had more severe depressive symptoms *(ps* < .01). No significant relationship between trauma and depressive symptoms was identified at 1SD below mean levels of avoidance-focused coping.

Social support did not moderate the relationship between previous trauma exposure and depressive symptoms. Indigenous status did not moderate the relationship between previous trauma exposure and depressive symptoms, nor any of the moderating effects of social support.

Previous Trauma Exposure and PTSD symptoms

The interaction between previous trauma and personal meaning in relation to PTSD symptoms, was significant (b=-.14, SE=.05, p=.002). At the mean level of personal meaning, more traumatic events were significantly related to more PTSD symptoms (b=2.9, SE=.61, p<.001*)* were significant. Lower levels of personal meaning (1 SD below the mean), more traumatic events were significantly associated with more severe PTSD symptoms (b=4.76, SE=.84, p<.001), whereas this relationship was not significant at higher levels of finding personal meaning (1 SD above the mean). None of the interaction effects associated with Indigenous status were found to be significant

When analyzing whether coping factors (each in separate analyses) moderated the relationship between previous trauma exposure and PTSD symptoms, as noted earlier, lower problem-focused coping, higher emotion-focused and avoidance-focused coping were significantly related to more PTSD symptoms. All coping factors moderated the relationship between trauma exposure and PTSD symptoms **(Figure 3-6)** Specifically, there was a significant interaction effect between emotion-focused coping and trauma (b=2.65*,* SE=.83, p=.001*)*. At mean levels or higher emotion-focused coping (1 SD above the mean), those who experienced more traumatic events had more severe PTSD symptoms (ps<.01). No significant relationship between trauma and PTSD symptoms was identified at 1 SD below mean levels of emotion-focused coping. Problem-focused

coping also moderated the relationship between trauma and PTSD symptoms (b=-2.13, SE=.86, p=.014). For problem-focused coping more traumatic events were related to PTSD symptoms. The magnitude of this positive relationship increased as the endorsement of problem-focused coping strategies decreased. Also, higher problem-focused coping appears to be related to lower PTSD symptoms in the condition of high to average traumatic events (ps<.01). Avoidance-focused coping also moderated the relationship between trauma exposure and PTSD symptoms (b=2.36, SE=1.01, p=.021). At mean level or at higher avoidance-focused coping (1 SD above the mean), those who experienced more traumatic events had more severe PTSD symptoms (ps<.01). No significant relationship between trauma exposure and PTSD symptoms was identified at 1 SD below mean levels of avoidance-focused coping. None of the 3-way interactions between Indigenous status, trauma exposure and the coping strategies on PTSD symptoms was significant.

Figure 3

Relationship Between Previous Trauma and PTSD symptoms with Emotion-Focused Coping as a Moderator

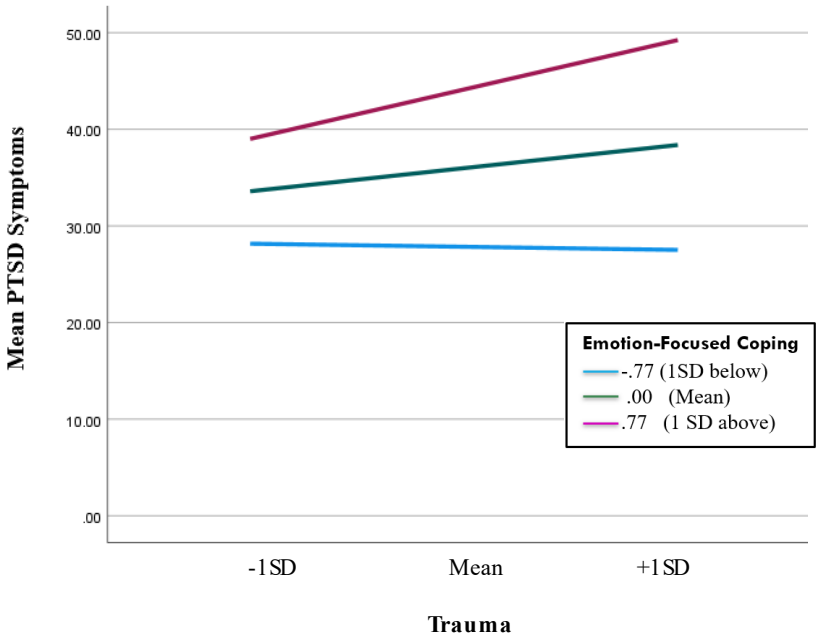


Figure 4

Relationship Between Previous Trauma and PTSD symptoms with Problem-Focused Coping as a Moderator

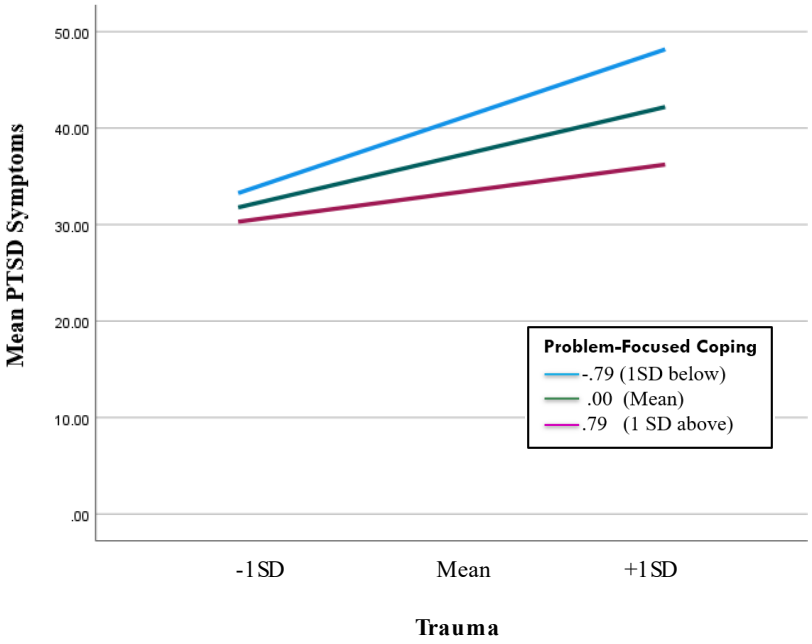
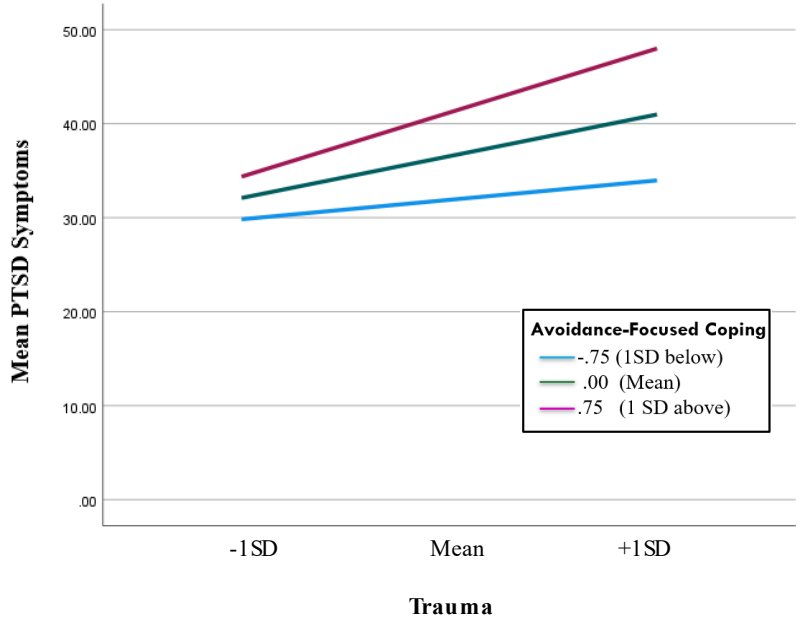


Figure 5

Relationship Between Previous Trauma and PTSD symptoms with Avoidance-Focused Coping as a Moderator



Social support did not moderate the relationship between previous trauma exposure and PTSD symptoms. Indigenous status did not moderate the relationship between previous trauma exposure and PTSD symptoms, nor any of the moderating effects of social support.

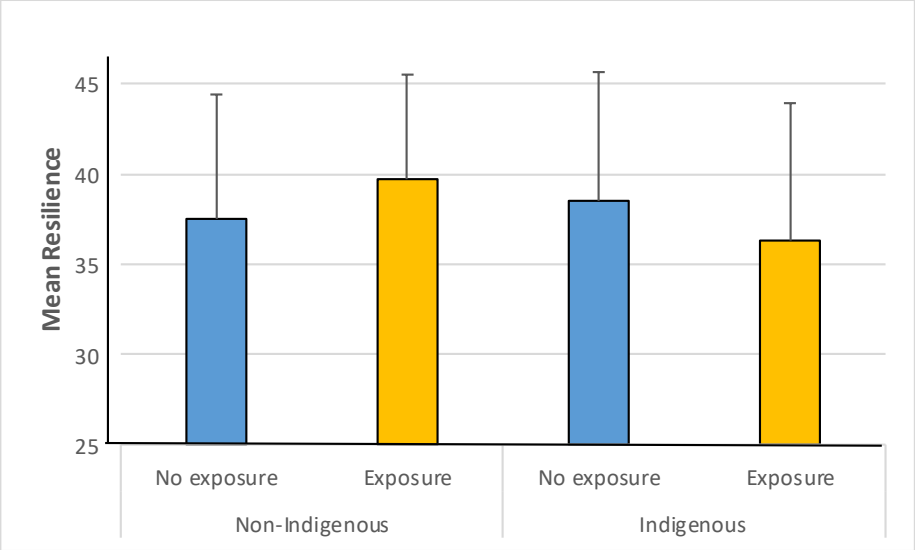
The relationship between exposure to active duty and mental health and the moderating role of protective factors

Exposure to active duty and resilience

In the conduct of the analysis assessing whether personal meaning moderated the relationship between exposure to active duty and resilience, there was only a significant interaction effect between exposure to active duty and Indigenous status (b=4.37, SE=2.00, p=.03). Among Indigenous participants, exposure to active duty was not related to resilience (b=-2.21, SE=1.67, p=.19). Among non-Indigenous participants, in contrast, participants who were exposed to active duty reported higher resilience than participants who were not exposed to active duty (b=2.16, SE=1.10, p=.05) (**Figure 6).**

Figure 6

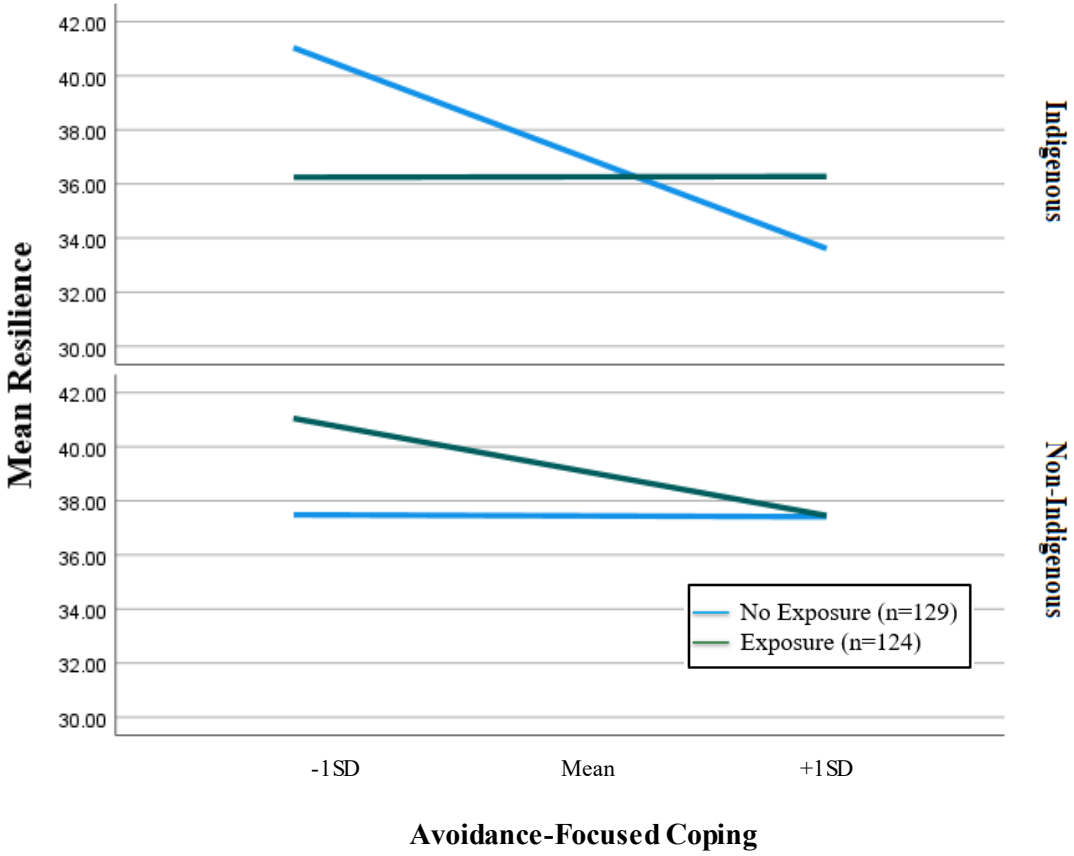
Relationship Between Exposure to Active Duty and Resilience with Indigenous Status as a Moderator



When analyzing whether coping factors (each in a separate analyses) moderated the relationship between exposure to active duty and resilience, none of the coping factors moderated the relationship between exposure to active duty and resilience. However, Indigenous status moderated the moderation effect of avoidance-focused coping on the relationship between exposure to active duty and resilience (b=-7.33, SE=2.59, p=.005). Among Indigenous participants, at 1SD below the mean of avoidance-focused coping, resilience was higher among those who were not exposed to active duty **(Figure 7).** As avoidance-focused coping scores increased, resilience scores became relatively similar between exposed and non-exposed groups. Among non-Indigenous participants, this pattern was reversed. When the avoidance-focused coping strategy was less endorsed, resilience was higher among participants exposed to active duty than those not exposed to active duty when the avoidance-focused coping strategy was low. However, resilience was similar between exposed and non-exposed groups when the avoidance-focused coping strategy was higher. **(Figure 7)**. None of the other interactions between Indigenous status, exposure to active duty and any of the other coping strategies on resilience was significant.

Figure 7

Relationship Between Exposure to Active Duty and Resilience with Avoidance-Focused Coping and Indigenous Status as Moderators.



Social support did not moderate the relationship between exposure to active duty and resilience, and this was not altered by taking into consideration Indigenous status.

Exposure to active duty and depressive symptoms

In the conduct of the analysis assessing whether personal meaning moderated the relationship between exposure to active duty and depressive symptoms, none of the interaction effects (including those associated with Indigenous status) were found to be significant.

When analyzing whether coping factors (each in separate analyses) moderated the relationship between exposure to active duty and depressive symptoms, none of the coping factors moderated the relationship between exposure to active duty and resilience. However Indigenous status moderated the relationship between avoidance-focused coping and depressive symptoms (b=-3.72, SE=1.47, p=.012), and higher avoidance-focused coping was significantly related to more severe depressive symptoms among Indigenous participants only (b=-3.06, SE=.75, $p < .001$). This relationship between avoidance-focused coping and depression was not seen in the non-Indigenous participants (b= .69, SE=.59, p=.25). None of the 3-way interactions between Indigenous status, exposure to active duty and any of the coping strategies on resilience was significant.

Social support did not moderate the relationship between exposure to active duty and resilience, and this was not altered by taking into consideration Indigenous status. However, greater social support was significantly related to higher resilience (b=.47, SE=.06, p<.01).

Exposure to active duty and PTSD symptoms

In the conduct of the analysis assessing whether personal meaning moderated the relationship between exposure to active duty and PTSD symptoms, the interaction effects were not found to be significant. However, Indigenous status moderated the relationship between exposure to active duty and PTSD symptoms (b=-8.95, SE=4.35, p=.04). Among the Indigenous participants, those exposed to active duty appears to have higher PTSD symptoms than those who were not exposed to active duty (b=6.94, SE=3.61, p=.06), but it did not reach significance. For the non-Indigenous participants, no significant differences were found on PTSD symptoms between exposure or no exposure to active duty (b=-2.00, SE=2.43, p=.41).

When analyzing whether coping factors (each in separate analyses) moderated the relationship between exposure to active duty and PTSD symptoms, none of the coping factors

moderated the relationship between exposure to active duty and PTSD symptoms. However, Indigenous status moderated the interaction between emotion-focused coping and active duty, (b=-12.82, SE=4.67, p=.006). For Indigenous participants, with greater endorsement of emotion-focused coping (1 SD above the mean), exposure to active duty was significantly related to more severe PTSD symptoms (b=9.13, SE=3.87, p=.02). There were no significant relationships between exposure to active duty and PTSD symptoms at the mean levels or 1 SD below the mean levels of the emotion-focused coping in the Indigenous participants. For non-Indigenous participants, there were no significant relationships between exposure to active duty and PTSD symptoms regardless of levels of emotion-focused coping. None of the other 3-way interactions between Indigenous status, exposure to active duty and any of the other coping strategies on PTSD symptoms were significant.

Social support did not moderate the relationship between exposure to active duty and PTSD symptoms, and this was not altered by taking into consideration Indigenous status.

Secondary Analysis

Indigenous Rangers: The relationship between exposure to trauma and mental health and the moderating role of protective factors

In the conduct of the analysis assessing whether cultural connectedness moderated the relationship between previous trauma exposure and mental health outcomes among Indigenous Rangers, none of the interaction effects were found to be significant. Specifically, there was no significant interaction effect between cultural connections and trauma on the resilience (b=-.01, SE=.03, p=.78), depressive symptoms (b=-.01, SE=.02, p=.64), or PTSD symptoms (b=-.001, SE=.06, p=.99). However, when controlling for trauma, higher cultural connections were significantly related to better resilience (b=.15, SE=.04, p<.01), less depressive symptoms (b=-.12, SE=.03, p<.01), and less PTSD symptoms (b=-.29, SE=.08, p<.01).

Likewise, there were no significant interaction effects between sense of identity and trauma on resilience (b=-.01, SE=.06, p=.85), depressive symptoms (b=-.02, SE=.04, p=.67), or PTSD symptoms (b=-.05, SE=.13, p=.67). However, when controlling for trauma, higher sense of identity were significantly related to higher resilience (b=.20, SE=.06, p<.01), less depressive symptoms (b=-.17, SE=.05, p<.01), and less PTSD symptoms (b=-.38, SE=.14, p=.01).

Protective effects of cultural connectedness and identity against the potential effects of exposure to active duty were not found. Specifically, the interaction between cultural connections and exposure to active duty were not significant in relation to resilience (b=.04, SE=.08, p=.63), depressive symptoms (b=-.04, SE=.06, p=.563), or PTSD symptoms (b=-.001, SE=.18, p=.99). Similarly, none of the interaction effects between sense of identity and active duty on the resilience (b=.08, SE=.13, p=.55), depressive symptoms (b=-.07, SE=.10, p=.47), or PTSD symptoms (b=.09, SE=.30, p=.77) was significant.

Discussion

The processes that underline the relationship between trauma and well-being involve dynamic interactions of various protective factors that buffer against negative mental health outcomes. We often consider the contributing protective factors to influence the way we appraise trauma and the ability to overcome them. In this regard, this study sought to depict pathways evident in relation to specific traumas, and in particular, consider how various levels of protective factors might contribute to longer-term resilience and well-being in the aftermath of traumatic events among the Canadian Rangers. The objective of doing so was to highlight the dynamic

relationship among protective factors leveraged by the Canadian Rangers that promote positive mental health outcomes following traumatic events and operational stress injuries.

The Relationship Between Trauma and Mental Health

The results supported Hypothesis 1, which predicted that trauma exposure would be related to more negative mental health outcomes. Bivariate relationships indicated that higher exposure to trauma was significantly related to more severe depressive and PTSD symptoms. This finding is consistent with previous research that has identified trauma exposure can predict various psychological outcomes and disorders (Armagan et al., 2006; Thoresen et al., 2009; Weiss et al., 1995; Zhen et al., 2012), thus preventing the ability to effectively adapt following trauma. This is important because the Canadian Rangers are at times exposed to trauma which results in more negative mental health outcomes and understanding the impact of trauma on mental health provides great insight into this sample.

However, trauma was not related to the outcome measure of resilience among Rangers. This is inconsistent with literature that identifies protective factors to enhance resilience and reduce vulnerability following traumatic experiences (Lee *et al.*, 2014; Leppin *et al.*, 2014). However, when controlling for trauma, stronger profiling for protective factors resulted in greater resilience among the sample. It is speculated that confounding variables that were unmeasured may have resulted in the insignificant results. Furthermore, there was insignificant findings to support that protective factors were related to positive mental health outcomes following exposure to active duty (two-way interaction). This is inconsistent with previous literature that identifies the positive role of protective factors following work-related traumas on positive mental health outcomes (Meredith,

2011). Although this sample did not find a significant moderation effects, the sample was small, and so the power to detect differences may have been compromised.

Trauma, Mental Health and the Interaction with Protective Factors

The factors that promote resilience have been associated with positive mental health outcomes in individuals following trauma (Agaibi & Wilson, 2005, Haddadi & Besharat, 2010, Southwick, Vythilingam, & Charney, 2005). In the present investigation, the results partially supported Hypothesis 2, which stated that protective factors (coping strategies, personal meaning, social support) would moderate the relationship between trauma exposure and mental health outcomes. In line with expectations, in the absence of protective factors, those who were more exposed to trauma had higher mean levels of PTSD and depressive symptoms, whereas this relationship dissipated with the enactment of the various protective factors. Essentially, moderation analyses identified the role of personal meaning at low to average levels indicated a significant interaction, where more traumatic events were related to more severe depressive and PTSD symptoms. These findings are consistent with research where the relationship between trauma and negative mental health outcomes is more severe among those who have lower personal meaning (Reynolds & Turner, 2008), and endorse maladaptive coping strategies (Arble & Arnetz, 2017; Fitzpatrick, 2020; Shepherd et al., 2017; Thompson et al., 2018).

The results did not support the moderation hypothesis for social support on the relationship between trauma and mental health outcomes. These findings are contradictory to previous reports that establish a link between poor social support and the exacerbation of the relationships between trauma exposure and PTSD and depression (Brancu et al., 2014; Brugha et al., 1990; Bruwin et al., 2000; Ehlers and Clark, 2002; Guay et al., 2006; Maddison et al., 2017; Ozbay et al., 2007; Shumn

et al., 2006; Wild et al., 2020). There may be multiple reasons why the interaction effect was not found to be significant. Most importantly, low power due to unreliability of the measure for social support. The Adult Resilience Measure-Revised (Jefferies et al., 2018; Liebenberg & Moore, 2018) was used to derive an index of social support for this study, and is not a validated measure for social support. Rather it is first and foremost an index of resilience. Thus conclusions regarding the role of social support per se are tenuous. Indeed, the COVID-19 pandemic, governmental imposed lockdowns and isolation protocols may have hindered the perception of social support among this sample which may have further diminished its impact.

Moderating Effects of Indigenous Status

Recent improvements to psychopathology and mental health assessments demonstrate inequality in mental health conditions that persist in Indigenous populations compared with non-Indigenous populations (Gone & Trimble, 2012; Nelson & Wilson, 2017). The Canadian Ranger program is composed of Indigenous and non-Indigenous personnel across all five Canadian Ranger patrol groups. The key component of this study was to identify if there were any cultural differences in the relationship between trauma and mental health outcomes. Preliminary analyses indicated that Indigenous participants reported more exposure to trauma and active duty, lower social support and personal meaning and higher endorsement for maladaptive coping strategies which ultimately related to lower resilience and higher outcomes of depressive and PTSD symptoms than non-Indigenous participants.

As this was the nature of what was expected, specifically identifying differences between groups, the objective was to observe the three-way interaction of protective factors, Indigenous status and mental health outcomes following trauma exposure. The results partially supported

Hypothesis 3, where Indigenous status moderated the moderation effect of coping strategies on resilience and PTSD symptoms following exposure to active duty. In line with expectations, in the absence of protective factors, Indigenous participants exposed to active duty had higher mean levels of PTSD and lower means of resilience; and these patterns were found to be reversed or found insignificant for non-Indigenous participants exposed to active duty. These findings are consistent with previous literature which illustrates Indigenous populations experience different determinants that impact their mental health than the general population, and these challenges are found to be more prominent in remote regions (Reading & Wien, 2009). For coping strategies, research suggests that community healing among Indigenous people is a well-founded coping strategy when combating stress than traditional coping strategies (Restoule, 2000; Walters & Simoni, 2002). It is possible that Indigenous participants' complex history could have contributed to the magnitude of the three-way interaction resulting in poorer mental health outcomes following trauma and exposure to active duty (Walters & Simoni, 2002).

Multiple studies have identified cultural identity, cultural engagements, and positive affiliation to be correlated with mental health outcomes of Indigenous people (Chandler & Lalonde, 1998; Carrier et al., 2022; Kral & Idlout, 2009; Mushquash et al., 2021). Unfortunately, the results did not support Hypothesis 4, which stated that cultural connectedness and a sense of identity would moderate the relationship between indicators of trauma and mental health outcomes among Indigenous participants. Although a moderation effect was not observed, when controlling for indicators of trauma, higher levels of protective factors were significantly related to better resilience, and less depressive and PTSD symptoms. This is consistent with previous research which finds a sense of identity, community connections, traditional knowledge and values related to positive mental health outcomes among Indigenous populations (Kading et al., 2019). This is

important because the majority of the Canadian Ranger population is Indigenous. Although this Indigenous sample did not find significant moderation effects, the sample was small, and so the power to detect differences may have been compromised.

Limitations

A primary limitation of this study is the biased sample due to the COVID-19 pandemic. The original study was designed to anticipate a predominately Indigenous sample with data collection intended to be in-person across all five CRPGs. An altered online format resulted in a biased sample, as many communities do not have adequate access to the electronic questionnaire platform. The majority of the sample came from the Newfoundland and Labrador (5 CRPG), which represented the least amount of Indigenous participants and exposure to active duty. This sample bias does not allow for an adequately represent the Canadian Ranger population as the majority of Rangers serve in very rural, remote and northern communities.

Although it is intuitively appealing to conclude that the absence of protective factors is responsible for the link between trauma and negative mental health outcomes among the Rangers, the data is entirely correlational and thus causal conclusions cannot be drawn. Specifically for this study, the recall of past traumas retrospectively can be influenced by the participants' feelings at the time of the study, resulting in participants exaggerating or under-report the severity or frequencies due to recall bias and social desirability bias. It should be considered that this does not allow for a valid intervention approach from this data set; instead, this study provides insight into possible protective factors that could be leveraged by Canadian Rangers to promote positive mental health outcomes. However, it is also possible that mental health status similarly influenced self-reported meaning and coping efforts.

In most questionnaire-based research, one of the most significant limitations is the length of the survey. Anecdotal evidence from Rangers, Ranger Instructors and Commanding Officers indicated that the survey length for this study was too long, resulting in multiple participants being excluded from the final sample due to failure to complete the survey entirely. Recommendations for future research include reducing survey length in anticipation of increased participation and completion rates.

Lastly, it should be taken into consideration that this study did not assess the potential for sex differences among this sample of Rangers. Sex differences are considered to be an important risk factor in the relationship between trauma and the development of trauma-related disorders such as depression and PTSD (Kimerling et al., 2014). Studies have found that females are more frequently exposed to family violence and sexual abuse, whereas males have heightened risks for violence and war-related traumas (Douki et al., 2003; Fox and Johnson-Agbakwu, 2020; Krug et al., 2002; Olff et al., 2007). Specifically, females have a heightened risk for developing PTSD and depression than their male counterparts (Kimerling et al., 2014). The primary objective of this research was to evaluate moderating roles of protective factors by Indigenous status on the relationship between indicators of trauma and mental health outcomes. Unfortunately, the sample size of women in the present study was limited, and so such analyses would not have sufficient power to detect differences. It is recommended that sex differences should be considered for future studies among the Canadian Ranger population.

Implications

Findings from this study can lay a foundation of empirical data on the assessment of Canadian Rangers and mental health. The findings provide insight into this sample of Rangers and

how in the absence of protective factors, those who were more exposed to trauma showed higher mean levels of depressive and PTSD symptoms. Specifically, for those who endorse problem-focused coping, perceive strong social support and indicate strong personal meaning, the relationship between trauma exposure and mental health outcomes were more positive. These results align with various studies highlighting the role of protective factors in promoting positive mental health outcomes following trauma exposure in first responders (Antony et al., 2020; Arnetz et al., 2008; Prati & Pietrantoni, 2010).

This study contributes to the limited research in the field of Rangers and provides empirical data and future direction for the assessment and wellness of the Canadian Rangers. This information can better assist the Canadian Armed Forces in preparing suitable approaches targeted to buffer against negative mental health outcomes in isolated communities with already limited mental and medical services. Furthermore, external support from local or provincial government agencies is critical in assisting Indigenous communities and Canadian Ranger Patrol Groups (CRPGs) to leverage protective factors of resilience through programming, resources, and best practices. Support from these agencies may enhance communities with CRPGs to promote protective factors and positive coping strategies to combat negative mental health outcomes in high-risk communities.

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APPENDICES
APPENDIX A – INFORMED CONSENT

Informed consent Name and Contact Information of Researchers:

Samantha Ghazal (Graduate Researcher) Department of Neuroscience, Carleton University Email: samanthaghazal@cmail.carleton.ca

Dr. Kim Matheson (Supervisor)
Department of Neuroscience, Carleton University
Tel.: 613-520-2600, ext. 2652; Email: kim.matheson@carleton.ca

Study Title: An Assessment of Resiliency and Wellness of the Canadian Rangers

Carleton University Project Clearance
Clearance #: Clearance # 112185 Date of Clearance: 26 March 2020

Invitation
You are invited to take part in this research project because you of your involvement in the Canadian Rangers Program as part of an academic thesis with Carleton University. This information in this form is intended to help you understand what we are asking of you so that you can decide whether to participate in this study. Your participation in this study is voluntary, and a decision not to participate will not have any implications for your role with the Canadian Rangers or the Canadian Armed Forces.

Who is eligible to participate in this study?
To be eligible, participants are members of the Canadian Ranger program. They must be fluent in English and be at least 18 years of age.

What will I be asked to do?
You will be asked to complete a questionnaire on Qualtrics regarding your background, interpersonal relationships (i.e. social support), stress management (i.e. coping strategies), life experiences (i.e. trauma), well-being, and spirituality. The questionnaire will take approximately ~30 minutes to complete.

Potential risks or causes of discomfort for participants
There are no physical risks in this study. There may be some discomfort or anxiety experienced when responding to some questions of a sensitive nature (i.e. mood, trauma experienced). Please note that there will be questions related to past experiences of trauma and responses to some of the questions or thinking about various stressors/ challenges in your life may be distressing to some people. You can skip questions you do not wish to answer. In the debriefing at the end of the questionnaire, we will provide a list of resources if any negative feelings are triggered. In order to mitigate any discomfort or anxiety experienced when responding to some questions, a support mechanism will be in place to have a padre available via telephone or online platform such as Zoom, Skype or TEAMS, upon appointment. You can also choose to withdraw at any point during the study without penalty, which can be done by simply ending the questionnaire,

Qualtrics will send you to the final debriefing page. Additionally, you will still have access to any mechanisms of support provided in the recruiting message. Since your commanding officer and ranger instructor are not present to observe whether you were partaking in the study and the fact that all questionnaires will be anonymous, breach of data confidentiality will be extremely minimal.

Anonymity and confidentiality

All responses will be kept confidential. All information collected from you for this study will be anonymous. Upon completion of the questionnaires, all data will be extracted from Qualtrics and stored on a password protected computer. Research data will only be accessible by the researchers, and will be destroyed 5 years after collection. The anonymous electronic data will be saved in SPSS (statistical software) stored on password-protected standalone computer and could potentially be used for other research projects

Information about Qualtrics (Online survey)

Where will my information be stored, who has access to it and how will it be protected?

The company running the online survey is Qualtrics and they are based in the United States. All response data collected during the study will be stored on U.S servers and will be subject to the Patriot Act. These data will be encrypted and deleted once the survey is complete. Research data will be accessible by the researcher, the research supervisor and the survey company. The data will not be identifiable meaning that no names or IP addresses will be linked to any of the information provided via Qualtrics, protecting your anonymity and confidentiality.

Right to withdraw from this study

Participation in this study is entirely voluntary. At any point during the study you have the right to not complete certain questions or to withdraw with no penalty whatsoever, which can be done by simply ending the questionnaire, Qualtrics will send you to the final debriefing page. Additionally, you will still have access to any mechanisms of support provided in the recruiting message. Participants who chose to withdraw during the study session will have their questionnaire destroyed and their responses will not be included with the rest of the data collected.As all the data are anonymous, withdrawal is not possible after your responses are submitted to the researcher

Ethics review

This project was reviewed and cleared by the Carleton University Research Ethics Board B. If you have any ethical concerns with the study, please contact Carleton University Research Ethics Board (by phone at 613-520-2600 ext. 4085 or by email at ethics@carleton.ca).

Statement of consent

Proceeding to voluntarily complete the survey constitutes your informed consent to participate

APPENDIX B – DEBRIEFING

Depression is a condition that can occur for many reasons, including workplace, school, or relationship stressors, traumatic life events, discrimination, as well as physical/biological imbalances. Approximately 10-15% of people will suffer some degree of depression during their lifetime. With advances in modern medicine, most people can readily be treated for this illness, which if unattended can be long lasting and affect many aspects of one's life. The symptoms of depression comprise:

- Poor or depressed mood, or a reduction in the pleasure gained from otherwise positive experiences
- Sleep disturbances
- Eating disturbances (loss of appetite, or overeating despite not being hungry), which may be linked to weight changes
- Lack of sexual interest
- Fatigue and lethargy (you don't feel like doing anything)
- An inability to focus (e.g., you have a hard time reading)
- Reduced interactions with family and friends
- Thoughts of suicide

Someone who is depressed may experience several (3-4), but not necessarily all of the above symptoms. It is likewise the case that 60% of individuals will encounter a severe traumatic event in their lives and of these people, a fair number will develop symptoms that cause severe anxiety. Illnesses of this nature, including posttraumatic stress disorder (PTSD) can be treated. Once again, if unattended, the repercussions can be severe. Symptoms include:

- Hyperarousal (e.g., feelings of anxiety and reactivity even to minor situations)
- Intrusive thoughts (memories of the event come into your head frequently)
- Avoiding thoughts or stimuli related to the event

These symptoms can persist for more than a month following the event, and influence your day-to-day functioning. Your responses to this survey suggest that you may be experiencing one of the above disorders. If you are not already receiving attention for this problem, it is suggested that you contact your family physician. It is not a good idea to allow problems to fester, as ruminating over these problems will typically not make them go away. Your family physician or counsellor will usually be able to help you or to refer you to someone who can. If you do not have a family physician, then you can contact either of the following:

Crisis Services Canada:

- 1-833-456-4566
- Web Site: http://www.crisisservicescanada.ca

Mental Health Crisis Line:

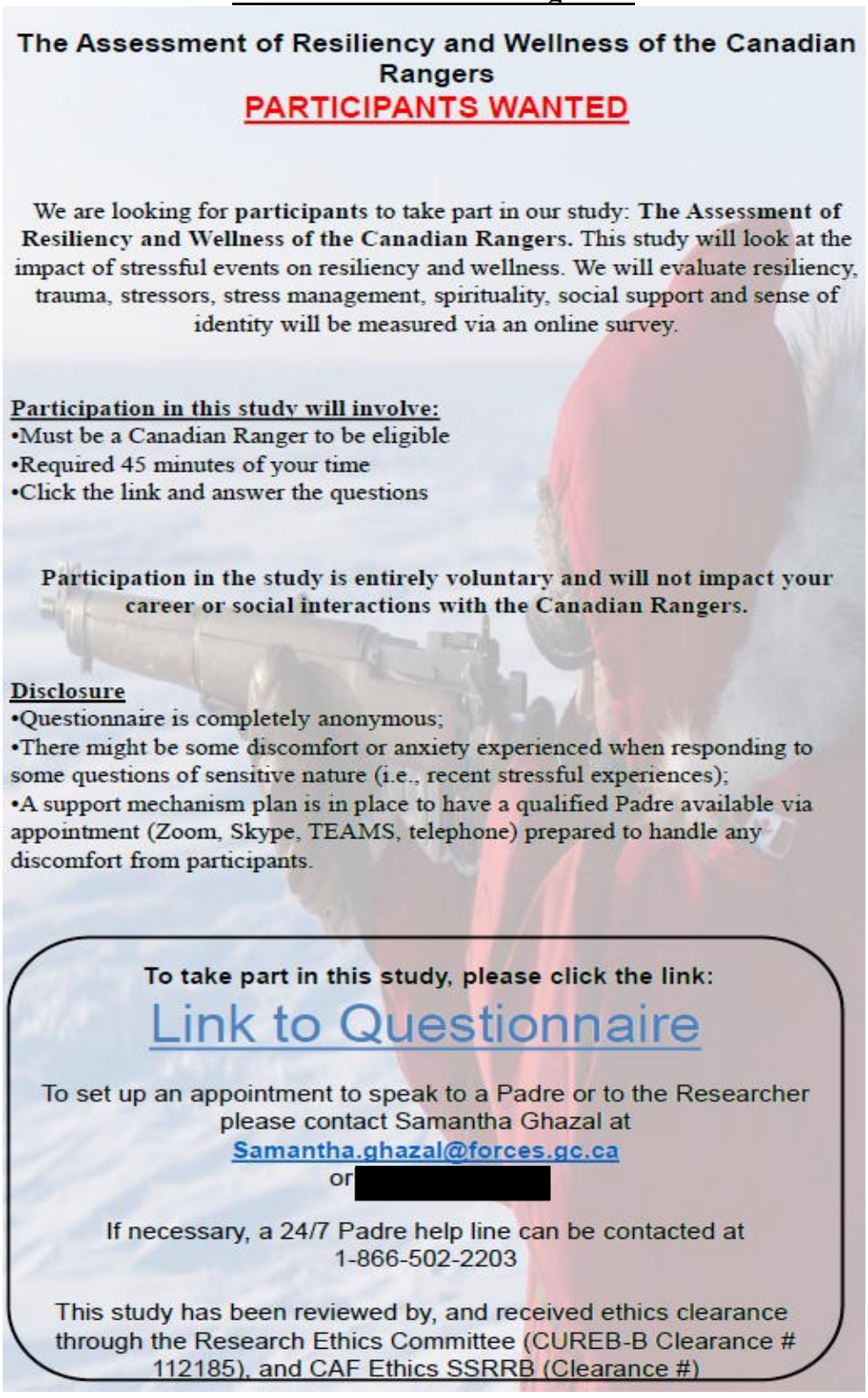
- 1-866-996-0991
- Web Site: http://www.crisisline.ca/

Canadian Armed Forces Mental Health Contact List includes but is not limited to;

- Canadian Armed Forces Member Assistance Program
    - 1-800-268-7708
- Canadian Armed Forces Chaplains
    - 1-866-502-2203
    - A support mechanism plan is in place to have a padre present during the study so that we are prepared to handle any discomfort from participants. The padre will be

available to assess participants if need be and has the means to provide any additional resources if necessary.

APPENDIX C – Recruiting Form



APPENDIX D – MILITARY SERVICE

RESERVE FORCE - SUB-COMPONENTS

The sub-components of the Reserve Force are:

a. the Primary Reserve, which consists of officers and non-commissioned members who have undertaken, by the terms of their enrolment, to perform such military duty and training as may be required of them and contains all formed Reserve Force units;
b. the Supplementary Reserve, which consists of officers and non-commissioned members who, except when on active service, are not required to perform military or any other form of duty or training;
c. the Cadet Organizations Administration and Training Service, which consists of officers and non-commissioned members who, by the terms of their enrolment or transfer, and supported by members of the Regular Force and members of the other Reserve Force sub-components, have undertaken as their primary duty the supervision, administration and training of cadets or junior Canadian rangers who are members of the cadet organizations referred to in section 46 of the *National Defence Act*.
d. the Canadian Rangers, which consists of officers and non-commissioned members who have undertaken, by the terms of their enrolment, to perform such military duty and training as may be required of them, but who are not required to undergo annual training.

https://www.canada.ca/en/department-national-defence/corporate/reports-publications/departmental-results-2017-18-index/supporting-documents-index/canadas-reserve-force.html

Classes of Reservists

The three classes of Reservist service described in the *Queen's Regulations and Orders for the Canadian Forces* are:

Class A - This is the most common form of employment for members of the Primary Reserve. The Primary Reserve comprises soldiers, sailors, and airmen who train to the level of and interchangeable with their Regular Force counterparts and are posted to Canadian Forces operations or duties on an on-going basis. Members are employed on a part-time basis within their unit. This form of employment is entirely voluntary and provides no job security. Class A Reserve service is used for short periods of service to a maximum of 12 consecutive days. Class A Reserve service includes proceeding to and returning from the place where the training or duty is performed, but not when that training or duty, including attendance at local parades, local demonstrations or local exercises, is performed at local headquarters.

Class B - This form of employment is for Reservists employed full-time in a non operational capacity (i.e. Administrative Officer, File Manager). The length of the employment is dependant on the Reservist's availability and the needs of the Canadian Forces. Reservists on Class B employment receive many of the same benefits as members of the Regular Force. Class B Reserve service is authorized unless the period of service is 13 or more consecutive days. Class "B" Reserve service includes proceeding to and returning from the place of duty.

Class C - This is the operational level of employment. Reservists on Class C employment receive an increase in pay to the level that a Regular Force member in the same position would be expected to receive. Additionally all benefits are awarded to the Reservist without any time constraint on the contract length. Examples of Class C positions include, but are not limited to, deployments to operational areas and core crew positions on Canadian warships. A Reservist is on Class C Reserve service when the member is on full-time service and is serving with approval by, or on behalf of, the Chief of the Defence Staff in a Regular Force establishment position or is supernumerary to Regular Force establishment; or on either an operation or an operation of a type approved by or on behalf of the Chief of the Defence Staff, where "operation" includes training and other duties necessary for the operation, and leave related to the operation. Class C Reserve Service includes proceeding to and returning from the place of duty.

https://www2.gnb.ca/content/gnb/en/departments/post-secondary_education_training_and_labour/promo/ProtectionCanadianForcesReservist/classes_of_reservists.html

APPENDIX E – Letters of Approval

Défense nationale

2e GROUPE DE PATROUILLES DES RANGERS CANADIENS
CP 100, Succursale Bureau-chef
Richelain QC J0J 1R0

National Defence

2nd CANADIAN RANGERS PATROL GROUP
P.O. Box 100 – Station Bureau-chef
Richelain QC J0J 1R0

5000 (2 CRPG)

7 January 2020

To whom it may concerns

Madam, Sir

I am Lieutenant-Colonel Benoit Mainville, and I am the Commanding Officer of the 2 Canadian Ranger Patrol Group located in Québec. We were introduced to Mrs Ghazal research project during the 2019 Canadian Ranger National Authority Working Group conducted in Ottawa in November 2019.

I understand the primary focus of her research project is to assess the factors contributing to resilience among the Canadian Rangers. The Canadian Rangers are exposed to numerous stressful events in their communities, but appear to demonstrate positive mental health. This research will identify the factors that moderate the relation between stressor exposure and wellbeing in this population.

To support her research project, I am ready to introduce Mrs Ghazal to several Canadian Rangers during one or several of our training events in order for her to conduct her study. I do not see any risks, threats or issues for the rangers to participate in the study. Each Rangers will be a volunteer and will consent individually to participate in the study.

If you have any questions don't hesitate to contact me at 1-800-817-2761, choice 3, ext 6641005.

[redacted]

Benoit Mainville
Lieutenant-Colonel
Commanding Officer

National Défense
Defence nationale

4th Canadian Ranger Patrol Group
Headquarters
PO Box 17000 Stn Forces
Victoria BC V9A 7N2

1000-1 (Admin O)

7 January 2020

Ms. Samantha Ghazal
Carleton University

LETTER OF SUPPORT FOR RESEARCH PROJECT
REGARDING THE RESILIENCY OF THE CANADIAN RANGERS

To whom it may concern,

I am the Commanding Officer of the 4th Canadian Ranger Patrol Group, a unit of the Canadian Army, and I am responsible for the Canadian Rangers within the area of operations of the 3rd Canadian Division, that being the four western Canadian provinces. My unit Headquarters is in Victoria, British Columbia.

I am aware of Ms. Samantha Ghazal's research project on the Canadian Rangers in which an assessment of resilience is intended. Having been previously briefed on the intent and scope of the project, I support the objective of this study and give my full support for Ms. Ghazal to conduct her research during selected training events within my area of operations (to be discussed and confirmed).

I do not perceive the proposed study activities to be intrusive, dangerous or harmful; however, I intend to appropriately manage all activity related to the study as it pertains to my unit in order to minimize any negative impact on both my Canadian Rangers and the communities within which they reside. That said, I do not feel that negative impact will be an issue and am happy to allow the study to proceed. The Canadian Rangers who attend the training events which come under scrutiny as part of the study will not be from a vulnerable population. I retain the right to order the cessation of any and all activity regarding this study within my area of operations at my discretion should I find it necessary to do so.

Sincerely,

[redacted]

Lieutenant-Colonel R. A. (Russ) Meades
Commanding Officer
4th Canadian Ranger Patrol Group

Canada

5th Canadian Ranger Patrol Group
Headquarters
PO Box 6000 Stn Main
Gander, NL A1V 1X1

1000-1 (Adjt)

13 January 2020

Ms. Samantha Ghazal
Carleton University

Subject: Letter of Support
Research Project Resiliency of the Canadian Rangers

To whom it may concern,

I LCol Andrew Heale, of the Canadian Armed Forces, commanding officer of 5th Canadian Ranger Patrol Group (5 CRPG) and responsible for the Canadian Rangers within 5 CRPG, would like to reflect my support for Ms. Samantha Ghazal's research project on the Canadian Rangers and assessment of resilience. I support the objective of this study and give my support for Ms. Ghazal to conduct her research during the training events within 5th Canadian Ranger Patrol Group.

I perceive the research is not intrusive, dangerous nor harmful, and we acknowledge the potential impact of your research on the population needs. This population of Canadian Rangers who are attending the training event are not of a vulnerable population.

Best regards,

[redacted]
Digitally signed by HEALE, ANDREW 024
Date: 2020.01.13 13:35:28 -03'30'

Andrew Heale
Lieutenant Colonel
Commanding Officer
5 CRPG
Andrew.Heale@forces.gc.ca
Tel: 709-256-1703 ext 1496
bb: 709-235-0719

3rd Canadian Ranger Patrol Group
The Company Sergeant-Major
Francis Pegahmagabow, MM Building
50 Market Garden Cres
Borden, ON L0M 1C0

15 January 2020

1000-1 (2IC Admin Coy)

Ms. Samantha Ghazal
Carleton University
1125 Colonel By Dr
Ottawa, ON K1S 5B6

LETTER OF SUPPORT - RESEARCH PROJECT
RESILIENCY OF THE CANADIAN RANGERS

To whom it may concern,

I am writing to state my support for Ms. Ghazal's research project with Carleton University on the resilience of the Canadian Rangers. I support the objective of this study and authorize you to conduct your research during training events of the 3rd Canadian Ranger Patrol Group within the 4th Canadian Division.

I know that this research will not be intrusive, dangerous, or harmful (mentally or physically) to the Canadian Rangers participating. I acknowledge the potentially beneficial impact of your research on the Canadian Rangers.

I wish you success with your research and look forward to reviewing the results.

Yours Truly,

[redacted]

S.R.A. McArthur
Lieutenant-Colonel
Commanding Officer

National Defence / Défense nationale

Chaplain Generals Office
101 Colonel By Drive
Ottawa Ontario K1A 0K2

17 January 2020

Ms. Samantha Ghazal
Carleton University

LETTER OF SUPPORT FOR RESEARCH PROJECT:
AN ASSESSMENT OF RESILIENCY AND WELLNESS OF THE CANADIAN RANGERS

To whom it may concern,

I am the Indigenous Advisor to the Chaplain General, my within my current role includes but is not limited to the networking of Indigenous resources across Canada, and the primary care of Indigenous Spiritual resiliency within the Canadian Armed Forces. In the past 18 years I have held various elected grass roots Indigenous positions across Canada. I am Abenaki First-Nation from Odanak but adopted within the Atikamekw First-Nation in Manawan. My wife and the mother of our 4 children is Nuu-chah-nulth First-Nation

I am aware of Ms. Samantha Ghazal's research project on the Canadian Rangers in which an assessment of resilience is intended. I am her primary contact with regards to cultural awareness by providing appropriate resources throughout the study, and I will also act as her mentor on Indigenous topics. I support the objective of this study and do not perceive the proposed study activities to be intrusive, harmful or dangerous.

Sincerely,

[redacted]

Warrant-Officer MJJEG Tetrault-Hamel
Indigenous Advisor of the Chaplain General
Canadian Armed Forces
Department of National Defence

Canada

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RÉGIE RÉGIONALE DE LA SANTÉ ET DES SERVICES SOCIAUX DU NUNAVIK
NUNAVIK REGIONAL BOARD OF HEALTH AND SOCIAL SERVICES

January 6th, 2020

SENT BY EMAIL

Mrs Samantha Ghazal
Royal Canadian Chaplain Service/ Office of the Chaplain General
Department of National Defence / Government of Canada
Canadian Armed Forces

Subject: Letter of Support
Research Project_Resiliency of the Canadian Rangers

Dear Mrs Ghazal,

With this letter, we want to confirm that we support your research project that will assess the resiliency of the Canadian Rangers as statistics do not show equal amounts of suicide of Rangers as there are with civilians within the community. We support your objective to figure out what the resilience factor is and how we can harness this resilient-quality and possible reintegrate it into the community. It is with interest that we have read the summary of your project after we met in person in Kuujjuaq, in November 2019. We also want to underline the necessity and the importance to have specific services for Inuit communities. The research is not intrusive, dangerous nor harmful, but we acknowledge the potential impact ofyour research on the population needs.

It is our pleasure to accompany you and we want to ensure our collaboration.

Best regards,

[redacted]

Geneviève Pellerin
Psychosocial affairs and Community Services Coordinator| Coordonnatrice aux services psychosociaux et communautaires
Planning and Programming | Planification et programmation
NRBHSS | RRSSSN

P.O. BOX 900, KUUJJUAQ (QUÉBEC) J0M 1C0
TEL : 1-844-964-2244 / 819 964-2222 FAX : 819 964-2888

APPENDIX F –Background Information

The purpose of the following set of questions is to collect demographic information about various aspects of your life.

1. Gender:_____Female____Male____Transgender____Two-spirited _____Not listed

2. Age: _____

3. What is your cultural affiliation? *Please select the one that best applies to you.*
___Indigenous; If yes, which group do you belong to? (Check one)
____First Nations
____Métis
____Inuit
____Other
___Other (please specify)_____

4. What is your First Language?
____Indigenous (please specify): _____
____English
____French
____Other (*please specify)*: _____

5. What is your religious/ spiritual affiliation?
____Indigenous Spiritual Practices
____None—Atheist (e.g., belief that there is NO God)
____None—Agnostic (e.g., belief that the existence of God cannot be known)
____Protestant (e.g., United, Anglican, Baptist, Presbyterian, Lutheran, Pentecostal, Mennonite, "Christian")
____Catholic (e.g., Roman Catholic, Ukrainian Catholic)
____Other (please specify):_____

6. Did you participate in or attend any traditional Aboriginal activities while growing up?
____Yes
____No

7. What is your current living arrangement? Please select the one that best applies to you.
___Living alone
___Living with friends
_____Living with family. How many adults?_____How many kids (younger than 18 years)?__
_____Other (please specify) _____

8. What province do you currently live in? _____

9. What is your current relationship status? Please select the one that best applies to you.
_____Single/ never married
_____Married/Common-law
_____Separated/Divorced ……. Please specify how many months ago you separated _____
_____Widowed

10. What is the population of your community?
_____Large city (population greater than 10,000)
_____Small city (population between 4,000 and10,000)
_____Rural community (population less than 3,000)
_____Reserve

11. What is your estimate of your family's overall income per year? Please select the one that best applies to you.

____ under $15,000	____$60,000 - $74,999
____ $15,000 - $29,999	____ $75,000 - $89,999
____ $30,000 - $44,999	____ $90,000 - $104,999
____ $45,000 - $59,999	____$105,000 or more

12. What Ranger Patrol Group do you belong to?
____1 CRPG
____2 CRPG
____3 CRPG
____4 CRPG
____5 CRPG

13. How many years of service do you have with the Canadian Ranger Organization?
Year(s) _____

14. Were you a member of the Junior Canadian Rangers before you joined the Canadian Rangers Organization? or the Cadets before you joined the Canadian Rangers program?
_____Yes.
_____No.

15. Were you a member of the Cadets before you joined the Canadian Rangers Organization?
___ Yes
___ No

16. How long were you in the Junior Canadian Rangers or the Cadets combined? _____

17. What is your rank?
____ Private (Pte)
____ Corporal (Cpl)
____ Master Corporal (MCpl)
____ Sergeant (Sgt)
____Other, Please specify _____

It may be some discomfort or anxiety experienced when responding to some questions of a sensitive nature. If you experience any discomfort or anxiety when responding, a support mechanism plan is in place upon request to allow a padre present to assess your well-being and has the potential to provide additional resources. You can skip questions you do not wish to answer.

18. How many Search and Rescue operations in your community have you been on?
In the past year as a ranger _____
*In your lifetime as a ranger*_____

1. How many Search and Rescue operations in another community have you been on?
*In the past year as a ranger*_____
*In your lifetime as a ranger*_____

2. How many body location patrols in your community have you been on?
*In the past year as a ranger*_____
*In your lifetime as a ranger*_____

3. How many body location patrols in another community have you been on?
*In the past year as a ranger*_____
*In your lifetime as a ranger*_____

4. How many community evacuations have you assisted on as part of your duties as a ranger?
*In the past year as a ranger*_____
*In your lifetime as a ranger*_____

5. How many natural disaster evacuations have you assisted on as part of your duties as a
*In the past year as a ranger*_____
*In your lifetime as a ranger*_____

6. In your opinion, how would you describe your general health?
____Poor
____Fair
____Good
____Very good
____Excellent

7. While growing up, was a household member depressed or mentally ill?
____Yes
____No

8. Did a household member attempt suicide?
____Yes
____No

9. Did you ever attend residential school?

____Yes. If so, how long were you at the Residential school? _____years & _____months
____No

10. Did either of your parents/caregivers ever attend residential school?
____Yes
____No

11. Did any of your grandparents ever attend residential school?
____Yes
____No

APPENDIX G – Standardized Measures

Native Wellness Assessment (NWA-S)

Please only fill out if you are Indigenous. If not, please skip to next questionnaire

		DK Don't Know	1 Do Not Agree	2 Agree a LIttle	3 Kind of Agree	4 Mostly Agree	5 Strongly Agree
1	I can see my loved ones who have gone on, or ancestors, in dreams or ceremony.	DK	0	1	2	3	4
2	My Native culture fuels my desire to live a good life.	DK	0	1	2	3	4
3	I believe that the Creator is the source of all life.	DK	0	1	2	3	4
4	My relationship to the land I come from is important.	DK	0	1	2	3	4
5	I feel comforted when I participate in cultural activities and ceremonies.	DK	0	1	2	3	4
6	I feel a need to connect with my spirit.	DK	0	1	2	3	4
7	My Native language is a sacred language.	DK	0	1	2	3	4
8	Knowing the names in the generations of my family is important for my identity.	DK	0	1	2	3	4
9	All living things have a spirit.	DK	0	1	2	3	4
10	Ceremonies and cultural activities open me up to share my thoughts and feelings with others.	DK	0	1	2	3	4
11	I learn about the Creator's teaching to live a good life.	DK	0	1	2	3	4
12	I am known in Creation through my traditional name or clan family.	DK	0	1	2	3	4
13	The Creator made a way for me to live a good life.	DK	0	1	2	3	4
14	The more I learn about my culture, the more confident I feel about my life.	DK	0	1	2	3	4
15	The more I learn about the importance of my spirit the more I want a good life.	DK	0	1	2	3	4

[ ]	I see my role in caring for water and fire as important for a balanced life.	DK	0	1	2	3	4
[ ]	I believe there is a reason the Creator gave me life.	DK	0	1	2	3	4
[ ]	The Creator gives me my Native identity.	DK	0	1	2	3	4
[ ]	I connect to life by being on the land and learning the names and stories of plants and animals.	DK	0	1	2	3	4
[ ]	I want to be like my ancestors who worked to have a good life.	DK	0	1	2	3	4
[ ]	I need to pay attention to my spirit because it is important to my physical well-being.	DK	0	1	2	3	4
[ ]	My connection to Mother Earth makes the land I come from my home.	DK	0	1	2	3	4
[ ]	I seek understanding of my purpose in life through cultural knowledge.	DK	0	1	2	3	4
[ ]	I give thanks for what I receive from Creation.	DK	0	1	2	3	4
[ ]	My language and a connection to the land help me to know who I am.	DK	0	1	2	3	4
[ ]	The respect I feel for my relatives in Creation, makes me want to give something back.	DK	0	1	2	3	4
[ ]	The Creation story is important to me because it helps me to feel my life is meaningful.	DK	0	1	2	3	4
[ ]	My dreams help guide and direct me through my life.	DK	0	1	2	3	4
[ ]	The Creation story that I believe in is Native in origin.	DK	0	1	2	3	4
[ ]	I make offerings such as food and other gifts to my ancestors because they help me.	DK	0	1	2	3	4
[ ]	I listen to traditional teachings to learn how my ancestors understood and lived life.	DK	0	1	2	3	4
[ ]	Laughter heals me.	DK	0	1	2	3	4
[ ]	I need to learn more about my Native identity.	DK	0	1	2	3	4

	I respect sacred bundle items.	DK	0	1	2	3	4
	I understand how the Creator helps me.	DK	0	1	2	3	4
	I treat my body as sacred.	DK	0	1	2	3	4
	My identity as a Native person helps me to know who I am and what to do in life.	DK	0	1	2	3	4
	I know who my extended or adopted family is.	DK	0	1	2	3	4
	It is important to me that I learn, speak and understand my Native language.	DK	0	1	2	3	4
	The Creator gives me choices in how to live my life.	DK	0	1	2	3	4
	My Native language comes from the Creator.	DK	0	1	2	3	4
	I have a necessary role in my family.	DK	0	1	2	3	4
	Understanding my spirit connection to all life helps me to be well.	DK	0	1	2	3	4
	I gather traditional foods because they are important for my health.	DK	0	1	2	3	4
	I strengthen my connection by talking to the Creator.	DK	0	1	2	3	4
	My family gives me strong identity.	DK	0	1	2	3	4
	I know all of Creation has spirit caring for me.	DK	0	1	2	3	4
	I take initiative to be physically active through land based activities.	DK	0	1	2	3	4
	I need to have a connection with my ancestors.	DK	0	1	2	3	4
	I feel all of Creation is my family.	DK	0	1	2	3	4
	I feel the spirit is with me when I am on the land, in ceremony, or through my dreams.	DK	0	1	2	3	4

[illegible]	I use cultural ways such as ceremonies, food and medicine for cleansing and healing.	DK	0	1	2	3	4
[illegible]	How I dress shows pride in my culture.	DK	0	1	2	3	4
[illegible]	I feel a connection between my community history and my own story.	DK	0	1	2	3	4
[illegible]	I think my spirit lives forever.	DK	0	1	2	3	4
[illegible]	I show who I am as a Native person through the things I wear.	DK	0	1	2	3	4
[illegible]	The Creator gave me a good mind.	DK	0	1	2	3	4
[illegible]	I see the strengths Native people have as a community.	DK	0	1	2	3	4
[illegible]	I think about the whole of Creation - the universe, all nature, plants, animals, and all people - as my family.	DK	0	1	2	3	4
[illegible]	I go to Elders to learn about our Native ways.	DK	0	1	2	3	4

Personal Meaning (18 items)

Instructions: Circle one response below each statement to indicate how much you agree or disagree.

	Strongly Agree	Somewhat agree	A little agree	Neither agree or disagree	A little disagree	Somewhat disagree	Strongly disagree
"I like most parts of my personality."	1	2	3	4	5	6	7
"When I look at the story of my life, I am pleased with how things have turned out so far."	1	2	3	4	5	6	7
"Some people wander aimlessly through life, but I am not one of them."	1	2	3	4	5	6	7
"The demands of everyday life often get me down."	1	2	3	4	5	6	7
"In many ways I feel disappointed about my achievements in life."	1	2	3	4	5	6	7
"Maintaining close relationships has been difficult and frustrating for me."	1	2	3	4	5	6	7
"I live life one day at a time and don't really think about the future."	1	2	3	4	5	6	7
"In general, I feel I am in charge of the situation in which I live."	1	2	3	4	5	6	7
"I am good at managing the responsibilities of daily life."	1	2	3	4	5	6	7
"I sometimes feel as if I've done all there is to do in life."	1	2	3	4	5	6	7
"For me, life has been a continuous process of learning, changing, and growth."	1	2	3	4	5	6	7
"I think it is important to have new experiences that challenge how I think about myself and the world"	1	2	3	4	5	6	7
"People would describe me as a giving person, willing to share my time with others."	1	2	3	4	5	6	7
"I gave up trying to make big improvements or changes in my life a long time ago"	1	2	3	4	5	6	7

Center for Epidemiologic Studies Short Depression Scale (CES-D-R 10)

	Strongly Agree	Somewhat agree	A little agree	Neither agree or disagree	A little disagree	Somewhat disagree	Strongly disagree
"I tend to be influenced by people with strong opinions"	1	2	3	4	5	6	7
"I have not experienced many warm and trusting relationships with others."	1	2	3	4	5	6	7
"I have confidence in my own opinions, even if they are different from the way most other people think."	1	2	3	4	5	6	7
"I judge myself by what I think is important, not by the values of what others think is important."	1	2	3	4	5	6	7
"In general, I am satisfied with my life as a whole right now"	1	2	3	4	5	6	7

Below is a list of some of the ways you may have felt or behaved.

Please indicate how often you have felt this way during the past week by checking the appropriate box for each question.

	Rarely or none of the time **(less than 1 day)**	Some or a little of the time **(1-2 days)**	Occasionally or a moderate amount of time **(3-4 days)**	All of the time **(5-7 days)**
1. I was bothered by things that usually don't bother me.	0	1	2	3
2. I had trouble keeping my mind on what I was doing.	0	1	2	3
3. I felt depressed.	0	1	2	3
4. I felt that everything I did was an effort.	0	1	2	3
5. I felt hopeful about the future.	0	1	2	3
6. I felt fearful.	0	1	2	3
7. My sleep was restless.	0	1	2	3
8. I was happy.	0	1	2	3
9. I felt lonely.	0	1	2	3
10. I could not "get going."	0	1	2	3

Adult Resilience Measure-Revised (ARM-R)

ARM-R

To what extent do the following statements apply to you? There are no right or wrong answers.

		Not at all [1]	A little [2]	Somewhat [3]	Quite a bit [4]	A lot [5]
1	I cooperate with people around me	1	2	3	4	5
2	Getting and improving qualifications or skills is important to me	1	2	3	4	5
3	I know how to behave in different social situations	1	2	3	4	5
4	My family have usually supported me through life	1	2	3	4	5
5	My family knows a lot about me	1	2	3	4	5
6	If I am hungry, I can get food to eat	1	2	3	4	5
7	People like to spend time with me	1	2	3	4	5
8	I talk to my family/partner about how I feel	1	2	3	4	5
9	I feel supported by my friends	1	2	3	4	5
10	I feel that I belong in my community	1	2	3	4	5
11	My family/partner stands by me during difficult times	1	2	3	4	5
12	My friends stand by me during difficult times	1	2	3	4	5
13	I am treated fairly in my community	1	2	3	4	5
14	I have opportunities to show others that I can act responsibly	1	2	3	4	5
15	I feel secure when I am with my family/partner	1	2	3	4	5
16	I have opportunities to apply my abilities in life (like skills, a job, caring for others)	1	2	3	4	5
17	I enjoy my family's/partner's cultural and family traditions	1	2	3	4	5

SCOPE – 27 version

The purpose of this questionnaire is to find out how people deal with their problems or the stressors in their lives. The following are activities that you may have done. After each activity, please indicate the extent to which you would use this as a way of dealing with problems or stressors you've experienced in recent months.

In response to stressful situations, I	**0** Not at all	**1**	**2** Somewhat	**3**	**4** Totally
1. accept that there is nothing I could do to change my situation.	0	1	2	3	4
2. blamed myself for my problems.	0	1	2	3	4
3. told others that I was really upset.	0	1	2	3	4
4. asked others for help or advice.	0	1	2	3	4
5. spent a lot of time thinking about my problems.	0	1	2	3	4
6. took time for recreation or pleasure activities.	0	1	2	3	4
7. made plans to overcome my concerns or problems.	0	1	2	3	4
8. avoided thinking about my problems.	0	1	2	3	4
9. told jokes about my situation.	0	1	2	3	4
10. thought a lot about who was responsible for my problems (besides me).	0	1	2	3	4
11. worried about my problems a lot.	0	1	2	3	4
12. made humorous comments or stories about my situation.	0	1	2	3	4
13. wished the situation would just go away or be over with	0	1	2	3	4
14. thought a lot about how I brought my problems on myself.	0	1	2	3	4
15. decided to wait and see how things turned out.	0	1	2	3	4
16. tried to keep my mind off things that were upsetting me.	0	1	2	3	4
17. sought reassurance and emotional support from others.	0	1	2	3	4
18. thought about how my problems were caused by other people.	0	1	2	3	4
19. cried, even if someone else was around.	0	1	2	3	4
20. looked for how I could grow and learn through my situation.	0	1	2	3	4
21. told myself that other people have problems like mine.	0	1	2	3	4
22. did things to keep busy or active (eg., exercised, went out).	0	1	2	3	4
23. held in my feelings.	0	1	2	3	4
24. daydreamed about how things may turn out.	0	1	2	3	4
25. tried to act as if I wasn't feeling bad.	0	1	2	3	4
26. took steps to overcome the problem.	0	1	2	3	4
27. turned to God or my faith.	0	1	2	3	4

TLEQ-revised

Events listed below are far more common than many people realize. Please read each question carefully and indicate the answers that best describe your experience. Please indicated whether you have had any of the following experiences:

a) a serious shock (e.g., a car accident, a natural disaster such as an earthquake).
____Yes ____No

In the most extreme instance of this happening to you, how much distress did you feel at the time:

No Distress	Slight Distress	Moderate Distress	Considerable Distress	Extreme Distress

b) An experience of personal discrimination due to your ethnicity, gender, religion, etc.
____Yes ____No

In the most extreme instance of this happening to you, how much distress did you feel at the time:

No Distress	Slight Distress	Moderate Distress	Considerable Distress	Extreme Distress

c) The sudden or unexpected loss of a loved one due to death.
____Yes ____No

In the most extreme instance of this happening to you, how much distress did you feel at the time:

No Distress	Slight Distress	Moderate Distress	Considerable Distress	Extreme Distress

d) Having to see something distressing happen to someone you cared about (e.g., suffering from a life-threatening illness, being injured). **____Yes No**

In the most extreme instance of this happening to you, how much distress did you feel at the time:

No Distress	Slight Distress	Moderate Distress	Considerable Distress	Extreme Distress

e) An experience of physical or sexual assault.**__Yes ____No**

In the most extreme instance of this happening to you, how much distress did you feel at the time:

No Distress	Slight Distress	Moderate Distress	Considerable Distress	Extreme Distress

f) If any of the events (listed above) happened to you, which one event CAUSES YOU THE MOST DISTRESS? **Which letter: _____**

Impact of Event Scale –Revised

In relation to question (f), above, please answer the following questions to the best of your ability based on the category you chose that caused you the most distress. During the past seven days, how much have you been distressed or bothered with these difficulties? In question f above.

	0	1	2	3	4
	Not at all	A little bit	Moderately	Quite a bit	Extremely
1. Any reminder brought back feelings about it.	0	1	2	3	4
2. I had trouble staying asleep.	0	1	2	3	4
3. Other things kept making me think about it.	0	1	2	3	4
4. I felt irritable and angry.	0	1	2	3	4
5. I avoided letting myself get upset when I thought about it or was reminded of it.	0	1	2	3	4
6. I thought about it when I didn't mean to.	0	1	2	3	4
7. I felt as if it hadn't happened or wasn't real.	0	1	2	3	4
8. I stayed away from reminders about it.	0	1	2	3	4
9. Pictures about it popped into my mind.	0	1	2	3	4
10. I was jumpy and easily startled.	0	1	2	3	4
11. I tried not to think about it.	0	1	2	3	4
12. I was aware that I still had a lot of feelings about it but I didn't deal with them.	0	1	2	3	4
13. My feelings about it were kind of numb.	0	1	2	3	4
14. I found myself acting or feeling like I was back at this time.	0	1	2	3	4
15. I had trouble falling asleep.	0	1	2	3	4
16. I had waves of strong feelings about it.	0	1	2	3	4
17. I tried to remove it from my memory.	0	1	2	3	4

18. I had trouble concentrating.	0	1	2	3	4
19. Reminders of it caused me to have physical reactions, such as sweating, trouble breathing, nausea, or a pounding heart	0	1	2	3	4
20. I had dreams about it.	0	1	2	3	4
21. I felt watchful and on guard.	0	1	2	3	4
22. I tried not to talk about it.	0	1	2	3	4

Modified 10-item Connor-Davidson Resilience Scale (CD-RISC)

Instructions: Considering your experiences over the last month, please rate how true the following statements are on a scale of 0 (rarely true) to 4 (true nearly all of the time). Please circle the appropriate number next to each question.

Not True at All	*Rarely True*	*Sometimes True*	*Often True*	*True Nearly all of the Time*
1	2	3	4	5

Over the past month…

1. I was able to adapt to change.	1	2	3	4	5
2. I could deal with whatever came my way.	1	2	3	4	5
3. I tried to see the humourous side of problems.	1	2	3	4	5
4. I thought that coping with stress could strengthen me.	1	2	3	4	5
5. I tended to bounce back after illness or hardship.	1	2	3	4	5
6. I could achieve goals despite obstacles being in my way.	1	2	3	4	5
7. I could stay focused under pressure.	1	2	3	4	5
8. I was not easily discouraged by failure.	1	2	3	4	5
9. I thought of myself as a strong person.	1	2	3	4	5
10. I could handle unpleasant feelings.	1	2	3	4	5