Understanding the Relationship of Time Perspective, Hope and Mental Health in Cancer Patients in Active Treatment and Early Survivorship

by

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Abstract

It is expected that two in five Canadians will develop cancer within their lifetimes (Canadian Cancer Society, 2023). With survival rates improving for many types of cancer, it is increasingly important to understand the different phases of survivorship and how those phases relate to mental health and aspects of well-being. Currently there is little research in psycho-oncology examining time perspective in treatment and survivorship, and limited research examining a balanced time perspective within a cancer population. A balanced time perspective is the ideal balance of the past, present, and future time perspective (Zimbardo & Boyd, 1999) That time perspective has been linked to higher levels of well-being and hope (McElheran, 2012). Despite hope theories articulating a temporal component to hope, the research exploring the relationship between hope and time perspective is scarce.

The current study: The purpose of the current study was to determine if a balanced time perspective exists in cancer patients in active treatment and early survivorship, to examine correlates of mental health in both phases of survivorship, and to ascertain if hope mediates the relationship between time perspective and mental health outcomes.

Methods: Using an online survey, 216 cancer patients and survivors (83 in active treatment and 130 in early survivorship) completed measures of demographics, time perspective, depression, anxiety, and two measures of hope. Correlation and ANOVAs were used to examine differences between measures and demographic variables. Hierarchical cluster analysis was used to assess time perspective clusters followed by ANOVA to assess group differences. Multiple regression analyses determined if hope mediated relationships between time perspective cluster and mental health outcomes, and if treatment status moderated this relationship.

Findings: Measures of hope were highly correlated with each other, and negatively associated with depression and anxiety. Depression had positive relationships with past-negative and negative-future, and negative relationships with past-positive and positive-future subscales. Anxiety was most highly related to past-negative and negative-future. Hope was most highly associated with past-positive and positive future, and negatively associated with past-negative, negative future, and present-fatalism. There were no differences found in depression and anxiety between those in active treatment and early survivorship. Those in early survivorship were less hopeful compared to those in active treatment. Three interpretable clusters emerged including balanced, disconnected future, and negative time perspectives. The balanced time perspective cluster was less anxious and depressed, and more hopeful than those in the negative time perspective cluster. Mediation was found in that the advantage of possessing a balanced time perspective cluster over the others predicting anxiety and depression diminished in the presence of hope measured by Herth Hope Index.

Implications: Findings are discussed in light of the research on time perspective therapy and how it may be applied to supporting cancer patients. The relationship between hope and time perspective cluster is discussed. The necessity of more clearly defined stages of survivorship for more precise evidence-based treatment research is explored. This will result in accessible, effective supports for patients moving through the cancer continuum.

Preface

This thesis is an original work by Jesse Jade Nicole McElheran. The research project, of which this dissertation is part, received research ethics approval from the Health Research Ethics Board of Alberta Cancer Committee:

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Dedication

This work is dedicated with deep love for my father, Ricki Alexander McElheran. Thank you for your constant and unwavering belief in me and my abilities. You gave me the loving foundation from which I was able to grow into who I am. The life I have made and what I have accomplished are a direct result of your love and will always be part of your legacy. I love you and hope I have made you proud.

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Introduction

“Getting a cancer diagnosis was like having a giant red stop sign held up. It was like I wasn’t allowed to have a future anymore.” ~ Marina, breast cancer patient

An often-unacknowledged aspect of therapy is how our clients shape and change us as we strive to support them. Few examples could be more poignant than the image of a bright red stop sign that comes to mind when I think of the breast cancer patient who said this to me in our first session. Her name was “Marina.” She was in her early 40s, and she could best be described as vibrant. Her positive attitude, generous nature, and love of life radiated from her. Marina was coming to see me to get support after receiving a second cancer diagnosis in three years. Her first diagnosis, breast cancer, was successfully treated with a double mastectomy followed by chemotherapy. To lower her risk of a future cancer recurrence, Marina opted to have her ovaries removed, a procedure she called “simple” until pathology results found cancer in her ovaries. Facing the stress and anxiety of a second round of chemotherapy, Marina accessed support services through the Department of Psychosocial and Spiritual Resources at the Cross Cancer Institute. This is where I had the great fortune of meeting her and becoming her therapist. While Marina navigated the physical aspects of treatment with grace and fortitude, she described being afraid of the future and refused to plan a long-awaited holiday with her family. Planning a holiday served as a reminder to Marina of her cancer diagnoses, changes to her body, and the uncertainty of her health. Unlike her husband and children, the prospect of a holiday brought her little excitement. Marina seemed stuck in the pain and discomfort of the present, unable to allow herself to trust that a future without cancer and treatment might be possible.

This client, and many others during my time working as a psychologist at the Cross Cancer Institute, made me question the link between time, hope, and mental health in cancer patients. When I started this project, I had been working in psychosocial oncology for three years, and the impact of time perspective and hope on those whom I worked with became an increasingly familiar conversation within my clinical practice, though patients never used that language to discuss their experiences. Instead, the narratives of time shifting after diagnosis, life being thrown into a state of pause while taking treatment, and uncertainty about how to re-enter life following treatment were woven into my daily experience as a therapist, as were discussions of the power of hope in helping individuals face all the obstacles inherent in a cancer diagnosis and treatments. As years passed and my experience grew, I collected more stories not just from those in treatment but from those who made it to early survivorship and who continued to face struggles (e.g., feeling abandoned in their difficulties as the healthcare team and other supports had moved on following the completion of treatment). Throughout my work experiences with these patients, I found myself continually pondering the same questions: Does an individual's time perspective change throughout their experience with cancer? If it exists, how might this temporal shift impact an individual's sense of hope or mental health? How can I help my patients examine their time perspective in hopes of helping them navigate the challenges they face?

Statement of the Problem

Two in five Canadians will develop cancer in their lifetimes (Canadian Cancer Society, 2023) with males having a 45% lifetime probability and females having a 44% lifetime probability of developing cancer. Perhaps more shocking than the current high rates of cancer is the estimate that new cancer diagnoses will rise by 40% from 2015 to 2030, primarily due to Canada's aging population (Canadian Cancer Society, 2023). While cancer rates continue to rise, so too do survival rates. The Canadian Cancer Society (2023) reports that the five-year relative survival ratio for people diagnosed with cancer is 64%. This ratio is up markedly from the 55% survival rate of the early 1990s, which means that a substantial number of Canadians are now living with and beyond cancer.

Well documented are the psychosocial impacts of cancer on an individual and their families. Individuals with cancer consistently report high levels of depression and anxiety (Mitchell et al. 2011), difficulties with fatigue, cognitive impairment, pain, and sexual function (Stanton, et al., 2015). Moreover, cancer patients may be under-diagnosed by healthcare professionals since mental health disorders such as anxiety and depression viewed as a normal part of the cancer experience (Vin-Raviv et al., 2015). It is also important to note that the fact that patients are living longer with cancer and increasingly, post-treatment, has, together with the above, given rise to the professional field in which I work: psychosocial oncology care. One of the chief goals of this field is to support patients in their cancer experience, including the mental health challenges that naturally emerge during and post-cancer treatment.

As noted above, individuals with cancer face numerous challenges; however, many find ways to remain hopeful. Hope has been described as envisioning a future you wish to be part of (Jevne, 2020); and, across research disciplines, hope is operationalized using some form of temporal component, with most literature linking hope to a future, goal-oriented outlook (Lazarus, 1999; Snyder, 2000). Generally speaking, hope research can be divided into two camps with hope being conceptualized as a uni-dimensional construct (i.e., hope as being equivalent to goals; Snyder et al., 1991) or as multidimensional construct (i.e., hope consisting of different dimensions such as cognitive, emotional, relational; Dufault & Martacchio, 1985). Yet both camps agree that hope and the hoping process are experienced in the present while being informed by the past and directed towards the future – suggesting temporal considerations within the hope process.

Returning to my client Marina, through our time together, she was able to face the fears she had about her future and the possibility of another cancer recurrence. After being able to fully express the stress and difficulty associated with her current situation, Marina began to tell stories of the hopes she had before she was diagnosed. She hoped to go on holiday with her family, sharing stories about their last family holiday and the joy she felt watching her children play on the beach. She hoped to return to work, describing how her work in social services had given meaning to her life, and how she deeply missed her co-workers and clients. She hoped to take a dance class, describing her desire to connect with and honour her body after all it had been through. After one particularly emotional session, Marina told me the relief she felt in coming to see me and how she always left feeling uplifted. It was in these sessions that I began to see how the past, present, and future were interwoven in Marina's experience of hope.

How to explain these temporal considerations? Zimbardo & Boyd (1999) suggested thinking about time perspectives as the nonconscious cognitive filters through which we understand and partition our experience into temporal zones of the past, present, and future. Time perspectives give order, structure, and meaning to our lived experience, and are believed to influence an individual's decision-making process and behaviours – exactly how Marina and my other patients explained their experiences. There are six different time perspectives: past positive, past negative, present hedonistic, present fatalistic, future positive, and future negative (Carelli et al., 2011; Zimbardo & Boyd, 1999). Each time perspective provides a unique lens from which to view the world, with some time perspectives being linked with more beneficial outcomes than others (Zimbardo & Boyd, 1999).

When I think about practical considerations and how to apply this slightly esoteric concept in clinical practice, instead of focusing on individual time perspectives, I suggest that it is more clinically relevant to take a more holistic stance and examine time profiles (i.e., distinct profiles of scoring on each time perspective) to explore ways in which the time perspectives are being used together (Boniwell & Zimbardo, 2004). The concept of a balanced time profile is believed to be the ideal balance of the six unique time perspectives (Boniwell & Zimbardo, 2004; Boyd & Zimbardo, 2005). A balanced time perspective is consistently associated with higher life satisfaction, positive affect, self-actualization, and lower levels of negative affect (Boniwell et al., 2010; Drake et al., 2008). In my work with Marina, the concepts of time perspective and hope were ever-present. Some sessions were present focused where we explored the challenges of chemotherapy and being off work. At other times we reflected on the past and about the many things which Marina was grateful for. As we worked together, Marina also began to envision a future; not one that was filled with cancer and treatment, but one filled with enjoyment and fun. Through our work, Marina seemed to shift from an unhealthy time profile to one more closely resembling a balanced time perspective. She was able to reflect warmly on the past, enjoy the present while honouring its struggle, and envision the future she wanted to live. I found myself curious about whether this balanced time perspective would be associated with different clinical outcomes of interest (e.g. depression, anxiety) and how hope might be related to the balanced time perspective for cancer patients.

Situating the Author and Project

The aim of this project is to provide a starting point for time perspective research in the field of psycho-oncology. More specifically, this project represents one of the first examinations of the balanced time perspective of cancer patients in active treatment and early survivorship. A balanced time perspective has been associated with higher level of well-being, satisfaction with life, positive affect, and decreased negative affect (Drake et al., 2008; McElheran, 2012). Examining this time profile and other time profiles in cancer patients will provide those working in psychosocial counselling centres better understandings of the challenges their patients with cancer may face without using a pathologizing mental health label. This project will detail mental health factors, as well as hope, in patients in both active cancer treatment and early cancer survivorship. Given the scare nature of research on time perspective and hope together, this research will work to address that gap.

I am uniquely situated to undertake this research for several reasons. First, I have spent several years immersed in the literature of both time perspective and hope. I was introduced to time perspective theory in 2007 when I attended a talk by Dr. Philip Zimbardo at the University of Regina where he spoke about time perspectives and how they can impact our lives. I fell in love with the language of time perspective, with how it describes the human experience in a non-pathologizing, accessible way – we all can reflect on the past, present, and future. From there I joined the *Time Perspective Network*, a collective of researchers across the globe who shared their projects and findings, and worked in collaboration to move the field of time perspective research forward. The vibrancy of this research network grew and in 2012 it hosted the first International Conference on Time Perspective in Coimbra, Portugal which I attended and where I presented findings from my master's thesis project. In 2016, I attended the 3rd international conference in Copenhagen, Denmark where I found support and encouragement for this project and its value in the research world of time perspective from my time perspective colleagues.

Second, I was introduced to the world of hope research and practice early in my graduate education when I took an educational psychology course titled "Hope and the Helping

Relationship" with Dr. Denise Larsen, an internationally recognized hope researcher. I was immediately hooked by both the complexity and power of hope, and I wanted to learn more about how to best utilize hope in clinical work. For several years, I participated in the Hope Discussion Group hosted by Hope Studies Central at the University of Alberta, where students and researchers shared their hope-focused project and broader discussion of hope literature. In addition, I acted as a research assistant for a project looking at the Common Factors Model of hope, and had the great fortune to be the research assistant on a multi-year pan-Canadian project focused on developing a multi-dimensional measure of hope to be used with counselling clients.

My education in hope did not end there. Once I began clinical work at the Cross Cancer Institute in Edmonton, Alberta, I found a place where hope and its complexity became real. I was trained and mentored in the field of psycho-oncology, and particularly in the power of hope and cancer care, by Dr. Ceinwen Cumming, who has been working in this field for almost 40 years. Her experience with hope and cancer has guided me through many years of counselling work with many patients. Working with cancer patients and their family members has given me the real-world and often embodied experience with something that initially felt theoretical – hope. Hope's presence or absence, how it manifests, or where it is threatened, has become part of my everyday counselling practice.

Cancer can happen to anyone. Certainly, factors like genetics, lifestyle, and environment are at play, but the reality is that anyone can have their life changed by cancer (Canadian Cancer Society, 2023). If it is not one's own experience of cancer, then it will be that of someone you love. The vast majority of the people I work with are "regular folks"- just like you or me - people who were going about their lives unaware that everything was about to change. It is in this "everyday" aspect of cancer that I found my inspiration for this project. If cancer could happen to someone I love, how would I want them to be treated going through this experience? What would I hope for their treatment? And how would I hope their clinicians conceptualize their experiences? This is the guiding value at the foundation of this project and my clinical practice.

I now provide an outline of the rest of this dissertation, which focuses on cancer, time perspective, and hope. First, the Literature Review chapter will explore current research on cancer and its impacts on individuals. This explanation is followed by a review of the literature on time perspective theory and time profiles, specifically looking at the role of a balanced time perspective. Next, I offer an overview of differing hope definitions, how hope develops, and how hope relates to time perspectives. This chapter concludes with the research questions and hypotheses. The Methods chapter includes a discussion of participants, measures, procedures, ethical considerations, and the data analysis strategy. The Results chapter reviews the findings and provide an examination of each of my hypotheses as it relates to participants' data. In the Discussion chapter, I explore key findings, accept and/or reject my hypothesis, and discuss the implications of my work for theory, research, and practice. Finally, I note the limitations of my work, suggest directions for future research, and provide my concluding thoughts.

CHAPTER 1: Literature Review

"Some see a hopeless end, while others see an endless hope." ~ Author Unknown

Cancer

Each hour, 22 people in Canada are diagnosed with cancer (Canadian Cancer Society, 2023). It is expected that two out of five Canadians will develop cancer in their lifetimes, representing 45% of the population. The Canadian Cancer Society anticipates 239,100 new cases of cancer will be diagnosed in 2023, with approximately 124,200 males being diagnosed and 114,900 females diagnosed with some form of cancer. Males are most likely to develop prostate cancer (estimated to be 20.8% of new cancer cases in males in 2023), followed by lung cancer (12.3%), and colorectal cancer (10.3%). Canadian females are most likely to develop breast cancer (estimated to be 25.6% of new cancer cases in females in 2023) followed by lung cancer (13.7%), and colorectal cancer (9.2%). It also estimates that new cancer diagnoses will increase by 40% from 2015-2030 (Canadian Cancer Society, 2023). This increase is primarily due to the aging baby boomer population, as most new cancer diagnoses occur in those 50-74 years of age. This increase represents an alarming number of Canadians directly impacted by cancer.

Historically, "a cancer diagnosis was viewed as the equivalent of death" (Holland, 2002, p. 207) and to this day one of the first questions asked by a newly diagnosed cancer patient is "Will I survive?" Hearteningly, the five-year relative survival ratio for individuals diagnosed with cancer from 2020-2023 was 64% (Canadian Cancer Society, 2023) compared to a 25% rate in the 1960s (Mullan, 1985). The Canadian Cancer Society (2023) reports that between 1992-1994 and 2015-2017, the five-year cancer survival index for all cancers increased by 8.6 percentage points from 55.5% to 64%, demonstrating how quickly cancer survival rates can change with better screening, diagnosis, and treatments options. Prevalence rates for 2018 indicate that just over 1.5 million Canadians were living with or beyond cancer (Canadian Cancer Society, 2022). Prevalence rates continue to rise with the increasing number of new cancer diagnoses and increased survival rates. Taken together, diagnosis, prevalence, and survivorship rates paint a clear picture of just how many Canadians are impacted by cancer.

Cancer Trajectory

Understanding where an individual is within the continuum of diagnosis to survivorship is important. The active treatment period includes when the person receives the initial cancer diagnosis and begins treatment to fight the disease (Jacobson & Andrykowski, 2015). Diagnosis can come from lab results or imaging procedures (e.g., CT, PET or Nuclear scan, x-ray, MRI, ultrasound), but is most often done through a biopsy. Following the confirmation of malignancy (i.e., the tumor is cancerous), the individual's care provider determines what treatment(s) will be offered. Treatment can include surgery, radiation, chemotherapy and/or immunotherapy. For many patients completing active treatment means an individual moves into the post-treatment or survivorship phase. This would be considered typical for those where treatment has a curative intent and life "after" cancer can be expected. Individuals can return to the active treatment phase at any time if they experience a recurrence of the disease or a different cancer diagnosis. However, we know not all cancers can be cured, some must be managed, and can be done so successfully for many years. We would consider these individuals to be "living with" and not beyond cancer. Individuals "living with" cancer may consider themselves permanently in the active treatment phases or may feel they have moved into survivorship based on if they get to take treatment breaks.

For the purposes of this project, I use the conceptualization of survivorship laid out by Stanton, Rowland, and Ganz (2015). Stanton and colleagues' survivorship model stresses that they are no sharp boundaries between phases of survivorship, with each person's experience being unique based on his/her individual type of cancer and treatment experience. In addition, these authors suggest that each phase of survivorship represents a distinct phase of cancer control, one with particular psychosocial and behavioural experiences that require study.

The first phase of survivorship is the re-entry period. The re-entry period (Mullan, 1985) follows the completion of active treatment and where "one makes the psychosocial transition from 'cancer patient' to person with a history of cancer'" (Stanton et al., 2015, p. 161). Re-entry can range from a couple weeks after completing treatment to more than one year. Cancer survivors may face many challenges in this phase as support available through active treatment may be withdrawn. For example, individuals in this phase may lose the support of their health care providers as appointments become less frequent. Moreover, they may experience a decline in social support, pressure to return to former roles both at home and in the workforce and continuing efforts to manage the physical and psychological impacts of diagnosis and treatment (Institute of Medicine, 2006; Stanton, 2012). Stanton and colleagues (2015) suggest the following psychosocial and physical sequelae of the re-entry phase: fear of cancer recurrence/anxiety, depressive symptoms, fatigue, cognitive impairment, pain, benefit finding, and return to work.

Following the re-entry phase, the early survivorship period can begin a couple months to approximately five years after diagnosis (Stanton et al., 2015). For many survivors in this phase, the acute physical challenges associated with treatment have mostly been resolved (e.g., recovered from surgery, radiation, chemotherapy or immunotherapy treatments). Fatigue can continue to pose a significant challenge, often continuing upwards of ten years post-treatment in between 25-33% of survivors (Bower, 2014). Stanton and colleagues (2015) suggest that most survivors in this phase have resolved the cancer experience psychologically but may continue to experience periods of marked fear most specifically around times of follow-up appointments. Similar to the re-entry period, the following sequelae are expected for those in early survivorship: fear of cancer recurrence/anxiety, depressive symptoms, fatigue, cognitive impairment, pain, and benefit finding.

An individual is considered a long-term survivor five years after diagnosis (Stanton et al., 2015). For many in long-term survivorship the challenges associated with a cancer diagnosis and treatment have resolved with many reporting a return to normative values on measures of health-related quality of life (Bloom et al., 2007). However, some may continue to experience long-term physical and psychological effects. Long-term treatment toxicities and late physical effects of cancer treatment (e.g., cardiac problems or second cancers) may emerge (Ellingson, 2017), as well as some long-term psychological effects which may be related to long-term physical effects (Weaver et al., 2012).

Psychosocial Impacts of Cancer

The psychosocial impacts of a cancer diagnosis and treatment are vast. In a review of the history of psycho-oncology, Holland (2002) reports that depression, anxiety, and delirium (often associated with pain) were the first psychosocial sequelae of cancer to be examined. Later cross-disciplinary research from psychiatry, behavioural medicine, social work, health psychology, nursing, and pastoral care expanded the scope of psychosocial research in oncology to include research on fatigue, cognitive impairment, pain management, caregiver/family member issues, and spiritual or existential concerns (Lang-Rollin & Götz Berberich, 2018). Indeed, the breadth and depth of research in this area is significant. As such, this review will be selective with a focus on factors directly related to this project, specifically depression, anxiety, and cancer-related post-traumatic stress disorder.

Depression

Mitchell and colleagues (2011) suggest that approximately 16.3% of cancer patients reach Diagnostic and Statistical Manual of Mental Disorders (DSM) criteria for major depressive disorder. Those with cancer are almost 2.4 times more likely to meet criteria for major depression when compared to the national American prevalence rate of 6.7%. Mitchell and colleagues (2011) further report prevalence rates in individual studies ranging from 1.0% to 77.5% when using clinical interviews to diagnose depression. Other systematic reviews examining prevalence rates of depression in cancer patients report similar findings. Depending on subgroups, rates of depression ranged from 5% to 16% in outpatients, 4% to 14% in inpatients, 4% to 11% in mixed outpatient and inpatient samples, and 7% to 49% in palliative care (Walker et al. 2013). A recent review of 210 studies found the clinical rate of depression for cancer patients ranged from 7.9% to 32.4% with a mean of 21.2% for different types of cancer (Riedl & Schuessler, 2022). This would mean almost one in every five patients would meet criteria for major depression during the first year following diagnosis.

Jacobson and Andrykowski (2015) suggest that the variability in this range of depression is due in part to the different cancer diagnoses and stages of cancer being studied (i.e., clinical factors) and differing research methodologies. Similarly, Riedl and Schuessler (2022) comment on the difficulty with finding an exact figure owing to definitional and methodology differences. Regardless of the exact figure, it is clear that a significant number of individuals with cancer experience depressive symptomology which can have a profound impact on the individual and their family. Moreover, cancer patients may be under-diagnosed with mental health disorders such as depression and anxiety, with healthcare professionals seeing these difficulties as a normal part of the cancer experience (Vin-Raviv et al., 2015)

Mitchell and colleagues (2011) found that the relative risk for depression was higher within the first two years after diagnosis compared with two to 10 years after diagnosis or more than 10 years. Riedl and Scherssler (2022) also report that the first year following diagnosis is when rates of depression may range from 15% to 20% in patients of various tumor groups. This time of increased depression corresponds with the active treatment phase and perhaps early stages of the re-entry phase when cancer patients are experiencing the most significant upheaval in life and face the most physical challenges. Furthermore, when compared to other health issues (e.g., chronic lung disease, heart disease, arthritis, diabetes), individuals with cancer within two years of diagnosis had the highest risk of significant depressive symptoms (Stanton et al., 2006). Similarly, Krebber and colleagues (2014) found that depression is highest within one year of diagnosis (during the active treatment phase) when compared those in survivorship.

Anxiety

In a meta-analysis, Mitchell and colleagues (2011) found a clinically significant prevalence rate of 10.3% for anxiety in cancer patients. Previous research by van't Spijker et al. (1997) estimates anxiety prevalence rates ranging from 0.9% to 49%. More current research from Iran examining mixed tumor groups found anxiety rates of 40.9% (Darvishi et al., 2022) Looking at tumor-group specific research, breast patients had anxiety prevalence rates of 41.9% (Hashemi et al., 2020), gastric patients 18.7% (Zamani & Alizadeh-Tabari, 2023), lymphoma patients 19% (Vargas-Roman et al., 2020), and prostate 15.09% (Watts et al., 2014) As with depression, the range in anxiety prevalence rates is likely a result of different clinical characteristics (e.g., types of cancer and staging) and research methodologies. Again, these numbers reflect a significant number of individuals with cancer experiencing fear, worry, and distressing physiological symptoms of anxiety. Finally, it should be re-emphasized that in some cases this may be an underestimation in that some healthcare professionals see anxiety and depression as a normal part of a cancer experience (Vin-Raviv, et al., 2015).

Jacobson and Andrykowski (2015) posit that anxiety is an expected response to the threat posed by a cancer diagnosis. Researchers have found heightened levels of anxiety during diagnosis (Fallowfield et al., 1994; Watts et al., 2014), throughout treatment (Stark & House, 2000; Watt et al., 2014), and even upon completion of treatment (Stanton et al., 2005; Watts, et al., 2014). Anxiety during diagnosis and active treatment is intuitively understandable. During this phase, an individual's world is disrupted in innumerable ways; fear and uncertainty can be high as they learn to navigate the healthcare system and face the day-to-day challenges of treatment. Koch et al. (2013) suggest that fear of recurrence is the most common of sequelae for individuals with cancer. These authors found that most long-term cancer survivors had modest to moderate levels of fear of recurrence. Heightened fears of cancer recurrence are associated with poorer quality of life in cancer survivors (Kim et al., 2012; Simonelli, Siegel & Duffy, 2017).

Cancer-Related Post-Traumatic Stress Disorder

Some cancer patients and survivors experience symptoms that fit DSM criteria for post-traumatic stress disorder (PTSD). Kangas et al. (2002) found that cancer-related PTSD occurred in less than 10% of cancer survivors. These authors found that symptoms of subthreshold PTSD (i.e., intrusive thoughts, re-experiencing cancer related events, and avoiding reminders of cancer) can be more common in the first two years following diagnosis. Other research has found much higher rates of cancer-related PTSD with some reporting prevalence rates of 55% (Pranjic, Bajraktarevic & Ramic, 2016). A large cohort study conducted over the course of four years found when combining those with full and subsyndromal PSTD, there was a 21.7% prevalence rate, and that while individual meeting criteria for PSTD decreased over time that a full one-third of patients who were diagnosed initially had persistent or worsening symptoms four years later (Chan et al., 2018). Similarly, Oliveri and colleagues (2019) found approximately 14% rate of PTSD after diagnosis in early diagnosis breast cancer patients (with 76% of the sample demonstrating some degree of subsyndromal symptoms) and that rates of PSTD only began to decrease two years after discharge. Again, this represents a significant number of patients in high levels of distress who require support so as to not have on-going symptoms of PSTD in survivorship.

Cancer poses a serious health risk to many Canadians. With two in five Canadians expected to develop cancer within their lifetimes and one in four Canadians expect to die from cancer (Canadian Cancer Society, 2023) the need to study the psychosocial impacts of cancer is great. Moreover, the importance of fully understanding the differences (and similarities) in psychosocial needs through active treatment and into survivorship cannot be overstated (Stanton et al., 2015). With increasing cancer diagnoses and higher survival rates, more Canadians will be facing the challenges of a cancer diagnosis.

Psycho-Oncology

The rise in cancer rates, the increase in successful treatments, and the increase in cancer survivorship together with the depth and breadth of understanding of the physical and psychosocial problems of cancer patients has given rise to a relatively new area of clinical practise: psycho-oncology. The history of psycho-oncology is closely tied to historical deconstruction of the fear and stigma surrounding both cancer and mental health conditions which has been unfolding since the 1950s (Holland, 2002). From the post-World War II years to the social upheaval throughout the 1960s-1970s, there was a growing call for the rights and informed consent of many throughout society including patients in the healthcare system. Prior to this change in practice, many physicians and family members would not tell the patient about their cancer diagnosis for fear of how it would impact the person's physical and mental health. Despite the field of medicine's historical reluctance to openly discussion cancer and is sequeala, cancer patients have been offering structured support to each other since the 1950's through support groups and visiting programs. The benefits of these programs, along with voices from within medicine (e.g., psychiatrist Elizabeth Kubler-Ross advocating for open conversations about death and grief with cancer patients) challenging the dominant narrative of silence around diagnosis, the context of oncology care began to shift and open towards understanding the full complexity of a cancer diagnosis and its sequela.

Since the 1960's collaborative, integrative research with practitioners from medicine, nursing, psychology, social work, spiritual care and others speciality areas has become standard practice (Lang-Rollin & Berberich, 2018). The goals of psycho-oncology are to treat the myriad of symptoms a patient may face. This can include physical symptoms (e.g., pain, fatigue, sleep disturbance), emotional problems (e.g., depression, anxiety, fear of death, fear or recurrence), social and practical problems (e.g., return to work, financial problems, housing, etc.), spiritual concerns (e.g., impacts on faith, finding meaning, facing end-of-life), lifestyle management (e.g., nutrition, exercise, stress management), support through treatment (e.g., coping with side effects, supporting treatment adherence), sexual health changes (e.g, decreased libido, communication difficulties) and/or support for family members. The goal of psycho-oncology is to take a holistic approach to treating the whole person, not just the disease, with a focus on increasing coping, adjustment, and quality of life for the patient or family member.

Psycho-oncology research has flourished in the last two decades detailing the vast impacts of cancer on both the patient and those who support them. Now in its fourth edition, the definitive resource for those in this field, the *Psycho-Oncology* textbook (Breitbart et al. 2021), provides a comprehensive overview of research in this field with topics ranging from cancer risk and prevention, to screening and assessment tools, managing physical symptoms, psychiatric disorders, tumor-specific information, cancer across the lifespan (from pediatric to geriatric populations), evidence-based interventions (for treatment, survivorship, or end-of-life), cultural components to care, caregivers issues, and healthcare policy, among other research areas. It truly is excellent resources that showcases the breadth and depth of literature and expertise in this complex field. One area that has continued to receive less attention and research is the temporal impacts of a cancer diagnosis and how this may relate to many common cancer sequelae.

Time Perspective Theory

Kurt Lewin (1951) is the earliest author to discuss the importance of time perspective and defined it as "the totality of an individual's views of his psychological future and psychological past existing at a given time" (p.75). For several decades following this definition, time perspective research had no clear or consistent definition or measurement and typically focused solely on a future time orientation (see Mohammed & Marhefka, 2020 and Stolarski, Fieulaine & Zimbardo, 2018 for excellent reviews on this history). However, in recent years the dominant time perspective theory comes from Zimbardo and Body's (1999) seminal article *Putting Time in Perspective: A valid, reliable Individual Differences Metric* which will be discussed in detail below.

Time Perspective (TP) can be understood as a non-conscious process by which we divide our lived experiences into a temporal category of past, present, or future (Zimbardo & Boyd, 1999). These categories or time frames provide structure, order, and meaning to our personal and social experiences. That is, our ability to partition events into the past, present, and future allow us to understand our experiences across time. TP can reflect both cyclical, repetitive temporal patterns (e.g., the seasons changing or birthday celebrations), or they can reflect singular life events (e.g., getting married or world events like the terrorist attacks on 9/11). Moreover, TP is used in encoding, storing, and recalling experienced events. The remembrance of an experienced event may differ based on an individual's time perspective. For example, a young man travelling in Australia who feels overwhelmed by the heat and perpetually on the look-out for spiders may initially warn others from travelling there, but as time goes by his nostalgic past TP may shift his travel stories to be more favourable and he may remember the experience positively years later. In the same vein, TP also influence how we form future expectations, goals, and imagined scenarios related to future events. Continuing with the young man who travelled to Australia, he may later consider taking a job in Texas as he remembers his trip to Australia and feels he may be able to handle the summers in Texas. How he envisions his future is impacted by how he remembers his past.

Zimbardo and Boyd (1999) suggest that TP has a "dynamic influence on many important judgements, decisions, and actions" (p. 1272), with each temporal frame providing a different structure or lens from which decisions can be made and behaviours enacted. That is, the abstract cognitive process of reconstructing the past or envisioning the future continually plays a role in shaping the choices and behaviours of the present. Zimbardo and Boyd provide the following examples of individuals with past, present, and future dominant orientations, and how the different orientations impact judgements and decision making. They suggest the individuals with a dominant past orientation may base decisions entirely on previous experience and analysis of how similar (or dissimilar) an event is compared to prior experience. For these past-oriented individuals, novel situations may result in increased levels of anxiety and even in excessively cautious or avoidant behaviour as they do not feel comfortable with new events, situations, or people. Future-oriented individuals may also restrict their behaviour, not out of fear or anxiety as past-oriented individuals, but in effort to achieve the goals or desired future-state. This may include forgoing life’s pleasures (e.g., time with friends, enjoyable hobbies) to focus entirely on what the future may bring and working towards that goal. Unlike the other two orientations, present-oriented individuals may not weigh the cost and benefits of a situation. Instead, they may focus on the situational factors and immediate stimuli, including their biological state, to guide their decision making. These individuals tend to make future choices based on how similar situations in the past may have turned out.

Zimbardo and Boyd (1999) believe that TP can be situationally determined (e.g., being on holiday or facing a crisis tends to make individuals more present-oriented) but generally can be understood as a relatively stable influence for individuals across a variety of situations. As such, they argue that it is possible to develop an overreliance or bias toward being past, present, or future oriented. An example of this bias would be the conscientious, future-oriented high school student who forgoes activities with friends and misses family events to dedicate herself to achieving the top marks which will allow her to apply to the top-ranked university she wishes to attend. Her overreliance on her future-oriented TP may results in strained relationships with friends and family or burn-out with academic activities. Zimbardo and Boyd suggest that overemphasis on one time zone is determined by many factors including individual traits and learned factors from one’s culture, education, religion, social class, and family. The authors suggest that TP are *multiply determined* with each of these factors contributing in different ways and with varying degrees of importance. The aforementioned high school student may have learned her future-orientation from her father who worked long hours to provide for his family and stressed that hard work comes before relaxation or play (i.e., family factors). Additionally, her future-oriented TP may be further reinforced by her cultural group that holds those with higher education in great esteem and provides her with praise for her academic achievements (i.e., cultural and social factors).

Zimbardo and Boyd (1999) initially proposed five distinct time perspectives: 1) past-positive, 2) past-negative, 3) present-hedonistic, 4) present-fatalistic, and 5) future. More recent research advocates for the inclusion of a future-negative TP to address the current scale only having a positively-loaded future-orientation (Carelli et al., 2014). All six time perspectives will be described briefly.

Past-Positive

The past-positive time perspective reflects pleasurable and warm views of one's past that includes aspects of nostalgia or a remembrance of the *good old days* (Zimbardo & Boyd, 1999). This TP has a strong emphasis on family and friends with plenty of fond memories of events, places, and people. Holman and Zimbardo (2009) found that past-positive individuals had larger social networks and closer ties with their families. Individuals who score high in a past-positive TP tend to have lower scores on depression and anxiety, and have high levels of self-esteem (Zimbardo & Boyd, 1999). Zimbardo and Boyd (2008) describe past-positive individuals as being more out-going, creative, and conscientious.

Past-Negative

A past-negative time perspective reflects a pessimistic or unpleasant view of the past that is marked by a focus on regrets and past harms (Zimbardo & Boyd, 1999). Zimbardo and Boyd found that individuals high on a past-negative TP were more aggressive, had higher levels of depression and anxiety, had poor impulse control, and demonstrated lower levels of self-esteem. Moreover, these individuals often engaged in anti-social behaviours such as lying and stealing. Holman and Zimbardo (2009) found that past-negative individuals had smaller social networks, were less involved with family, and reported a high degree of conflict within their social networks.

Present-Hedonistic

The present-hedonistic time perspective is characterized by a risk-taking, pleasure-seeking attitude (Zimbardo & Boyd, 2008). Individuals high in this time perspective focus on today's pleasures at the expense of planning or preparing for future consequences. Zimbardo and Boyd (1999) found that individuals high on the present-hedonistic time perspective had high levels of depression and aggression, and were less emotionally stable. Moreover, these individuals tend to have poor impulse control, and engage in more gambling, novelty, and sensation seeking behaviours. Individuals high on present-hedonism reported higher levels of happiness, were more energetic, creative, and exercised more often. These individuals have larger social networks with many supportive friendships (Holman & Zimbardo, 2009).

Present-Fatalistic

Those high in a present-fatalistic time perspective are characterized by a hopeless, helpless attitude towards life and future (Zimbardo & Boyd, 2008). These individuals believe that their futures are predetermined and that their actions play little to no role in shaping their futures. Unlike the present-hedonists who find fun and enjoyment in the present, present-fatalists live life with a resignation that outside forces or fate controls their lives. Zimbardo and Boyd (1999) found that individuals high in present-fatalism had higher scores on aggression, depression, and anxiety. They also found individuals high in present-fatalism to have poor impulse control, and to engage in anti-social behaviours like lying and stealing more than the other time perspectives. These individuals were also found to have higher social conflict with acquaintances (Holman & Zimbardo, 2009).

Positive-Future

Individuals high in a future time perspective are concerned with working for future goals (Zimbardo & Boyd, 2008). They are able to delay gratification and focus on future rewards, often at the expense of present enjoyment. Zimbardo and Boyd (1999) found that future-oriented individuals were less aggressive and had lower levels of depression and anxiety when compared to the other time perspectives. Zimbardo and Boyd also found individuals high in the future time perspective to be more energetic with higher levels of self-esteem. Behaviourally, these individuals tend to study more, have a balanced cheque book, and consume less alcohol and drugs. Holman and Zimbardo (2009) found that those with a future time perspective had more supportive partners or spouses and had stronger relationships with parental figures and their extended families.

Carelli et al. (2014) discuss how the majority of research on future temporal orientations focuses on goal development, motivation, and planning. Having a future time perspective is viewed as a positive trait based on striving and achievement. These authors argue that future thought can also have a negative valence focused on uncertainty and preoccupation. Moreover, they see anxiety disorders and PTSD being grounded in fear, worry, or apprehension about the future. They suggest that the future time perspective, like the past and present orientations, can have either positive or negative valence.

Negative-Future

Zimbardo and Boyd (1999) recognized a possible gap in the original Zimbardo Time Perspective Inventory (ZTPI) stating: “the ZTPI has but one future TP. Perhaps further factor analyses of our scale with a variety of non-college populations will again show a more complex set of future subfactors” (p. 1284). Critiques of the ZTPI only having a positive, goal-directed future subscale followed (Worrell & Mello, 2007).

Carelli et al. (2011) addressed this critique by developing a negative-future subscale and validating this measure on a Swedish sample. Two items from the original future subscale plus six new items designed to measure anxiety and worry associated with the future were tested on 491 participants with the 6-factor model being validated through factor analysis. Designed to measure both negative anticipation as well as a negative attitude towards the future, Carelli and colleagues found that future-negative individuals were impulsive and tend to avoid decision-making, preferring to allow others to make decisions on their behalf. Future-negative individuals also scored higher on a measure of anxiety (Carelli & Wiberg, 2012). Carelli and Wiberg also found higher rates of future-negative individuals in a sample of those with ADHD compared to a control group. Further research on the future-negative time perspective needs to clarify the traits, characteristic, and behaviours of those high in a future-negative time perspective.

Individual Time Perspective or Holistic Time Profile?

Zimbardo and Boyd (2008) conceptualize time perspective as multidimensional and argue that all five time perspectives (six if the new negative-future TP is included) are distinct constructs that highlight different aspects of one’s relationship with time. Time perspective theory posits that scores on one temporal dimension are unrelated to scores on other dimensions (i.e., a high score on one dimension does not necessarily indicate a high or low score on other dimensions), and that it is theoretically possible to score high on all six time perspectives (Boyd & Zimbardo, 2005; Zimbardo & Boyd, 2008). As such, the Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999) provides an individual score for each dimension resulting in time perspective research being focused on the traits, characteristics, or predictive value of an individual time perspective (Adams, 2009; Boyd & Zimbardo, 2005; Keough et al. 1999). Moreover, the body of time perspective research has historically been and continues to be concentrated primarily on the role of the future time perspective (Aspinwall, 2006; Kooij & Van De Voorde, 2011; Mohammed & Marhefka, 2020).

Lost within the individualized time perspective research is an understanding of the holistic relationships among and between the six differing time perspectives. Each time perspective offers a unique way of understanding the world. The interrelationship between the past, present, and future is a dynamic process continually shifting based on a multitude of contextual and individual factors (as is evidenced in qualitative research by Breaden (1997), and by Rasmusson and Elverdam (2007)). The question is: can we really understand the impact of one temporal frame without understanding it within the context of its relationship with the other temporal frames? Stolarski and colleagues (2012; 2014) suggest that we cannot. These researchers found interaction and suppression effects with the future and present-hedonistic time perspectives when measuring well-being (Stolaski et al., 2012) and mood (Stolarski et al., 2014). These results indicate the importance of examining an individual's entire time profile rather than individual time perspectives. Zimbardo and Boyd (1999) initially proposed the idea of time profiles and the importance of understanding the relationship between time perspectives and continued to clarify time profiles with further work (Boyd & Zimbardo, 2005).

Balanced Time Perspective

Zimbardo and Boyd (1999) define a balanced time perspective as “an idealized mental framework that allows individuals to flexibly switch temporal frames among past, future, and present depending on situational demands, resource assessments, or personal and social appraisals” (p. 1272). A balanced time perspective profile consists of higher scores on the future, present-hedonistic, and past-positive scales, combined with lower scores on present-fatalistic and past-negative scales (see Figure 1; Boniwell & Zimbardo, 2004; Zimbardo & Boyd, 2008). The balanced time perspective is believed to be the ideal time profile in that it draws from the positive aspects of the positive future, the present-hedonistic and the past-positive while limiting the deleterious effects of the present-fatalistic, future negative, and the past-negative time perspectives (Stolarski, Fieulaine, & Zimbardo, 2018). Specifically, high positive future scores allow the individual to prepare for the future by having goals and the plans necessary to achieving these goals. High present-hedonistic scores indicate that the individual is able to find enjoyment and pleasure in day-to-day life. High past-positive scores are indicative of an individual who feels grounded in traditions and family, as well as having a deep understanding of past success and one’s ability to overcome adversity.

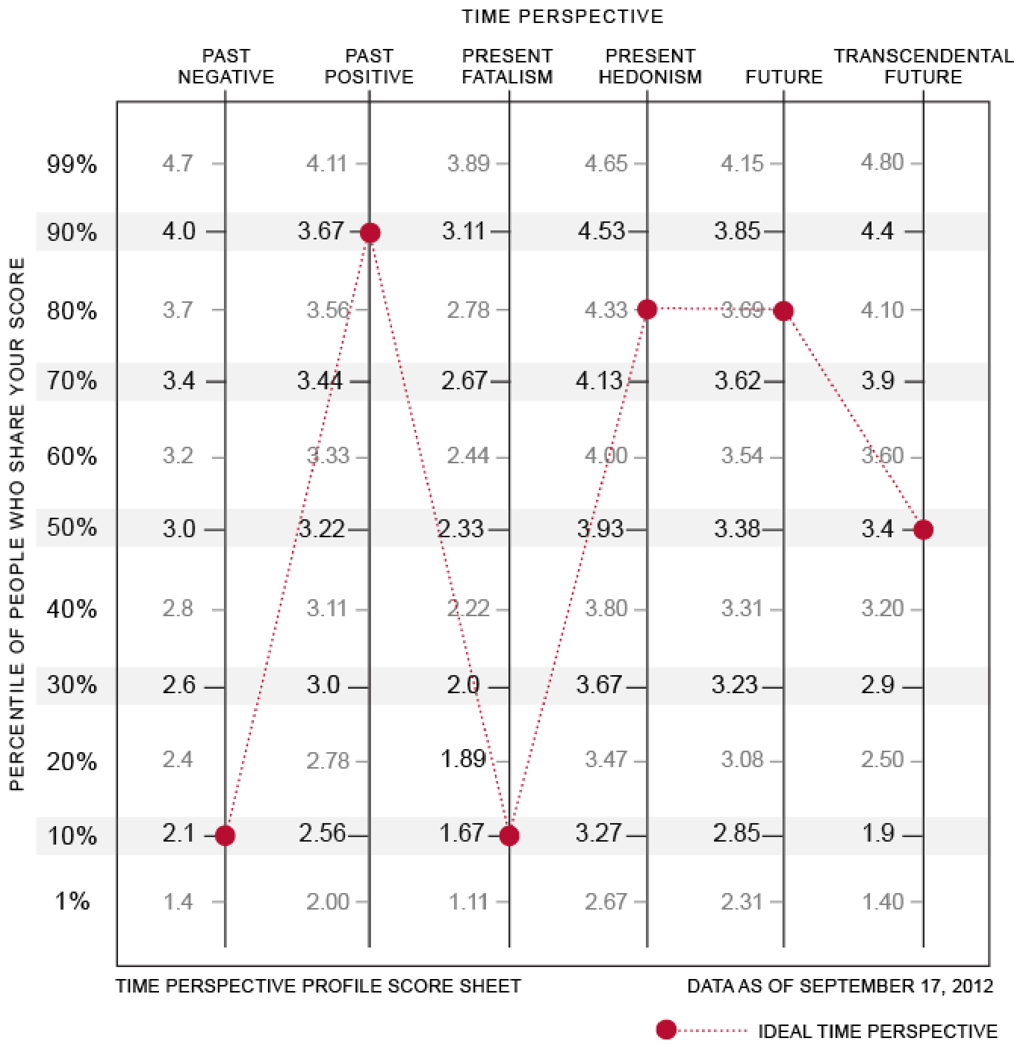

Figure 1. Theorized scores for a balanced time perspective. Image retrieved from: http://www.thetimeparadox.com/surveys/

Operationalizing a Balanced Time Perspective

As with many theoretical constructs, the process of operationalizing and measuring a balanced time perspective has been approached in several different ways with various methodologies. For an excellent review of research on the evolution of measurement for a balanced time perspective using both the ZTPI and other measures, see Stolarski et al. (2015).

The first attempt at measuring a balanced time perspective came from Drake and colleagues (2008). Using a cut-off point approach, participants were divided into three groups based on percentile ranking of their time perspective scores with those below the 33rd percentile being considered low, those between the 34-66 percentiles being considered moderate, and those above 66th percentile being considered high. Using Zimbardo and Boyd's (2008) theoretical balanced time perspective construct, Drake and colleagues operationalized a balanced time perspective as those who had scores in the moderate to high range on future, present-hedonism, and past-positive, as well as low scores on the present-fatalistic and past-negative. Drake et al. (2008) found that individuals falling within the balanced time perspective profile scored higher on measures of happiness and mindfulness.

While Drake and colleagues (2008) took an important first step towards operationalizing and measuring a balanced time perspective, their methodology has been critiqued (Boniwell et al., 2010). First, the cut-off point approach yields sample-specific results as to who would be considered to have a balanced time perspective. Using this method an individual could be labelled balanced time perspective in one sample, but not in another sample that has a higher percentage of individuals with balanced time perspective. Second, the cut-off points were determined arbitrarily with later results by Boniwell and colleagues (2010) using a 50th percentile cut-off point (rather than 33rd percentile) methodology resulting in similar effect sizes on measures of well-being. The randomly chosen cut-offs are clearly not the best option for operationalizing a complex construct like a balanced time perspective.

To address these methodological flaws, Boniwell and colleagues (2010) used a cluster analysis approach to measure a balanced time perspective. Using a person-oriented clustering analysis technique, subgroups of individuals with similar score patterns were identified. Groups were analyzed for theoretical and practical relevance with most samples resulting in four to six separate clusters. In both British and Russian samples, a balanced time perspective cluster emerged (representing between 10-23% of the sample). Individuals falling within the balanced time perspective group scored higher on measures of well-being when compared to individuals in the other groups. Zhang et al. (2013) argue that similar to the cut-off point approach, cluster analysis yields sample dependent categories making comparison across studies difficult. Moreover, cluster analysis can result in participants being classified as balanced even if their scores do not fully align with Zimbardo and Boyd's (2008) theoretical conceptualization. That is, individuals included in the balanced time perspective cluster may not have the score pattern suggested by Zimbardo and Boyd as being reflective of a balanced time perspective.

Taking a different approach, Stolarski et al. (2011) developed an analysis technique using what they call the Deviation from Balanced Time Perspective (DBTP) as a way of measuring the difference between an individual's time profile and the optimal profile suggested by Zimbardo and Boyd (2008). The DBTP method measures how close (or far) an individual is from the suggested *optimal* balanced time perspective scores of 4.60 for past-positive, 3.90 for present-hedonism, 4.00 for future, 1.95 for past-negative, and 1.50 for present-fatalistic. Using the square root of the sum the squares, the DBTP score indicates how ill-balanced an individual time perspective is with DBTP values closer to zero indicating a more balanced time perspective.

Using this technique allows the researcher to achieve a normal distribution and avoid dichotomizing individuals in balanced or non-balanced time perspective groups. As a linear variable a DBTP score does not indicate if an individual is not balanced or not; rather it provides a score with how far an individual is from the most adaptive time profile.

Zhang et al. (2013) conducted four large studies comparing differing balanced time perspective methodologies (i.e., cut-off point, cluster analysis, and DBTP) to determine which technique was most predictive of subjective well-being. Across all four samples they found that those with a high past positive, present-hedonistic, future time perspective had the highest levels of subjective well-being (i.e., life satisfaction, happiness, positive and negative affect). Using both the cut-off point approach and cluster analysis, individuals categorized as having a balanced time perspective had higher life satisfaction, happiness, positive affect, and lower negative affect when compared to non-balanced time perspective individuals. This trend also held using the DBTP technique. Moreover, the strength of the correlation using a comparison of correlated correlation coefficients (see Meng et al. 1992, as cited in Zhang et al. 2013) was strongest between the DBTP method and measures of well-being. A recent systematic review of the DBTP found strong support for this method and that a BTP appears to be an important mechanism in adaptation with pronounced effects on individual's well-being (Stolarski et al., 2020).

Time Perspective and Cancer

The relationship between time perspective and cancer has been documented in the nursing literature for many years. Fitzpatrick et al. (1980) noted the importance of time perspective for individuals with cancer: "Individual's perception of the temporal components of the changed situation [cancer diagnosis] would seem to be an important factor in the manner in which they cope with the alterations" (p. 191). Despite the role of time perspective in a cancer experience being acknowledged early, there is a small number of studies that explore these ideas directly. Moreover, there is substantial variation in how these studies conceptualize and report time measures (e.g., measuring speed of time, time coherence, time dominance, temporal extension).

Across studies researchers have documented differences in time perspective between individuals with cancer compared to those without. Fitzpatrick et al. (1980) found individuals with cancer had a shorter future time perspective when compared to those without cancer. That is, the length of time the cancer patients predicted into the future was shorter (average 4.36 years) than that of a healthy population (average 7.37 years). Fitzpatrick and colleagues also found that individuals with cancer endorsed more past-positive and less past-negative statements than the control group indicating that they viewed time before the cancer more positively than those who did not have cancer. Measuring general temporal endorsements, van Laarhoven et al. (2011) found that advanced cancer patients placed a greater emphasis on the present, while individuals without evidence of cancer placed a greater emphasis on the future orientation. Interestingly, these researchers found somewhat differing results regarding a past orientation than Fitzpatrick and colleagues (1980) with their results indicating that a past orientation was indicative of higher rates of distress.

Individuals with inoperable lung cancer described the present becoming an embodied experience as they reconciled the reality of their illness and what the future would hold (i.e., health decline and death; Lovgren et al., 2010). These individuals also discussed the need to reprioritize aspects of their life to find enjoyment in the present. The present became their sole time perspective with little consideration given to the past or future. Similarly, van Laarhoven and colleagues (2011) found that advanced cancer patients placed a greater emphasis on the present over the past or future.

Using a hermeneutic phenomenology methodology, Breaden (1997) found that cancer disrupts the normal continuity of time, with clock time no longer being reflective or representative of individual's lived experience. Participants discussed how after receiving a cancer diagnosis, clock time continued to advance but *self-time* (i.e., time as experienced by the individual) seemed to stand still. Participants wondered how to plan for a future when there may be no future and expressed a sense of disorientation in time with the future being temporarily unavailable. Future planning re-emerged but there was often a shift in focus towards the importance of cyclical time (e.g., how many seasons had passed since diagnosis and treatment) with less emphasis on how much clock time remained. Some participants also discussed how cancer was viewed as a new beginning with a process of reclaiming the future in ways that focused more on aspects deemed important to the survivor such as being connected with friends, family, or other communities.

Rasmusson and Elverdam (2007) conducted a qualitative study to explore how longer-term cancer survivors experience, discuss, and manage their time. Participants reported that a cancer diagnosis disrupts the experience of time with time often becoming a primary focus in life after a diagnosis. Participants discussed how time is divided into life "before and after" cancer with time often being marked with dates related to their cancer diagnosis (e.g., time since diagnosis, time spent in remission, time elapsed since treatment). Moreover, due to the uncertainty of the future, participants lived more fully in the present. The present was viewed as the connection between the past (cancer) and the future, with some participants unable to allow themselves to believe in what the future may hold. As participants distanced from treatment, they were better able to integrate the future into their lives.

Through these narratives, one can see patients describing shifts in time perspective. Many describe a shortened future time perspective after diagnosis and through treatment that begins to re-emerge as the patient distances themselves from their cancer diagnosis. The present plays an increased role with many patients re-evaluating their life and prioritizing the use of time differently (i.e., present-hedonism). Patients also become focused on the day-to-day aspects of treatment and being involved in the healthcare system (i.e., present-fatalistic). The past becomes marked by the division between the time before cancer and time after cancer holding the possibility for both positive and negative qualities of the past to emerge.

The future time perspective is the most relevant time perspective for understanding both health-protective (e.g., healthy diet, exercise, health screening) and health-risk (e.g., smoking, alcohol use, sedentary lifestyle) behaviours (Hall et al., 2015). Indeed, the body of time perspective research on health behaviours indicates that a future time perspective is associated with less alcohol, drug, and tobacco use (Keough et al., 1999), more attempts at smoking cessation (Adams, 2009), and less problematic drinking in adolescents (McKay et al., 2014). A future time perspective is also associated with greater seatbelt use, healthy sex behaviours (e.g., condom use), and exercise (Henson et al., 2006).

Research exploring the present and past time perspective in regards to health behaviours is more limited; less available still is research that details the relationship between all six time perspectives and health. Research regarding a present orientation indicates more maladaptive health strategies. The present orientation is associated with more alcohol, drug, and tobacco use (Keough et al., 1999), more problematic drinking in adolescents (McKay et al., 2014), risky driving (Zimbardo et al., 1997) and less preventive health behaviours (e.g., exercise, seatbelt use; Henson et al., 2006).

There is limited research that uses quantitative measures of cancer patients' time perspective and that explores how these correlate with health behaviours or psychosocial well-being and coping. Whitake et al. (2011) found a relationship between one's future orientation and socio-economic status. Specifically, those with a low socio-economic status were more engaged in cancer screening if they had a stronger future orientation. Guarino et al. (1999, as cited in Boyd & Zimbardo, 2005) found that women high in present hedonism were less likely to have regular breast exams, whereas women high in a future time perspective were more likely to have breast exams. Finally, Mann et al. (1999; as cited in Boyd & Zimbardo, 2005) found that children with cancer who were high in a future time perspective were more optimistic than children with a low future time perspective.

To date, the majority of research using Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999) within cancer care has focused on reporting mean scores across subscales. Kroyan, Gurova and Ippolitova (2019) report that women with breast or gynecological cancer had high scores on past-positive and that their future scores did not differ from norms. Those who faced more intense treatments had higher scores of present-fatalism than those with less aggressive treatment. In a study looking at different chemotherapy treatment schedules, Moskalewicz, Kordel, and Sterna (2022) report that scores on present-hedonism differed for those in various treatment conditions with those having the most frequent treatment (ie., weekly chemotherapy) having the lowest scores. All other scores were similar across treatment conditions. Alizadeh-Fard (2020) found that scores on past-negative and perceived injustice were predictive of pain catastrophizing in women with breast cancer and suggests addressing time perspective as a way for helping to better manage pain.

The research on time perspective and cancer using the Zimbardo and Boyd (1999) model can be described as limited at best, representing a significant gap in the current cancer control and time perspective literature. Qualitative studies (Breaden, 1997; Rasmusson & Elverdam, 2007) clearly highlight a shift in time perspective after a cancer diagnosis. However, there has been no quantitative research to further explore the relationship between time perspective, a cancer diagnosis, and how these factors relate to survivorship, cancer-related health behaviours, or psychological well-being. More research on time perspectives in individuals with cancer is clearly required.

Returning to the patient I described in my introduction to this work, with Marina, a second key narrative evolved embedded within her shifting time perspectives – a story of hope. At the beginning of our work, Marina described being lost in the difficulties of her present situation and was unable to envision a positive future where she may be cancer free. Through our work Marina began to expand her narrative to reflect on enjoyable past experiences and her desire to have those moments return in the future. Her hopes started small with wanting her next treatment to go well and in time evolved to include having fun on her upcoming family holiday.

Hope

At first glance asking "what is hope?" may seem like a relatively simple question. Perhaps hope is that first blade of grass peeking through the snow in the spring. Hope may be the sound of children playing in the park across the street. Hope could be finally achieving the goal of finishing school and walking across the stage at graduation. If you ask ten people "what is hope?" you will likely get ten completely different answers. Hope's history can be traced back to the ancient Greek writer Hesiodus (c. 800 BC), who described hope as the last remaining evil trapped in Pandora's jar. Hope winds its way through different theologies across the globe (Jevne et al. 1999) it has been pondered by great philosophers, and more recently has found its way in to the health and social sciences (Snyder, 2000). For an excellent overview of hope's history, see Eliott (2005).

A brief review of the health and social science literature reveals the complexity that is hope research. Various models, theories, frameworks, and definitions of hope abound. Hope is believed to be a cognition (Snyder, 1995), an emotion (Lazarus, 1999), a dynamic life force (Dufault & Martocchio, 1985), an inner power (Herth, 1991), and/or a coping resource (Cutcliffe, 1996). Eliot and Olver (2002) found that hope can be used as both a noun (e.g., there is hope) and as a verb (e.g., he hopes to get his project done on time); hope can have dualistic qualities (see Table 1).

Bruininks and Malle (2005) suggest that some of hope's complexity lie in its use as a folk term. Unlike many psychological terms (e.g., self-efficacy), hope is used in everyday language and generally understood by all. However, this presents a challenge in defining hope for measurement, as we all define and understand hope slightly differently. For the purposes of this project, hope will be measured as both a uni-dimensional and multi-dimensional construct. Within the field of psychology, Snyder's (1994, 1995) uni-dimensional hope model is widely accepted and often viewed as the gold standard for measures of hope. Coming from nursing, Dufault and Martocchio (1985) offer a multi-dimensional model of hope that has provided the foundation for three decades of hope research and the theoretical foundation for multiple measures of hope.

Table 1

Potential Dualistic Qualities of Hope

Hope can be…	**Hope can be…**
Objective	Subjective
An evaluation	An expectation
An empirical fact	An individual desire
A warrant for action	An excuse for inaction
Present oriented	Future oriented
Focused on the self	Focused on another
A burden	A resource
Vulnerable	Impervious
A feature of the patient	A feature of the caregiver
An attribute of the individual	An attribute of the situation
Inherent within the individual	Inspired by sources external to the individual

Note. Table from Eliott & Olver (2002)

Snyder's Hope Theory

Developed during the *cognitive revolution* of the 1980's, Snyder's hope theory takes a cognitive stance in understanding hope. Hope is defined as "a positive motivational state that is based on an interactively derived sense of successful (a) agency (goal-directed energy), and (b) pathways (planning to meet goals)" (Snyder et al., 1991, p. 287). Hope is equated with goal setting and achievement, with the terms hope and goals used interchangeably in this theory. Hopeful thinking is comprised of two types of thoughts: 1) pathway thoughts and 2) agency thoughts. These key elements of Snyder's hope theory will be further described below.

Goals. The guiding assumption of Snyder's hope theory is that individual goal pursuits (i.e., what people want to attain) are central in hopeful thinking (Snyder, 1995, 2000). Snyder and colleagues (2006) define a goal as whatever an individual wishes to develop, achieve, or experience. Goals can vary in length, with some being quite long-term (e.g., I'm going to pay off my mortgage in 15 years), while others are quite short-term (e.g., I'm going to finish the laundry before the kids get home from school). Goals can also vary from being very broad or abstract (e.g., finding my life's purpose) to more simplistic and concrete (e.g., not eating any snacks before dinner).

Hope theory suggests that there are two general types of goals (Snyder et al., 2000). First, there are positive or *approach* goals with three differing subtypes. Approach goals can be: 1) achieving an outcome for the first time (e.g., an individual reaching his weight loss goal), 2) maintaining the present outcome (e.g., an individual setting a new goal to maintain his weight for 6 months), or 3) increasing or broadening an outcome that has already been achieved (e.g., an individual planning to complete another half marathon following the completion of their first one). The second type of goals are negative or avoidance goals. These are goals that reflect the desire to delay a negative outcome. Avoidance goals can be: 1) attempts to prevent something from happening (e.g., using sunblock to prevent wrinkles or skin damage later in life), or 2) attempts to delay an event from happening (e.g., a student who puts together part of an assignment the night before he meets with his group, so they remain unaware that he has not completed his duties).

Snyder and colleagues (1991) posit that pathway and agency thoughts are iterative and additive as an individual strives to achieve their goal. To hope requires the identification of personally meaningful goals, and both pathway and agency thoughts, as described below, are necessary to achieving one's goals (the way and the will, if you will).

Pathway Thoughts. Pathway thoughts represent one's perceived ability to generate the routes or paths to an identified goal (Snyder, 2000). Pathway thoughts can be understood as the development of at least one way to different possible routes to goal achievement (i.e. the *way* of hope). More effective pathway thinking thus results in multiple possible pathways that can accommodate possible goal blockages. Pathway thoughts are based upon an individual's already available skills and self-perception. Positive self-perception is believed to provide the groundwork from which pathway thoughts can begin to develop. High hope individuals are better able to generate multiple pathways and more creative pathway thinking when facing obstacles, while the opposite is true for low hope individuals.

Agency Thoughts. Agency thoughts represent one's perceived capacity to use pathways to reach the desired goals (Snyder, 2000). Specifically, agency thoughts can be understood as the cognitive energy or motivational force to moving towards a goal (i.e., the *will power* of hope). Agency thoughts are the invigorating force to begin and sustaining an individual over the course of the goal pursuit. Agency thoughts are especially necessary when an individual faces a goal blockage and needs an energetic boost to begin the goal pursuit using an alternative pathway. Similar to pathway thinking, high hope individuals embrace more agency thinking when facing obstacles believing “I can do this” than lower hope individuals.

Hope theory initially conceptualized hope as solely cognitive (i.e., hope being uni-dimensional in nature). However, later revisions of Snyder’s theory attempt to integrate the role that emotion plays in goal pursuit. Snyder and colleagues (2006) suggest that the achievement (or lack thereof) of goal pursuits and thoughts surrounding this process influence subsequent emotions. Those who have success with goal achievement feel more positive emotions, while those who have less success experience negative emotions. Despite the acknowledgment of emotions surfacing later in the literature on Hope Theory, the theory remains a primarily cognitive model for understanding hope. Therefore, it is of value to identify an alternative, multidimensional model of hope which accounts for other key elements that have been viewed as important for hope development.

Dufault & Martocchio’s Spheres and Dimensions

In 1985, Dufault and Martocchio published their seminal article, *Hope. Its Spheres and Dimensions*. Coming from nursing, the authors proposed one of the first multidimensional models of hope. Their model has provided the foundation for many nurse researchers, as well as researchers from many other disciplines, to explore hope as a more complex construct. Dufault and Martocchio define hope as “a multidimensional dynamic life force characterized by a confident yet uncertain expectation of achieving a future good which, to the hoping person, is realistically possible and personally significant” (1985, p. 380). Within this model, hope is not static and continually changes and evolves, and is comprised of two spheres and six dimensions.

Spheres. The two spheres of hope in Dufault and Martocchio's (1985) model are generalized and particularized. Generalized hope is a broad, global perspective that good things can and will happen, and is not linked to any particular outcome. Statements that may be reflective of generalized hope include "I don't hope for anything in particular, I just hope" or "hope keeps me going" (Dufault & Martocchio, 1985, p. 380). Generalized hope gives a broad, expansive outlook on life and allows openness or flexibility for changing circumstances. Dufault and Martocchio (1985) argue that generalized hope restores meaningfulness in life and across circumstances. Generalized hope is what allows a person to carry on in dire circumstances when particularized hopes are unavailable.

Particularized hope involves a specific, identified "outcome, good or state of being" which can best be understood as a "hope object" (Dufault & Martocchio, 1985, p. 380). A hope object can be abstract or concrete and can either be explicitly stated or implied by the hoping person. Particularized hope is based on several expectations, including: 1) the present situation can be improved, 2) what is not had at this time can be attained, 3) a desired stated will occur, 4) what is currently valued can occur in the future, and 5) unfavorable outcomes will not occur. Particularized hope helps to clarify and prioritize what is most important in life. Furthermore, particularized hope encourages investment and movement towards an end that goes beyond the present moment. In this sense, particularized hope is similar to Snyder's cognitive model in that both encourage coping with challenges and determining alternatives ways of attaining the hope object (i.e., similar to pathway and agency thoughts).

Dufault and Martocchio (1985) emphasize the fluidity between generalized and particularized hopes. If a particularized hope is threatened, a person may then rely on a generalized hope to carry on through the difficult circumstance. Conversely, another individual may hold firmly to a particularized hope object if their generalized hope is diminished. This fluidity allows the hoping to flexibly adjust to changes in circumstances and maintain a sense of hope in challenging times.

Dimensions. Within this model, there are six dimensions which structure the experience of hope (Dufault & Martocchio, 1985). The affective dimension of hope involves the emotions and sensations associated with hope. Key within this dimension is the emotional pull or attraction to a desired future state or outcome that is personally meaningful to the hoping person. This desired state is characterized by both confident and uncertain emotions. That is, the hoping person feels confident that the outcome can occur but also remains uncertain. This reflects the varied felt sense of hope that can range from feeling positive, trustful and optimistic to anxious, doubtful or uneasy. Dufault and Martocccchio (1985) suggest that the inherent uncertainty of hope can be influenced by other dimensions of hope, such as the cognitive and affiliative dimensions.

Cognitive. The cognitive dimension of hope focuses on “the processes by which individuals wish, imagine, wonder, perceive, think, remember, learn, generalize, interpret, and judge in relation to hope” (Dufault & Martocchio, 1985, p. 384). This dimension involves the identification of hope objects, and can include desired goods, goals, states of being, or outcomes. Additionally, the cognitive dimension of hope involves an examination or assessment of reality in relation to the hope object. That is, the hoping person perceives the attainment of the hope object as realistically possible though not certain. Hope is considered reality-based from the perspective of the hoping person, with hopes being adjusted, modified, or abandoned (temporarily or permanently) if new evidence is presented which challenges the identified hope.

Affiliative. The affiliative dimension involves a person’s sense of connection and relatedness to people and things outside of oneself (Dufault & Martocchio, 1985). This dimension can include relationships with others, a sense of belonging to a community or group, or even a sense of connection to a higher power, God or even mankind. This dimension of hope is often expressed through other-oriented hopes that reflect a caring connection such as “I hope my sister recovers quickly from her illness” or “I hope my niece gets into the college she applied for.” In these cases, hope is directed away from the hoping person towards a cared-for other. Affiliative hopes can also be directed towards others but impact the hoping person directly. An example of this type of hope would be “I hope my children can care for me in my old age.” This dimension also involves the shared and often reciprocal nature of hope. Hope can be developed, maintained, and even bolstered through supportive, caring relationships.

Behavioural. The behavioural dimension of hope focuses on the action orientation of the hoping person (Dufault & Martocchio, 1985). Actions can fall into one of four realms: 1) psychologic, 2) physical, 3) social, and 4) religious. Within the psychologic realm, actions can include organizing, planning, and decision-making towards how a hope can be achieved. Dufault and Martocchio (1985) acknowledge the overlap between this action realm and the cognitive dimension. However, they extend the psychologic action realm to also include an active *waiting* component in which the hoping person is waiting for favorable circumstances and preparing to take action. This psychologic action phase acknowledges that some hopes cannot be actively addressed, for example a hopeful person waiting for test results from a physician before making choices in how to proceed. The action in this sense involves waiting before more physical action can begin. Actions within the physical realm are concrete, visible acts that help move a person toward his or her hope. Social realm actions involve enlisting others in helping to achieve one’s hope. Actions within the religious realm can involve praying, meditating, fasting, or other activities designed to foster a connection with a higher power or God. The action or behavioural dimension often comes as a result of feeling from the affective or cognitive dimensions of hope.

Contextual. The contextual dimension of hope identifies the specific context and life circumstances in which the hoping person experiences his or her hope (Dufault & Martocchio, 1985). Indeed, it could be argued that hope is most often noticed by its absence or when it is challenged (e.g., when facing a serious illness). The contextual dimension of hope "focuses upon the life situation that surround, influence and are a part of a person's hope" (p. 388). It is the context which gives rise to hope.

Affective. The affective dimension of hope involves the emotions and sensations that are associated with hope (Dufault & Martocchio, 1985). This is the dimension of hope that many people think of when they reflect on hope. Hope is often experienced as a feeling in the body that can be similar to warmth or peacefulness, the lifting of a weight off one's shoulders, for feeling energized or activated towards motion.

Temporal. The final dimension of hope, and the one most tied to this project, is the temporal dimension. The temporal dimension includes how a person experiences time (i.e., the past, the present, and the future) in regards to hope objects and the process of hoping (Dufault & Martocchio, 1985). Hope is directed toward the future but also involves the past and the present. Hope can be directed into a short-term future (e.g., I hope to finish spring cleaning this weekend) or long-term (e.g., I hope to get done my dissertation in the next two years). Hope can have a specific end time (e.g. I hope for better blood pressure at my next appointment) or it can be on-going with no end (e.g., I hope for good health). Dufault and Martocchio (1985) suggest that hope with no fixed time frame allow for more flexibility when difficulties are encountered and allow for less reality involvement. The past allows the person to remember times when previous hopes were achieved or good times that may serve as a protective or encouraging factor when determining new hope objects. Moreover, recalling times when past hopes were not achieved allows individuals to reflect on how they coped or managed that challenging situation, offering perspective on ways current difficulties can possibly be addressed. Hope is experienced in the *here and now* of the present and the place from which visions of the future develop. The hoping person may want present good to extend into the future or, conversely, for a present difficulty to resolve or be absent from the future. For others being hopeful in the present is all they can do, as the future is too difficult to embrace (e.g., an individual facing death may hope to fully enjoy the present and not envision what the future will bring). In any case, the process of hoping is grounded within the current experience, drawing from both the past and future to shape the present reality.

The spheres and dimensions of hope articulated by Dufault and Martocchio (1985) clearly demonstrate the complex and processual nature of hope. Hope can be both general and/or specific. It can be developed and fostered through affective, cognitive, affiliative, behavioural, contextual, and temporal dimensions. The interplay of intrapersonal and interpersonal components understood within the often complex lived reality is the foundation of hope. This is where the power of hope lies – in its complexity and multidimensional nature. If one dimension of hope is hindered, there are others available to offset this deficit. This flexibility allows an ebb and flow to the hoping process and limits the ways in which hope can truly be absent. Given the many challenges that cancer patients face both in treatment and survivorship, understanding with the many facets of hope can benefit both the patient and psycho-oncology professionals in keeping hope alive throughout the cancer trajectory.

Hope and Time Perspective

Across theoretical models, hope and the process of hoping is linked with having a future time perspective (Dufault & Martocchio, 1985) and in many models, hope is (in part or in its entirety) a cognitive, goal-oriented future time perspective (Farren et al., 1995; Snyder, 2000; Scioli et al., 2011). The role of a future time perspective in hope thus makes intuitive sense. When completing the sentence stem “I hope…”, the hoped-for outcome is something desired to happen in the future. It is easy to see the role that a future time perspective plays in the hoping process. More difficult to see, perhaps, is how the past and present are involved in the hoping process.

Snyder et al. (2006) suggest that hopeful thinking begins through the identification of a desired future state (i.e., determining a goal). Regardless of whether the goal is approach or avoidant, the hoping person then develops pathway thoughts (i.e., routes) to achieving the identified future state. Pathway thoughts can be understood as the connection between the present to the desired future state. Moreover, the past plays a role in helping individuals see their agency (e.g., I was able to complete my masters research so I should be able to complete my PhD research), as well as be able to construct alternate pathways when encountering goal blockages (e.g., the last time I had difficulty with consistently working on my project I found a “study buddy”; perhaps I will try that again).

Emotions associated with previous goal pursuits can impact the experience of hope in the present moment (Snyder et al., 2006). Individuals who have experienced success in previous goal pursuits may feel excited or invigorated as they embark on achieving a new hope. Conversely, those who have history of failed goal pursuits may react with dejection or feel overwhelmed at the prospect of moving toward a new goal. These emotional reactions interact with cognitions in a feedback and feed-forward loop that determines if an individual will continue to move towards the identified goal.

Despite major differences in their conceptualizations of hope, Dufault and Martocchio (1985) see the role of the past, the present, and the future in a similar fashion to that of Snyder et al. (2006). Both groups of researchers see hope as directed toward a future good that is shaped by the past and experienced in the present. Past experiences, both good and bad, provide a context from which the hoping person selects his or her hopes for the future. Past experiences may impact the time specificity that the hoping person chooses for their hope. For example, an individual recovering from surgery may hope to return to previous exercise levels within one month of surgery (time specific) or simply hope that returning to that level is possible (non-specific). Hope is experienced in the present, and in many ways. is the intersection between the past and the future.

Thus far I have spoken of the past, the present, and the future as temporal zones. I turn now to the research on hope and specific time perspective. To say the research on hope and time perspective is limited would be generous. In their seminal article on time perspective, Zimbardo and Boyd (1999) make two mentions of hope. First, Zimbardo and Boyd argue that individuals high in a future time perspective will be most hopeful. Similar to Snyder’s (2000) cognitive understanding of hope, Zimbardo and Boyd (1999) characterize individuals high in future time perspective as being goal-directed and careful in planning for the future. These authors predict that high hope will be most closely associated with a future time perspective. Second, Zimbardo and Boyd (1999) suggest that high scores on present fatalism reflect the absence of a focused time perspective. That is, those high in present fatalism do not have the direction of those with a future time perspective, the excitement or enjoyment of present-hedonism, nor are they grounded in the nostalgia or resentment of the past. Zimbardo and Boyd (1999) believe that those high in present-fatalism see fate as controlling their destiny and have little hope for their future.

With these limited predictions in mind, I (McElheran, 2012) conducted the first quantitative study exploring the relationship between all five time perspectives and hope on a sample of healthy Canadian adults as my master's thesis. Contrary to Zimbardo and Boyd's (1999) predictions, I found that the past time perspectives (past negative and past positive) had the strongest correlations with hope. There was a statistically significant but weak correlation between hope and the future time perspective. As predicted by Zimbardo and Boyd (1999), the present-fatalistic was negatively correlated with hope. There was no correlation between hope and the present-hedonistic time perspective.

At a glance, these results may seem surprising. Across theoretical models, the importance of a future temporal orientation of hope is emphasized (Scioli et al., 2011; Snyder, 2000), yet I found a negligible relationship between the future time perspective and hope in my master's research. Those who reflect warmly on the past are the most hopeful and those who see the past negatively are the least hopeful. It seems that the past and how it is reconstructed in memory plays a far larger role in the hoping process and the experience of hope than is currently acknowledged in many hope theories.

Despite the paramount role of future, Snyder and colleagues (2006) also recognize the influential role that the past plays with the process of hope development. Past experiences with goal-pursuits shape individual dispositional hope styles. An individual's experience with achieving desired hopes and goals (or failing to do so) early in life provides a foundation for later hopes. Early success with overcoming obstacles teaches the young child resilience and how to manage the negative emotions associated with goal blockages, while early failures can provide a foundation of discouragement and defeat. As such early experiences with hope provide a foundation from which future hopes are selected, as well as the ways in which the individual strives to realize such hope. Success or failures with early hopes, and the emotions associated with the hoping process, lead to dispositional styles that, while mutable, are often stable. It is clear that the relationship between time perspective and hope is more complicated than once thought and that it is not entirely linked to a future time perspective. More research needs to be done to explore and validate the relationships between all six time perspectives and how they relate to hope. As we better understand the interrelationships hope and the various time perspectives, we will be better able to create targeted interventions to address maladaptive time perspective and work towards fostering a more robust experience of hope for cancer patients and survivors.

Purpose, Research Questions, and Hypotheses

Building upon the current psycho-oncology literature, this project aims to address the dearth of quantitative research on time perspective in cancer care by surveying patients about their cancer experiences. Qualitative analysis (Breaden, 1997; Rasmusson & Elverdam, 2007) clearly indicates a shift in time perspective through treatment and into survivorship, yet there have been no quantitative studies to confirm these shifts in larger samples of cancer patients. In addition, there is an absence of research on a balanced time perspective in cancer care. A balanced time perspective has been linked with increased well-being, life satisfaction, positive affect, and decreased negative affect (Drake et al., 2008; McElheran, 2012). As a growing number of Canadians are living with and beyond cancer, the need to better understand what factors relate to their psychological health and well-being in survivorship increases. Better understanding the time profiles of cancer survivors will undoubtedly add to healthcare providers ability to quickly assess and offer support to those in need.

With plenty of research in existence on the value of hope with those diagnosed with cancer, the aim of this project is to focus on one facet of hope (i.e., the relationship between hope and time perspective). The majority of hope research continues to focus on the role the future time perspective plays in the hoping process (Scioli et al., 2011; Snyder, 2000). However, my master's research indicates that how one views the past (whether it be positive or negative) has a significant impact on one's experience of hope; this work will expand on my masters findings. The relationship between the past, present, and future in the process of hoping remains unclear and must be delineated so that researchers and clinicians alike can better understand hope and foster it in individuals facing the challenges inherent within a cancer experience.

Based on the review of hope and time perspective research in psycho-oncology, I aim to meet two broad research goals. First, I will determine the time profiles of individuals with cancer, which acknowledges the inherent multidimensionality of time perspective when it has mostly been treated in a unidimensional model for most of the existing research (e.g. assessing each time perspective individually instead of all together). Time profiles, balanced or not, can provide insight for psycho-oncology clinicians to better understand their patients and the possible mental health challenges (i.e., depression and anxiety) they are facing. Moreover, they provide a non-pathologizing language to both talk to patients and conceptualize patients. Second, I seek to understand the relationship between cancer patients' and cancer survivors' time perspective/time profile and their experiences of hope (defined as both a uni-dimensional and multidimensional construct). As established above, this is a unique goal and will provide important information about how cancer patients experience hope – is it as future oriented as current theorizing might suggest? Outside of these research goals, I also have professional reasons for undertaking this research. I want to understand how to better support my psychosocial oncology clients as they navigate their cancer journeys; I hope that the findings from this work may suggest different possible avenues of intervention for work with clients that have been heretofore unexplored.

Based on the research reviewed above, I have developed a set of hypotheses for this research (the full set of hypotheses follows this explanation). First, I draw on the work of Vellone et al. (2006) and McElheran (2012) to suggest that hope will be negatively associated with depression and anxiety. Vellone et al. (2006) found that hope was negative correlated with depression and anxiety in Italian cancer patients. McElheran (2012) found hope was negatively associated with negative affect and positively associated with positive affect. Next, I use Mitchell et al. (2011) and Oliveria et al. (2022) to support the idea that patients in active treatment will have a decreased quality of life (i.e. higher depression and anxiety, lower hope) than patients in early survivorship. In a metanalysis, Mitchell and colleagues (2011) found that anxiety and depression were lower in survivorship than in the first two years after diagnosis. Similarly, Oliveria and colleagues (2022) found improvement in symptoms of PSTD two years after treatment ended. Third, the work of Zimbardo and colleagues (1999, 2005) suggests that specific time perspectives will be either positively or negatively associated with hope. They suggest that hope will be positively associated with a positive-future and negatively associated with present-fatalism. Fourth, I suspect that cancer survivors will have more balanced time perspectives than those in active treatment as suggested by Rasmusson and Elverdam (2007) and Oliveria et al (2022). Qualitative research indicates a temporal shift with descriptions more closely resembling a balanced time perspective appear in survivorship (Rasmusson & Elverdam, 2007). As individuals move into survivorship their scores on PTSD diminish (Oliveria, et al.

2022); this decrease would indicate a temporal shift towards a more balanced time perspective. Next, I expect that balanced time perspectives will be negatively associated with depression and anxiety and positively associated with hope; this is suggested by McElheran (2012), who found that a balanced time perspective was associated with lower negative affect and higher positive affect and hope. Finally, I expect that the pathway between time perspective and negative symptoms in cancer patients will be mediated by hope and moderated by stage of cancer treatment; this expansion is supported by Rustøen et al., 2010 and Watts et al. (2014), who suggest that hope impacts psychological distress and life satisfaction, and that cancer patients' experiences are impacted by where they are in their cancer journeys.

To reiterate, the hypotheses for this study are:

1- That hope will be negatively associated to measures of depression and anxiety.
2- That cancer patients in active treatment will have higher scores on depression and anxiety, and lower scores on hope, than cancer patients in early survivorship.
3- That hope will be positively associated with past positive, present hedonic, and future positive time perspectives, and negatively associated with past negative, present fatalistic and future negative time perspectives.
4- That cancer survivors in early survivorship will have more balanced time perspectives than cancer survivors in active treatment.
5- That balanced time perspectives will be negatively associated with depression and anxiety
6- That balanced time perspectives will be positively associated with hope.

7- That the pathway between time perspectives and depression and anxiety (negative symptoms) in cancer patients will be mediated by hope and moderated by stage of cancer treatment.

CHAPTER 2: Methods

This section describes the inclusion and exclusion criteria for participation, recruitment strategies, and the study procedure. The measures that were administered and the ethical practices followed are also described.

Participants

Participants for this study were individuals who self-identify as having been diagnosed with cancer and fit in to one of the two recruitment categories: 1) individuals in active cancer treatment including awaiting surgery, or undergoing chemotherapy, radiation therapy, or other drug treatments, and 2) individuals who have completed cancer treatment in the past two to five years (i.e., in early survivorship). All participants were over the age of majority (age 18) and able to complete the survey online.

There were 216 participants (143 female, 62 male, one participant identified as ‘other’, and 10 individuals did not identify their gender). Table 2 shows the demographics characteristics of the sample. Participants ranged in age from 19 to 79 years of age, with a mean age of 47.34 years and a stand deviation of 14.18 years. Using categories from Census Canada, the predominant ethnic backgrounds of the participants were European origins (e.g., English, Flemish, Scandinavian; 170 participants or 82.1% of the sample), Other North American origins (e.g., Acadian, Canadian; 15 participants or 7.2% of the sample), North American Aboriginal origins (e.g., First Nations, Inuit, Métis; 6 participants 2.9% of the sample), multi-ethnic (5 participants or 2.4% of the sample) and 11 participants from all other remaining groups combined (5.3% of sample from 6 remaining categories). Among the 208 participants that indicated marital status, 103 identified as being married (49.5 % of valid sample), 56 identified as single (26.9%), 21 as divorced (10.1%), 18 as common law (8.7%), seven as separated (3.4%)

and three as widowed (1.4%). Of those 208 participants, 10 had less than a Gr. 12 education (4.8%), 16 had a high school diploma (7.7%), 29 had some post-secondary or trades training (13.9%), 37 had completed a trade or diploma program (17.8%), 75 had a Bachelor's degree (36.1%), 35 had a Master's degree (16.8%), and six had a Doctoral degree (2.9%).

Of the 216 participants, 83 identified as being in active treatment (39.0% of the sample) and 130 were in early survivorship (defined as being 2-5 years post treatment; 61.0%). Table 3 shows the cancer-specific demographics of the sample. The largest tumors groups in order were breast (57 participants), gynecological cancers (i.e., ovarian, uterine, cervical; 30 participants), leukemia/lymphoma and other blood cancers (27 participants), skin/melanoma (25 participants), head and neck (including thyroid; 18 participants), prostate (10 participants), colorectal (10 participants), urinary (bladder, kidney; 7 participants), brain (7 participants), lung (6 participants), testicular (5 participants), and 5 participants identified having other types of cancer. Participants were asked to identify the types of cancer treatment(s) that had been completed (ie., "check all that apply"). Among the participants, 169 individuals had surgery, 98 had chemotherapy, 89 had radiation therapy, 18 had immunotherapy, 56 had hormone/endocrine therapy (e.g., Tamoxifen, ADT therapy), 18 indicated other treatment including brachytherapy (2 participants), radioactive iodine ablation (2 participants), targeted therapy (3 participants), stem cell transplant (2 participants), "watch and wait" or other monitoring (3 participants), and 6 responses that did not fit any of the aforementioned categories. Within the sample, 32 participants (15.4%) indicated that their cancer diagnosis was metastatic, 165 were not metastatic (79.3%), and 11 indicated "other" which includes those currently having investigations for metastatic disease or were uncertain of disease status.

Table 2
Demographics

Characteristics	Frequency	Percent	*M (SD)*
Gender			
Female	143	69.4%	
Male	62	30.1%	
Other	1	0.5%	
Age			
Ethnic Origins			
North American Aboriginal	6	2.9%	
Other North American	15	7.2%	
European	170	82.1%	
Caribbean	0	-	47.34 (14.18)
Latin, Central & South American	1	0.5%	
African	4	1.9%	
West Asian & Middle Eastern	1	0.5%	
South Asian	1	0.5%	
East & South East Asian	3	1.4%	
Oceania	1	0.5%	
Multi-Ethinc	5	2.4%	
Other	0	-	
Marital Status			
Single/Never Married	56	26.9%	
Married	103	49.5%	
Common-law	18	8.7%	
Separated	7	3.4%	
Divorced	21	10.1%	
Widowed	3	1.4%	
Education Level			
Less than Grade 12	10	4.8%	
Grade 12 Diploma	16	7.7%	
Some Post-Secondary/Trade	29	13.9%	
Diploma or Trade Complete	37	17.8%	
Bachelor Degree	75	36.1%	
Master Degree	35	16.8%	
Doctorate Degree (PhD, MD)	6	2.9%	

Note. *N*s varied between 207 and 208.

Table 3

Cancer-Specific Demographics

Characteristics	Frequency	Percent
Status of Treatment		
Active Treatment	83	39.0%
Early Survivorship	130	61.0%
Type of Cancer		
Breast	57	
Prostate	10	
Lung	6	
Colorectal	10	
Brain	7	
Leukemia/Lymphoma/Blood	27	
Skin	25	
Pancreatic	0	
Gynecological	30	
Urinary	7	
Head & Neck (include Thyroid)	18	
Testicular	5	
Other	5	
Type of Treatment		
Surgery	169	
Chemotherapy	98	
Radiation	89	
Immunotherapy	18	
Hormone/Endocrine therapy	56	
Other	18	
Metastatic Diagnosis		
Yes	32	
No	165	
Other	11	

Note. *N*s varied between 208 and 213 (except for Type of Treatment)

Measures

The research measures were presented to participants in the form of an online survey. Participants viewed nine survey pages (including the consent page; Appendix A) and one debriefing page (Appendix B). There were 112 questions in total. All measures can be found in Appendix C.

Demographics

Basic demographic information collected included: age, gender (male, female, transgender, other), ethnicity (using Statistics Canada categories), marital status, and highest education level completed.

Cancer-Related Demographics

Demographics related specifically to an individual's cancer diagnosis were collected. These demographics included: cancer diagnosis (e.g., breast, prostate, lung); type of treatment (check all that apply): surgery, chemotherapy, radiation therapy, immunotherapy, hormone/endocrine therapy, and other; currently in treatment (yes/no); treatment completion date (approximation); metastatic (i.e., spread to other parts of the body; yes/no/other).

Depression Anxiety Stress Scale (DASS-21: Lovibond & Lovibond, 1995).

The DASS-21 consists of three subscales measuring characteristics of depression, anxiety, and stress. Participants were asked to rate each item based on how they have felt during the past week. Each item is ranked on a 4-point Likert scale that ranges from Did Not Apply to Me at All (score of 0) to Applied to Me Most of the Time (score of 3). Higher scores reflect increased symptomology. For this project, the DASS-21 stress subscale was used as an index of anxiety symptoms. This was done for two reasons. First, the DASS-21 anxiety items are too physiologically specific. For example, items such as "I was aware of dryness in my mouth", "I experienced difficulty breathing" or "I experienced trembling", could cue participants to reflect on symptoms or side effects related to cancer treatment or medication, and not about psychological aspects related to anxiety. Second, past research has found that the DASS-21 stress subscale displays stronger associations with indices of worry (Szabo, 2011) and generalized anxiety (Brown et al., 1997) thus more fully capturing the emotional component of anxiety when compared to the anxiety subscale. Only items from the depression and stress subscales were administered. It should be noted that one item from the stress subscale was input incorrectly in the online survey, resulting in only six items instead of seven being used in analysis.

Herth Hope Index (HHI; Herth, 1992).

Based upon the multidimensional definition of hope proposed by Dufault and Martocchio (1985), the HHI consists of a 12-item scale comprised of four items that reflect the cognitive-temporal dimensions, four items that reflect the affective-behavioural dimensions, and four items that reflect the affiliative-contextual dimensions of hope. Items were scored on a four-point Likert scale ranging from 1 – strongly disagree to 4 – strongly agree resulting in scores ranging from 12 to 48. Herth (1992) found the reliability to range from 0.88 to 0.97 with test/retest scores ranging from 0.87 to 0.91. This scale is an adapted version of the 30-item Herth Hope Scale (HHS; Herth, 1991) designed to be used in clinical practice with items specifically designed for adults experiencing changes in their health status.

Hope Scale (HS; Snyder at al., 1991).

The HS is a 12-item scale comprised of two 4-item subscales for agency (i.e., goal directed determination) and pathways (i.e., ability to generate multiple paths to achieve goals) thinking, and four distractor items. Items were scored on a 4 point Likert scale resulting in total hope scores ranging from 12 to 48. The agency and pathways subscales can be combined to yield a higher-order trait scale of hope. Internal reliabilities have varied from 0.74 to 0.84 in previous research and test/re-test reliabilities over an 8-10 week period have been between 0.73 and 0.82 (Snyder et al., 1991). The four distractor items were omitted due to the overall survey length.

Swedish Zimbardo Time Perspective Inventory (S-ZTPI; Carello et al., 2011).

This scale consists of 64 items that are responded to on a five-point Likert scale ranging from very uncharacteristic (1) to very characteristic (5) of the respondent. The scale is designed to measure participants' time related attitudes and behaviours by providing a profile of relative values on each of the six factors for individuals, thus creating a unique time profile for each participant. The original ZTPI has high test-retest reliability ranging from 0.70 to 0.80 for the five different factors. The S-ZTPI includes six additional items for the future-negative subscale as proposed by Carello et al.

Procedure

Participants were recruited via three main recruitment strategies. First, the researcher shared information about the study at various speaking engagement or community events that were offered for cancer patients and survivors. Advertising postcards were made available at these events for individuals to take home. Second, with the approval of the Supportive Care Lead North from the Cross Cancer Institute, individual patients and groups members were provided with information about the study by their therapist or group facilitator from the Department of Psychosocial and Spiritual Resources at the Cross Cancer Institute. Third, the majority of study participants (84% of sample) were recruited through the Prolific.co data collection organization. Prolific.co is an online platform affiliated with Oxford University that connects researchers to participants. These participants were compensated a nominal fee (based on Prolific's guidelines) for their participation. Across all three forms of data collection participants took on average thirteen minutes to complete the survey.

All advertising material invited cancer patients to participate in an anonymous secure online survey about their experience of hope and time perspective that will take less than 25 minutes to complete. These materials included the link to the online survey, selection criteria (e.g., currently in active treatment or have completed treatment within the last two to five years) and the researcher's contact information. Advertising material indicated that survey participants could entered into a draw for one of four $50 gift cards to businesses of their choice. A random draw was conducted following the completion of data collection to select the four winners of the gift cards. The four winners were contacted via the email addresses they used to enter the draw.

Upon clicking on or entering the survey link into a web-browser, the participants were presented with the title of the survey and a consent form which provided information about the survey, anonymity, and contact information for the primary researcher and her supervisor. Consent to participate was considered implied by the overt action of selecting "I agree to participate" and completion of the survey. Participants viewed nine survey pages with the number of questions ranging from one (consent page) to thirty items per page. Following the completion of all scales, participants were presented with a debriefing page that provides information about the survey, details on how to enter the draw for the gift card, and the contact information for the researcher and her supervisor.

Ethical Practices

In accordance with the requirements of the University of Albert and the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS 2; Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, & Social

Sciences and Humanities Research Council of Canada, 2010/2018), an ethics proposal was submitted to the Health Research Ethics Board: Cancer Committee for review. This proposal included information on the nature, length, and purpose of the study, data collection procedures, advertising material, consent/debrief forms and procedures to ensure anonymity and confidentiality. Ethics approval was received on November 9th, 2016, and was renewed yearly until completion of this project. Data integrity and security was of the utmost importance. In accordance with University of Alberta guidelines, all data were stored on the researcher's password protected computer with no identifying information.

Data Analysis Strategy

Preliminary analysis included descriptive statistics on demographics and all survey measures and will also include analysis to establish validity and reliability (Cronbach's alpha) of all measures. Pearson's correlations are used to assess the relationship between time perspective, hope, depression, and anxiety for each group (i.e., active treatment vs early survivorship). Following the method of Boniwell and colleagues (2010), a Balanced Time Perspective (BTP) will be operationalized using the hierarchical cluster analysis. All hypotheses will be tested through correlational, ANOVA, and regression analyses.

CHAPTER 3: Results

This chapter presents results of summary statistics and correlations of the Swedish-Zimbardo Time Perspective Inventory, as well as that of the measures of anxiety, depression, and both measures of hope. This is followed by exploration of differences between those in active treatment and early survivorship for measures of mental health and hope. Next, results for hierarchical cluster analysis with summary statistics and correlates for measures of hope, depression, and anxiety. Finally, mediation and moderation regression results are reported.

Time

Summary statistics and the correlations between the S-ZTPI scales can be found in Table 4. Correlations were quite similar to those found in Zimbardo and Boyd (1999), and Carelli and colleagues (2011), with one exception. The correlation between past positive and past negative was higher in this sample, $r = -.45$, compared to the Zimbardo and Boyd (1999; $r = -.24$) and Carelli and colleagues (2011, $r = -.23$). The alpha reliabilities for the six subscales ranged from 0.71 to 0.86 and aligned with reliabilities found in previous studies.

Differences between the mean scores on the S-ZTPI subscales were statistically significant, $F(5, 870) = 227.97$, $p < .001$, $\eta_p^2 = .567$. The only mean differences (see Table 4) that were not statistically significant ($p < .05$, Bonferroni adjusted) were between past positive and past negative, past positive and future negative, and past negative and future negative. Scores on the S-ZTPI were correlated with age for past-positive, $r\ (193) = .14$, $p < .044$, past-negative, $r\ (194) = -.14$, $p < .048$, and future-negative, $r\ (193) = -.23$, $p < .001$. There were no gender differences on the S-ZTPI.

Table 4

Correlations between the S-ZTPI Scales

	M	*SD*	Alpha	1	2	3	4	5	6
1. Past Positive	31.51	7.09	.86	__	-.45**	.15*	-.16*	.24**	-.26**
2. Past Negative	32.46	7.75	.84		__	.15*	.39**	-.09	.59**
3. Present Hedonic	48.89	7.87	.80			__	.34**	-.17*	.05
4. Present Fatal	26.44	5.89	.74				__	-.41**	.33**
5. Future Positive	38.20	5.91	.74					__	.12
6. Future Negative	32.52	6.08	.71						__

$^{*}p < .05$, $^{**}p < .01$

Note. *Ns* vary between 192 to 202

Hope, Depression, and Anxiety

Summary statistics and correlations among the measures of unidimensional (Snyder Hope Scale, HS) and multidimensional hope (Herth Hope Index, HHI), as well as depression (DASS-D) and anxiety (DASS-A) measures appear in Table 5. The two hope measures correlated substantially, *r*(96) = .74, *p* < .001. Both measures of hope were associated with less depression and less anxiety as anticipated by Hypothesis 1. Depression and anxiety were positively related. All four measures showed substantial reliability. The subscales of the HHI varied in their reliability --- Inner Sense of Temporality and Future (*M* = 11.41, *SD* = 2.25, α = .74), Inner Positive Readiness and of Temporality and Future (*M* = 11.41, *SD* = 2.25, α = .74), Inner Positive Readiness and Expectancy (*M* = 12.37, *SD* = 2.04, α = .71), and Interconnectedness with Self and Others (*M* = 11.99, *SD* = 2.14, α = .53). Correlations between the subscales of the HHI and the total score were substantial: the HHI total score and Interconnectedness, *r* (201) = .87, *p* < .001, the HHI total score and Inner Positive, *r*(201) = .92, *p* < .001, and the HHI total score and Inner Sense, *r*(201) = .90, *p* < .001. Thus, only the results from the HHI total score are reported below.

Age was correlated positively to the HHI, *r*(198) = .184, *p* < .009, and correlated negatively to DASS-D, *r*(197) = -.165, *p* < .02, and anxiety, *r*(195) = -.179, *p* < .012. Age failed to correlate to the HS, *r*(197) = .135, *p* < .057. There was a gender differences for anxiety that approached statistical significance, *t*(196) = 1.42, *p* < .078, *d* = .275, with females (*M* = 12.42, *SD* = 3.78) slightly more anxious than males (*M* = 11.37, *SD* = 3.82).

Table 5

Summary Statistics and Correlations for Hope, Depression and Anxiety Scales

Scale	Alpha	*M*	*SD*	1	2	3
1. HHI	.86	35.76	5.77	--		
2. HS	.92	46.04	10.31	.74**	--	
3. DASS-D	.93	13.08	5.35	-.69**	-.64**	--
4. DASS-A	.83	12.07	3.82	-.41**	-.34**	.55**

** *p* < .01

Note. HHI = Herth Hope Index, HS = Snyder Hope Scale, DASS-D = Depression Anxiety Stress Scale Depression, DASS – A = Depression Anxiety Stress Scale Anxiety. *N*s varied between 201 and 203.

Time and Hope, Depression and Anxiety

Table 6 shows the correlations among the S-ZTPI and measures of hope, as well as depression, and anxiety. All correlations fit expected pattern of results and were consistent with previous findings. Consistent with Hypothesis 3, both measures of hope had moderate to high correlations with past positive and positive future subscales (but a slight relationship with present hedonic), and negative correlations with past negative, present fatalistic, and negative future. Depression had moderate positive correlations with past negative and negative future subscales, and moderate negative correlations with past positive and future positive. Anxiety was most highly correlated with past negative and future negative. In addition, anxiety had statistically significant correlations with both present subscales.

Active vs. Early Survivors

There were no difference between active treatment vs. early survivors for age ($M = 48.6$, $SD = 13.92$; $M = 46.5$, $SD = 14.35$, $t(202) = 1.03$, $p < .30$, $d = .15$). There was also no difference between active treatment vs. early survivors on gender, with 54 of the active treatment female and 27 male vs. 89 of early survivors female vs. 35 male, χ^2 (1) = .61, $p < .44$.

Comparing those in active treatment to those classified as early survivors, differences were found for past positive, $t(197) = 2.86$, $p < .005$, $d = .416$, and marginally for future negative, $t(197) = 1.96$, $p < .052$, $d = .283$. Those in active treatment scored higher for past positive ($M = 33.28$, $SD = 5.96$) compared to those classified as early survivors ($M = 30.39$, $SD = 7.52$). Conversely, those in active treatment scored somewhat lower ($M = 31.5$, $SD = 5.64$) for future negative compared to those classified as early survivors ($M = 33.21$, $SD = 6.29$).

Table 6

Correlations between the S-ZTPI, Hope, Depression and Anxiety Scales

	PP	PN	PH	PF	FP	FN
HHI	$.62^{**}$	$-.52^{**}$	$.16^{*}$	$-.38^{**}$	$.41^{**}$	$-.48^{**}$
HS	$.46^{**}$	$-.55^{**}$	.10	$-.40^{**}$	$.44^{**}$	$-.41^{**}$
DASS-D	$-.45^{**}$	$.55^{**}$	.01	$.41^{**}$	$-.31^{**}$	$.46^{**}$
DASS-A	$-.17^{*}$	$.49^{**}$	$.27^{**}$	$.32^{**}$	-.13	$.48^{**}$

$^{*}p < .05$; $^{**}p < .01$

Note. HHI = Herth Hope Index, HS = Snyder Hope Scale, DASS-D = Depression Anxiety Stress Scale Depression, DASS – A = Depression Anxiety Stress Scale Anxiety, PP = Past Positive, PN = Past Negative, PH = Present Hedonic, PF = Present Fatalistic, FP = Future Positive, FN = Future Negative.

Contrary to Hypothesis 2, those in active treatment scored higher (not lower) than early survivors on Snyder Hope HS ($M = 48.28$, $SD = 10.46$ vs. $M = 44.54$, $SD = 9.97$), $t(200) = 2.57$, $p < .01$, $d = .368$, and that same relationship approached statistical significance for the Herth Hope HHI ($M = 36.62$, $SD = 5.18$ vs. 35.20, $SD = 6.08$), $t(201) = 1.72$, $p < .09$, $d = .246$. Also contrary to Hypothesis 2, active treatment and early survivors did not differ on anxiety ($M = 12.14$, $SD = 3.58$ vs. $M = 12.02$, $SD = 4.00$), $t(199) = .20$, $p < .84$, $d = .03$, or depression ($M = 13.35$, $SD = 5.08$ vs. $M = 12.91$, $SD = 5.52$), $t(201) = .57$, $p < .57$, $d = .08$.

Balanced Time Perspective

A balanced time perspective was operationalized used the person-oriented approach proposed by Magnusson (1999) and colleagues (Magnusson & Mahoney, 2003; Magnusson & Törestad, 1993). Within this approach, groups are determined by analyzing patterns of responses and clustering those who have similar responses into homogenous groups. For this study, hierarchical cluster analysis was conducted to determine typical score patterns found within the S-ZTPI and its compromising six subscales in hopes of finding a cluster or group reflecting a balanced time perspective. Clusters are determined by finding similar score patterns and grouping these cases together (Norusis, 2008). To measure the distance between two points (i.e., how similar two case are to each other), one can use the Squared Euclidean distance and group cases with the highest degree of similarity. As more cases are grouped together, a hierarchical clustering technique is applied to determine how the new group is compared to other groups. Using a complete enumeration process that maximizes within group homogeneity, Ward's method uses the summed Squared Euclidean distance for all cases and merges groups based on the smallest increase in the overall within-group distance, thus ensuring the highest level of similarity among group members.

One challenge with hierarchical cluster analysis is that clusters are sample specific, making it difficult to compare across samples (Stolarski et al., 2014). To mitigate this challenge, hierarchical cluster analysis was conducted on the sample as a whole (i.e., inclusive of both those in active treatment and early survivorship) rather than on two separate groups. This analysis also ensured that clusters within each group (i.e., active treatment versus early survivorship) were large enough to conduct between groups analyses to determine what, if any, differences may exist. Using Ward's method, a Squared Euclidian metric was applied to the standardized scores of the six S-ZTPI sub-scales in order to identify groups of individuals with similar score patterns or time profiles. Expanding the definition of a balanced time perspective from Zimbardo and Boyd (2008) to include the two future subscales from Carelli and colleagues (2011), a balanced time perspective should score low on past negative, present fatalistic and future negative, moderate on present hedonistic, moderately high on future positive and high on past positive. Preliminary analyses included using clusters solutions with three, four, or five clusters. In hierarchical cluster analysis, the goal is to find the ideal number of clusters with each group being significantly different from others while also having a high degree of within group homogeneity (Norusis, 2008). Based on this strategy, the three cluster solution was most interpretable.

Differences between clusters on the S-ZTPI were statistically significant for past positive, $F(2, 172) = 43.82$, $p < .001$, $\eta^2_p = .337$, past negative, $F(2, 172) = 77.11$, $p < .001$, $\eta^2_p = .473$, present hedonic, $F(2, 172) = 6.02$, $p < .003$, $\eta^2_p = .065$, present fatalistic, $F(2, 172) = 54.04$, $p < .001$, $\eta^2_p = .386$, future positive, $F(2, 172) = 32.79$, $p < .001$, $\eta^2_p = .276$, and future negative, $F(2, 172) = 53.83$, $p < .001$, $\eta^2_p = .385$. Differences between clusters ($p < .05$) were assessed using Tukey post-hoc tests. The first cluster ($n = 41$) was characterized by higher scores future positive, and lower scores on present hedonistic and present fatalistic (Table 7). This pattern was considered the Balanced Time Perspective as it followed the profile suggested by Boyd and Zimbardo (2005) with modifications to the future orientation suggested by Carelli et al. (2011). The second cluster ($n = 55$) was characterized by the lowest scores on future negative while sharing characteristics with the first cluster on higher past positive and lower past negative scores. This pattern was interpreted as a Present-Past or Disconnected Future Time Perspective. The third cluster ($n = 79$) was characterized by having the lowest score on past positive and the highest score on past negative, and the highest scores on future negative, as well as sharing high scores on present fatalistic and present hedonistic with the second cluster. This profile was interpreted as the Negative Time Perspective.

The clusters did not differ by age, $F(2, 168) = 1.67$, $p < .19$, $\eta^2_p = .02$, or gender, $\chi^2(2) = 1.22$, $p < .87$. Contrary to Hypothesis 4 that anticipated those participants in early survivorship would have more balanced time perspectives, the clusters did not differ by active treatment vs. early survivor status, $\chi^2(2) = 1.86$, $p < .39$. Twenty-three of Cluster 1 were active treatment, 32 were early survivor; 19 of Cluster 2 were active treatment, 22 were early survivor; 27 of Cluster 3 were active treatment, 52 were early survivor.

Table 7

Summary Statistics for S-ZTPI Scales by Cluster M (SD)

	Cluster 1	Cluster 2	Cluster 3
PP	35.78^a (4.06)	34.59^a (5.35)	26.77^b (6.89)
PN	28.19^a (6.02)	27.56^a (5.77)	38.67^b (5.59)
PH	45.12^a (5.72)	50.34^b (8.02)	49.52^b (8.46)
PF	19.93^a (3.63)	27.41^b (4.74)	29.18^b (5.13)
FP	43.59^a (4.23)	35.09^b (4.48)	37.23^b (6.10)
FN	30.68^a (5.87)	28.24^b (4.70)	36.75^c (4.41)

Note. PP = Past Positive, PN = Past Negative, PH = Present Hedonic, PF = Present Fatalistic, FP = Future Positive, FN = Future Negative. Means with different subscripts differ at $p < .05$.

Table 8 reports on summary statistics for the three clusters by the psychological measures. One-way ANOVAs were calculated. Statistically significant differences were found for the Herth Hope Index (the HHI), $F(2, 168) = 30.83$, $p < .001$, $\eta^2_p = .268$, Snyder's hope measure (the HS), $F(2, 169) = 35.29$, $p < .001$, $\eta^2_p = .295$, DASS depression, $F(2, 169) = 37.54$, $p < .001$, $\eta^2_p = .308$, and DASS anxiety, $F(2, 169) = 10.68$, $p < .001$, $\eta^2_p = .112$. Speaking to Hypotheses 5 and 6, Cluster 3, the Negative Time Perspective cluster, scored lower than the other two clusters on both hope measures, and was the cluster that was most depressed and anxious. Cluster 1, the Balanced Time Perspective cluster, was the most hopeful and the least depressed and anxious.

Table 8

Summary Statistics for Hope, Depression and Anxiety Scales by Cluster M (SD)

	Cluster 1	Cluster 2	Cluster 3
HHI	39.00^{a} (4.30)	38.07^{a} (4.66)	32.29^{b} (5.84)
HS	53.49^{a} (5.95)	48.30^{b} (8.66)	39.81^{c} (10.17)
DASS-D	9.95^{a} (3.24)	10.49^{a} (3.61)	16.24^{b} (5.53)
DASS-A	10.62^{a} (3.65)	11.15^{a} (3.10)	13.49^{b} (4.00)

Note. HHI = Herth Hope Index, HS = Snyder Hope Scale, DASS-D = Depression Anxiety Stress Scale Depression, DASS – A = Depression Anxiety Stress Scale Anxiety. Means with different subscripts differ at $p < .05$.

Model Building

To test Hypothesis 7, Hayes's (2022) Process Macro was used to test models with the balanced time perspective cluster as the predictor variable (X), depression or anxiety as the outcome variable (Y), and hope (Snyder or Herth) as the mediator (M). In the classic Baron and Kenny (1986) model, the predictor X is seen as the cause of the outcome variable Y. That is Step 1 in the Baron and Kenny model. Step 2 is the relationship between X and the mediator or M. In other words, is there a relationship between balanced time perspective and hope. In Step 3, X or the balanced time perspective and M or the mediator of hope are tested simultaneously, with the objective being that the relationship between X and Y in the first step is mediated or suppressed in the presence of M. Step 4 is an examination of X and Y or X and Y in the presence of M although the statistical significance is not built into Baron and Kenny. In other words, time perspective is related to depression or anxiety but that relationship diminishes in the presence of hope. Although Baron and Kenny proposed testing mediation through simple and multiple regression, Hayes's macro tests all those paths simultaneously but in addition performs a bootstrapping test to determine the statistical significance of the indirect effect (X to Y in the presence of M. Mathematically, a test of the indirect effect of X to M and M to Y must be equal to the test of the direct effect of X to Y in the presence or not in the presence of the mediator. Effect coding was done such that the first indicator variable (X1) compared the Balanced Cluster (Cluster 1) to the Present Past/Disconnected Future Cluster (Cluster 2; i.e., -1 1 0), and the second indicator variable (X2) compared the Balanced Cluster to the Negative Cluster (Cluster 3; i.e., -1 0 1). Model 4 of Process was run to test mediation four times, with the different combinations of the Herth and Snyder hope measures as the mediators, and depression or anxiety as the outcome variables.

Turning first to Anxiety and Snyder hope (Table 9), neither X1 nor X2 produced a statistically significant indirect effect. In other words, the difference in the relationship between Balanced versus Present Past Clusters (X1) and Anxiety in the presence of Snyder hope (b = -.44) was not sufficiently different from the relationship between Balanced versus Present Past Clusters (X1) and Anxiety in the absence of Snyder hope (b = -.51). That difference of b = -.07 was not found to be statistically significant as tested by bootstrapping in SPSS Process (the confidence interval included zero). The same was true for Balanced and Negative Clusters (X2; b = 1.16 vs. b = 1.66).

Turning next to Anxiety and Herth hope (Table 10), both X1 and X2 produced statistically significant mediation. The difference between Balanced versus Present Past Clusters (X1) and Anxiety in the presence of Herth hope (b = -.36) was different from the relationship between Balanced and Present Past Clusters (X1) and Anxiety in the absence of Herth hope (b = -.70). Similarly, the difference between Balanced and Negative Clusters (X2) and Anxiety in the presence of Herth hope (b = .94) was different from the relationship between Balanced and Negative Clusters (X2) and Anxiety in the absence of Herth hope (b = 1.81). Thus, the presence of Herth hope reduced the relationship between time and anxiety.

Turning then to Depression and Herth hope (Table 11), both X1 and X2 produced statistically significant mediation. The difference between Balanced versus Present Past Clusters (X1) and Depression in the presence of Herth hope (b = -1.14) was different from the relationship between Balanced and Present Past Clusters (X1) and Depression in the absence of Herth hope (b = -1.92). Similarly, the difference between Balanced and Negative Clusters (X2) and Depression in the presence of Herth hope (b = 2.01) was different from the relationship between Balanced and Negative Clusters (X2) and Depression in the absence of Herth hope (b = 4.16). Thus, Herth hope reduced the relationship between time and depression.

Finally, Table 12 reports on Depression and Snyder hope. X1 did not produce statistically significant meditation (b = 1.51 vs. b= 1.73). However, X2 produced statistically significant mediation. The difference between Snyder Hope and Depression in the presence of X2 or Balanced and Negative Clusters (b = 2.18 vs. 4.01) produced statistically significant differences between the respective clusters and depression mediated by Snyder hope (b = 1.83). Thus, differences between balanced and negative clusters and depression were reduced by Snyder hope.

Moderation tests whether a mediated relationship holds for individuals of one sort or another. To test whether active versus earlier survivor status moderated the relationships between time perspective clusters and depression or anxiety mediated by Snyder or Herth hope, Hayes (2018) Process Macro Model 8 was run. In other words, is the relationship between time perspective and psychopathology as mediated by hope depends on one survivor status or not. The results are presented in Table 13. Recall anxiety as the outcome variable with Snyder hope as the mediator produced a mediated effect of b = -.07 when the clusters were Balanced and Past Present (X1) (see Table 9). Looking at Table 13, that mediated effect of b = -.07 was partitioned into a mediated effect of b = -.06 for Active Status and b = -.09 for Early Survivor Status. The difference between those mediated effects moderated by Active and Early Survivor Status, b = -.03, produces a bootstrapped 95% confidence interval of -.41 to .30, a confidence interval that includes zero and thus is not statistically significant. The same was true for Anxiety and Snyder hope when the clusters were Balanced and Negative (i.e., a difference of b = -.07; bootstrapped 95% confidence interval of -.39 and .28). Summarizing Table 13, Active Status versus Early

Survivor Status failed to moderate the Snyder and Herth hope mediated relationships between effect coded clusters and depression or anxiety.

Table 9

Results from Mediation Analyses for Anxiety and Snyder

	b	SE	*t*	*p*	LLCI	ULCI
Anxiety-Snyder						
X1 - Snyder	1.04	1.01	1.03	.31	-.96	3.04
X2 - Snyder	-7.41	.92	-8.01	.001	-9.24	-5.59
X1 – Anxiety	-.44	.41	-1.07	.29	-1.25	.37
X2 – Anxiety	1.16	.44	2.63	.009	.29	2.03
Snyder - Anxiety	-.07	.03	-2.15	.03	-.13	-.01
X1 – Anxiety	-.51	.41	-1.23	.22	-1.32	.31
X2 – Anxiety	1.66	.37	4.39	.001	.92	2.41
X1 - Indirect	-.07	.08			-.28	.06
X2 - Indirect	.50	.28			-.02	1.09

Table 10

Results from Mediation Analyses for Anxiety and Herth

	b	SE	*t*	*p*	LLCI	ULCI
Anxiety-Herth						
X1 - Herth	1.62	.58	2.77	.01	.47	2.77
X2 - Herth	-4.18	.54	-7.78	.001	-5.24	-3.12
X1 – Anxiety	-.36	.40	-.90	.36	-1.16	.43
X2 – Anxiety	.94	.42	2.23	.03	.11	1.78
Herth - Anxiety	-.21	.05	-3.97	.001	-.31	-.11
X1 - Anxiety	-.70	.41	-1.71	.09	-1.51	.11
X2 - Anxiety	1.81	.38	4.79	.001	1.07	2.57
X1 - Indirect	-.34	.16			-.69	-.07
X2 - Indirect	.87	.29			.34	1.47

Table 11

Results from Mediation Analyses for Depression (Depress) and Herth

	b	SE	*t*	*p*	LLCI	ULCI
Depress-Herth						
X1 - Herth	1.47	.57	2.56	.01	.34	2.61
X2 - Herth	-4.03	.53	-7.63	.001	-5.07	-2.98
X1 – Depress	-1.14	.41	-2.78	.01	-1.95	-.33
X2 – Depress	2.02	.43	4.70	.001	1.17	2.86
Herth - Depress	-.53	.05	-9.76	.001	-.64	-.42
X1 - Depress	-1.92	.50	-3.81	.001	-2.92	-.93
X2 - Depress	4.16	.46	8.98	.001	3.25	5.07
X1 - Indirect	-.79	.31			-1.43	-.21
X2 - Indirect	2.14	.39			1.42	2.98

Table 12

Results from Mediation Analyses for Depression (Depress) and Snyder

	b	SE	*t*	*p*	LLCI	ULCI
Depress-Snyder						
X1 - Snyder	.83	.99	.84	.40	-1.13	2.79
X2 - Snyder	-7.11	.90	-7.88	.001	-8.90	-5.33
X1 – Depress	-1.51	.45	-3.35	.001	-2.70	-.62
X2 – Depress	2.18	.48	4.54	.001	1.23	3.13
Snyder - Depress	-.26	.03	-7.30	.001	-.33	-.19
X1 - Depress	-1.72	.52	-3.34	.001	-2.75	-.71
X2 - Depress	4.01	.47	8.54	.001	3.08	4.93
X1 - Indirect	-.22	.25			-.71	.29
X2 - Indirect	1.83	.35			1.17	2.54

Table 13

Results from Moderation Analyses

Variable		Effect	*SE*	LLCI	ULCI
Anxiety-Snyder					
X1	Active	-.06	.14	-.39	.19
X1	Early	-.09	.11	-.35	.06
Active Early		-.03	.17	-.41	.31
X2	Active	.60	.29	.07	1.22
X2	Early	.53	.27	.06	1.12
Active Early		-.07	.16	-.39	.28
Anxiety-Herth					
X1	Active	-.17	.18	-.55	.17
X1	Early	-.46	.21	-.92	-.11
Active Early		-.28	.26	-.88	.15
X2	Active	.75	.27	.29	1.33
X2	Early	.93	.33	.36	1.63
Active Early		.17	.24	-.26	.72
Depress-Herth					
X1	Active	-.29	.44	-1.19	.55
X1	Early	-1.13	.41	-1.98	-.38
Active Early		-.84	.59	-2.04	.24
X2	Active	1.85	.45	1.01	2.81
X2	Early	2.30	.50	1.39	3.34

Active Early		.44	.59	-.64	1.70
Depress-Snyder					
X1	Active	-.12	.47	-1.04	.80
X1	Early	-.32	.29	-.91	.24
Active Early		-.20	.54	-1.26	.87
X2	Active	2.07	.50	1.13	3.11
X2	Early	1.78	.40	1.06	2.60
Active Early		-.28	.51	-1.31	.72

CHAPTER 4: Discussion

In this study, I aimed to investigate the relationships between time perspective, hope, depression, and anxiety among individuals undergoing cancer treatment and early survivors. My discussion is structured as follows, focusing on the key findings and their implications. First, I will restate what analyses I performed and highlight key findings. Second, I will examine which of my hypotheses were supported and which were not supported, providing possible explanations for why. Third, I will explore the implications of this dissertation for theory and research, focusing on Time Perspective Theory. I will also explore the implications of this dissertation for counselling practise and for oncology treatments. Fourth, I will explain the limitations of this study. Fifth, I will explore future directions that this work suggests. Finally, I will provide my concluding thoughts and summarize the learnings from this work.

Summary of the Present Study

In this study cancer patients who fit one of two treatment categories (i.e., in active treatment or early survivorship) completed an online questionnaire measuring their time perspective, mental health (i.e., depression and anxiety) and levels of hope. Data were analysed using correlation and ANOVA to look for relationships between substantive variables and demographic variables, and differences between categories based on those demographic variables. Hierarchical cluster analysis was used to place patients within time perspective clusters and ANOVAs were used to examine whether those time perspectives varied by treatment categories and mental health outcomes. Finally, multiple regression analyses were conducted to determine if hope mediated relationships between time perspective cluster and mental health outcomes, and if treatment status moderated this same relationship.

The S-ZTPI subscales as the measure of time perspectives demonstrated strong alpha reliabilities (ranging from 0.71 to 0.86) and similar correlations between subscales as seen in previous research (Carelli et al., 2011; Zimbardo & Boyd, 1999). Differences between the subscale mean scores were found such that the highest scores were associated with present hedonic and future positive, and the lowest scores with past positive, past negative, future negative, and present fatal. No differences between subscale mean scores were found based on gender. Subscale mean scores were correlated with age for past-positive, past-negative and future-negative.

As was expected, uni-dimensional and multi-dimensional measures of hope were highly correlated with each other, and both hope measures were negatively associated with anxiety and depression. As we turn to look at the relationships between the S-ZTPI subscales as measures of time perspective and measures of mental health, I confirmed my hypothesis that depression had positive relationships with past-negative and future negative subscales, and negative relationships with past-positive and future-positive subscales. Anxiety was most highly related to past-negative and future-negative subscales. Contrary to previous findings (e.g., Stanton et al., 2015), we found no differences on depression and anxiety comparing those in active treatment to those in early survivorship. Contrary to my hypothesis, those in active treatment had higher scores on the Snyder's Hope Scale and to a lesser extent the Herth Hope Index (HHI). Those in active treatment versus early survivors did not differ on age, gender, anxiety, or depression.

Hierarchical cluster analysis revealed three interpretable clusters. As expected, a balanced time perspective cluster was identified in addition to disconnected future time perspective and negative time perspective clusters. The numbers of patients from active treatment and early survivorship were similar in each of the three clusters. The balanced time perspective cluster contained those patients most hopeful and least anxious and depressed. Conversely, the negative cluster contained those patients least hopeful and most anxious and depressed. Clusters did not differ by active versus early survivor status.

To see if time cluster predicting depression or anxiety was mediated by hope and was moderated by status, mediation and moderation analyses were conducted. Mediation was found in that the advantage of a possessing balanced time cluster over a disconnected future or negative time clusters predicting anxiety and depression diminished in the presence of Herth hope. In other words, high levels of Herth hope could substitute for an advantage gained by maintaining a balanced time perspective. However, high levels of Snyder hope did not bestow the same advantage. Furthermore, any advantage for Herth hope was unaffected by active or earlier survivor status.

Hypothesis Acceptance and Rejection

Whether hypotheses were accepted or rejected are presented in Table 14.

Table 14. Hypothesis Acceptance and Rejection

Hypothesis	Supported
1. Hope will be negatively associated with depression and anxiety	Yes
2. Patients in active treatment will have increased depression and anxiety and decreased hope as compared to early survivors	No
3. Hope will be positively associated with a Past Positive, Present Hedonistic, and Future Positive Time Perspective and negatively associated with a Past Negative, Past Fatalistic, and Future Negative Time Perspective	Yes
4. Early survivors will have a more balanced time perspective than patients in active treatment	No
5. A balanced time perspective will be negatively associated with depression and anxiety	Partially
6. A balanced time perspective will be positively associated with hope	Partially
7. The pathway between time perspective and depression and anxiety will be mediated by hope and moderated by cancer stage	Partially

Hope in Treatment and Survivorship

Contrary to the second hypothesis, individuals in active cancer treatment exhibited higher scores on both measures of hope compared to early survivors. Since the 1980's hope has been identified as a "key element" in the cancer experience and an abundance of research has been done by those working in oncology to define and measure hope (Dufault & Martocchio, 1985; Hickey, 1989). Resoundingly, hope has been associated with positive outcomes for cancer patients, including higher quality of life (Shen et al., 2020), lower psychological distress (Todorov et al., 2019), and better return to goal pursuits (Berg, et al., 2020). In fact, a recent systematic review of 33 studies of patients undergoing treatment for cancer found positive associations between hope and quality of life, social support, and spiritual and existential well-being, and negative associations between hope and symptom burden, psychological distress, and depression (Nierop-van Baalen, Grypdonck, Van Hecke, & Verhaeghe, 2020). Studies in this review took place across Asia, United States, and Australia. Similar to my findings, this review found no relationship between hope and either demographic variables or clinical variables. The patient experience of hope and benefits of hope are well understood while a patient is in active treatment but after treatment ends, we find far less clarity and less research.

Intuitively, one would think hope would be challenged or diminished by a cancer diagnosis and the intensity of the treatment process and would then rebound as an individual moves away from these challenges, yet this study found the opposite result. We found that those in active treatment scored higher on both measures of hope when compared to those in early survivorship. We may wonder, then, what is happening to patients so that their hope decreases, rather than increases as they move away from their cancer diagnosis and treatment? There are several possible explanations for this decrease in hope.

To understand the decrease in hope in patients, we first must understand happens between active treatment and early survivorship. As described by Stanton and colleagues (2015), as patients' complete treatment, they begin navigating the uncertain waters of the re-entry phase. Days may lose structure as cancer care appointments begin to become less frequent and for many, on-going follow up is transferred to a primary care physician. Regular and supportive connections with the cancer care team are ended for many patients when they are discharged from oncology clinics. Day-by-day, more aspects and responsibilities of regular life resume and many return to work in this time frame. The pressure, speed, expectations, and commitments of regular life come back in full measure. Patients continue to heal both physically and emotionally from the intensity of treatments, finding what their "new normal" may entail, and having to live within and work towards accepting a changed body. They may begin to face fear of recurrence in a different way and process the losses brought by cancer (e.g., changes to body, self-image, loss of health status, energy level, fertility, etc). It is often in this phase the meaning and purpose found in active treatment (i.e., "battling" or "fighting" the cancer) become less clear while the changes and losses stemming from the cancer become evident. Taken all together, this context is rife with factors that can challenge one's experience of hope. Without targeted intervention and support, it is clear how this struggle may carry into early survivorship.

Delisle and colleagues (2022) found that structural factors most strongly associated with cancer survivors reporting a positive experience with their follow-up cancer care are 1) perceiving their oncology specialist oversaw their follow up care, and 2) reporting that cancer care follow up among different healthcare providers was good or very good. It is unsurprising that patients who felt their care was in good hands (whether by oncology team or primary care physician) reported a positive follow-up cancer care experience. Having a trusted healthcare professional to support you in survivorship undoubtedly fosters a sense of hope. However, not all patients have the benefit of this structural factor of care available to them. The Alberta Medical Association (2023) estimates that upwards of 650, 000 Albertans are looking for a primary care physician (albertadoctors.org) and a recent report found that 923,542 people visited the Alberta Find a Doctor website between April 2022 and March 2023 (albertafindadoctor.ca). This means a sizable number of cancer survivors are not getting the benefit of, or sense of hope associated with feeling their follow-up cancer care is in good hands – indeed many may not have a primary care provider who is following them and to whom they feel connected.

Shakeel, Tung, Rahal, and Finley (2020) looked at the factors associated with unmet needs in 10717 adult (age 30 years and older) cancer survivors with shocking results. Almost 8 out of 10 respondents who reported a health care concern in one of three domains (emotional, physical, or practical) also reported an inadequate level of support in addressing these concerns. When looking at the emotional concerns, 47% or respondents indicated that depression was a concern and of those who reported depression as a concern, 67% report it was an unmet need. Looking at anxiety, 69% of respondents indicated that anxiety was a concern, and 68% report it as an unmet need. Looking at other psychosocial issues, we continue to see numbers equally as concerning. Of the 32% of the overall sample who acknowledged changes in their relationships with family members, over ¾ of respondents (78%) had an unmet need in addressing these concerns. Almost half the sample reported a concern with changes in sexual intimacy (43%) and of these individuals, 70% describe this as an unmet need. Nearly 40% of the sample indicate problems with memory and concentration, with 75% of these finding it an unmet need. This is a small reporting of results but numbers across all three domains echo the challenges that cancer survivors face. The median number of concerns faced was six, with help not being sought out or not available for a median of four concerns. These results paint the picture of a challenging phase of adjustment and a lack of support available to those facing these difficulties. Is it any wonder that patients' experience of hope would decrease in this early survivorship timeframe as individuals face many challenges with little support?

In 2016, the Canadian Partnership Against Cancer conducted a Pan-Canadian Experiences of Cancer Patients in Transitions Study survey asking cancer survivors about their experiences with follow-up cancer care. The goal of the study was to identify key gaps in care and common unmet needs within cancer survivors who are 1-3 years post-treatment. Survey respondents had a non-metastatic breast, hematologic, colon melanoma or prostate cancer. Results from this study have been analyzed by various groups across Canada. Specific to Alberta cancer survivors, we can see how respondents' concerns and unmet needs vary by tumor group (Link, DeIure & Watson, 2022). Again, I limit my reporting of their findings to challenges coming from the emotional domain. Across all tumor groups, depression and sadness ranged as a concern in 32-53% of respondents; anxiety, stress or worry about cancer returning ranged from 56-77% of respondents; changes in relationship with family ranged 12-32% of respondents; changes in body image ranged from 25-55% of respondents; and changes in sexual intimacy ranged as a concern in 13-72% of respondents. When looking at concerns of specific tumor groups, it was evident that different patient groups experience different challenges. Anxiety was identified as the top concern for all tumor groups, except genitourinary. Generally speaking, younger patients (with the youngest being AYA patients [Adolescents and Young Adults – ages 15-39 years]) had higher levels of anxiety than patients aged 65 and older.

It is evident that cancer survivors face many challenges in re-entry to their "normal life" and that many of these difficulties can carry on into early survivorship without targeted intervention. The healthcare team that provided support, expertise and hope during active treatment phase is now absent for many cancer survivors who have transitioned back into community care. In addition, cancer survivors find themselves facing many predictable post-treatment sequelae with little support or guidance. This situation creates an ideal context to drain hope and lead to on-going psychological distress.

Balanced Time Perspective in Treatment and Survivorship

Turning now to an examination of a balanced time perspective in active treatment and early survivorship, I found my fourth hypothesis challenged in that I found an equal number of patients with balanced time perspective in active treatment and early survivorship groups. One may wonder if this equality is due to how treatment groups were treated with hierarchical cluster analysis. By combining active treatment and early survivorship groups to mitigate the challenges with comparing across samples, inadvertently I may have made it difficult to tease apart if there are differences in the number of those with a balanced time perspective in active treatment compared to those in early survivorship. Future research employing a longitudinal design would be better able to examine this question and more importantly determine if the number of individuals with a balanced time perspective changes during cancer treatments and into recovery.

Alternatively, I can take a perhaps more encouraging view of this lack of difference. First, I can assume that a balanced time perspective should be expected across all treatment phases. Using an alternate form of measuring balanced time perspective, Stolarski et al. (2015) posit that the balanced time perspective is normally distributed. This supposes a certain amount of the population (i.e. the majority) will have a balanced time perspective. Indeed, it seems that time perspective research seems to operate with the assumption of a balanced time perspective being presupposed to exist. This represents the idea of the balanced time perspective being relatively consistent over time as was found by Wiberg et al. (2017) in their 18-month longitudinal study. It would be important for future cancer research to also employ a longitudinal design to examine if the number of individuals with a balanced time perspective changes throughout the cancer trajectory.

Balanced (or not) Time Perspective and Mental Health

As was expected by hypotheses five and six, individuals with balanced time perspective (BTP) were more hopeful and less depressed and anxious. A balanced time perspective has been shown consistently to be associated positive characteristics and outcomes. Individuals with a BTP have a great sense of well-being (McElheran, 2012), report higher quality of life (Wiberg et al, 2017), are more mindful (Drake at al. 2008), and have more satisfaction with life (Stolarski, Vowinckel, Janowski, and Zajenkowski, 2016). In addition, these individuals tend to report more positive and fewer negative emotions (McElheran, 2012), less distressed (Mooney, Earl, Mooney & Bateman, 2017) with overall better mental health (Daukantaitė, 2017; Vowinckel, Westerof, Bohlmeijer, & Webster, 2017). The benefits of an optimal temporal orientation cannot be understated.

Just as the research indicating the benefits of a balanced time perspective are growing, so is the research indicating the challenges faced by those with a negative or non-balanced time perspective. A recent systematic review of literature examining the deviation from the balanced time perspective (DBTP; that is a score that differs more significantly from the theoretical ideal scores of a balanced time perspective) points to many challenges faced by those with less temporal balance (Stolarski, Zajenkowski, Jankowski, & Szymaniak, 2020). In fact, these authors found that DBPT accounts for up to 40% of the variance of well-being in the studies they examined. In addition, those with a higher DBTP were found to be more distressed, with higher anxiety, more depression (Olivera-Figueroa et al., 2014) and lower quality of life (Oyandel & Buela-Casal, 2014) when compared to those with a more balanced time perspective. The DBTP is also associated with higher alcohol use in both adolescents and adults (Loose et al. 2017); being less mindful (Ge, Wu, Li & Zheng, 2019), being less satisfied in their relationships (Stolarski, Wojtkowska & Kwiecinska (2016), and having more maladaptive attachment styles (Arkirmak, 2014).

Looking at results from this study, a more striking, and perhaps more clinically relevant time perspective cluster to examine would be the negative time perspective cluster. Almost a full third of cancer patients in this study (79 out of 216) had a negative time perspective, and were more depressed, more anxious, and less hopeful than patients in the other two clusters. This is a sizable number of cancer patients and survivors who would benefit from targeted intervention to help improving coping and adjustment.

Given the traumatic nature of a cancer diagnosis itself, let alone the magnitude of some cancer treatments, it is no surprise that a certain portion of cancer patients would qualify for a diagnosis of Cancer-Related Post-Traumatic Stress Disorder (CR-PTSD). As we know, PTSD occurs when an individual is unable to recover from a traumatic event (Leano, Korman, Goldberg & Ellis, 2019). They experience recurrent intrusive thoughts about the traumatic event, experience negative changes in mood or cognition, and often work to avoid any stimuli that can cue reminders of the trauma. Their bodies move into a state of heightened arousal and quick reactivity. These symptoms can persist for weeks or months and become disruptive to living life in a meaningful way. Even with the completion of cancer treatments, there is typically no end to cues (e.g., cancer charities), reminders (e.g., learning of a celebrity death to cancer), and possible medical follow-up for most cancer patients all serving to keep the trauma being present.

When we look at the temporal features of the negative time perspective cluster, we see individuals who have many shared aspects to those with CR-PTSD. First, we have individuals with a negative future perspective. When they look to the future, they experience anxiety and fear of recurrence. Second, these individuals have a past-negative time perspective. The past is filled with remembering the trauma of the event and there is little room to remember anything good from the past. Third, we have a high degree of present-fatalism marked by the feeling of having little control over future outcomes, and low degree of present-hedonism. Instead of pleasure or ease within the body, they experience hypervigilance and distress. Individuals with a negative time perspective would benefit from further assessment specifically looking for PTSD. At the same time, patients may respond more positively to discussing a unbalanced time perspective rather than PTSD; this provides non-pathologizing language that the clinician can use to talk to cancer patients about their experiences and perhaps move them towards understanding why specific interventions may be helpful (e.g. intervention targeted at PSTD).

Implications

In this section I will explore the implications of this work for theory and research, particularly in the fields of Time Perspective and Hope, as well as the implications of this work for psychosocial-oncology and oncology treatments.

Implications for Time Perspective Theory and Research

Over the last 20 years, the Zimbardo Time Perspective Inventory (ZTPI) has become one of the most well-known and researched inventories used to measure an individual’s experience of time. It has been validated on samples of university students (Zimbardo & Boyd, 1999), adults (McElheran, 2012), seniors and elders (Zalai et al., 2022) and has been translated into multiple languages including Spanish, Swedish, German, Russian, Italian, Turkish, Lithuanian, and Arabic. It now has validated short forms in various languages, and new temporal zones continue to be developed and refined (e.g., expanding the present to include a eudemonic or expanded present, transcendental future; Stolarski, Fieulaine, & Zimbardo, 2018)

As time perspective literature has become more globally established, it has increasingly been utilized in a clinical context. Early in the transformation from theoretical to clinical were Sword, Sword, Brunskill, and Zimbardo (2014) who piloted time perspective therapy (TPT) with U.S. veterans trying to address their service-related post-traumatic stress disorder (PTSD), which has since been expanded to other clients with PTSD. In their book, *The Time Cure,* Zimbardo, Sword, and Sword (2012) share how individuals with PTSD become “stuck in time” with symptoms of PSTDs, demonstrate a negative temporal bias, and enact behaviours which reinforce negative symptomology. Supporting these findings, Mengxin and Zilan (2022) found that intrusive rumination positively predicts PTSD and that the more imbalanced an individual’s time perspective, the more severe the symptoms of PTSD. Similarly, Tomich, Tolich and DeMalio (2022) found more trauma exposure was related to a more deviation from a balanced time perspective and again, more symptoms of PTSD.

The goal of TPT is to help identify and then modify an individual’s time perspective profile through clinical interventions. Zimbardo and Boyd (1999) suggest that most people are unaware of their time perspective and how their temporal experience may impact or influence their thoughts, feelings, and/or behaviours. Kazakina and van Beek (2017) state that the role of counselling or psychotherapy is to learn and “apply purposeful switching of temporal frames – past, present, and future – to help patients better understand their experience in the present and how it is affected by their recollections or behavioural patterns from the past or their thoughts and emotions about the future" (p. 241). Within the therapeutic context, clinicians seek to articulate how time perspective is typically hidden within our experience and then learn ways to become aware and shift towards using time in a more positive way.

Currently, there is dearth of research using TPT with cancer patients. In fact, I could only find one article where TPT was used as a treatment for cancer patients. Echoing positive results from Zimbardo, Sword and Sword (2012), Mirzania, Firoozi, and Saberi (2021) found that for women with breast cancer TPT significantly reduced symptoms of post-traumatic stress, anxiety and depression when compared to the control group. Treatment consisted of 6 weeks of individual psychotherapy (with 90 minute counselling sessions) focused on examining patient's temporal attitudes, exploring positives and negatives of each time zone, and working to shift patient's towards to a more balanced time perspective. Given the rigorous nature of this randomized control trial, this provides a promising glimpse into the power of using TPT with cancer patients.

Implications for Hope Theory and Research

Time is an intrinsic aspect of hope, and there is a consensus among hope scholars that hope includes future-facing component (Dufault & Martocchio, 1985, Snyder et al. 1991). However, results from my master's thesis (McElheran, 2012) called this sole focus on the future time perspective into question, finding that the time perspectives most strongly associated with hope (or lack thereof) are past-positive and future-negative, respectively, and that while the future time perspective had a statistically significant relationship with hope it was a negligible correlation. This current project again found the strongest relationship between hope (or lack thereof) among those high in past-positive or past-negative. Contrary to what I found in my master's work (McElheran, 2012), the current project found that both future time perspectives had correlations almost as high as those with the two past orientations. Future research is warranted to better understand the relationship between the individual time perspectives and hope so we that can learn how to best leverage the power of hope to support cancer patients and cancer survivors.

Within oncology research, the use of both uni-dimensional and multi-dimensional models of hope are well represented (Feldman & Corn, 2023). This project aimed to determine if there were any differences between uni-dimensional and multi-dimensional measures of hope with cancer patients and survivors. Given the high correlations found in the Herth Hope Index (HHI) between the total score and subscales, this project used only the total score for the sake of simplicity and for parity with the Hope Scale by Snyder. Across variables, the differences between the two measures were small and all scores trended in similar fashion between the two scales. Despite the purported differences between scales, a recent systematic review exploring the construct validity of the Herth Hope Index (HHI) may help us understand these similarities. Within this review most studies found two factors, not three as hypothesized in its design (Nayeri, et al. 2020). Looking across the studies found within this 2020 review, the two consistent factors found within the HHI can be described as: 1) future-focused sense of expectancy factor and 2) interconnection and relationships factor. When I compare this to the Synder Hope Scale, features of alignment between the two are obvious, which may be why no meaningful differences between scales were found within the current research project.

How Can We Support Patients?

Defining this project and my career as a psychologist in psychosocial oncology is a simple yet incredibly complex question: how do we best support our patients? First, the importance of assessing and addressing time perspective in individuals undergoing cancer treatment and in survivorship is clear. The presence of a balanced time perspective may contribute to better psychological well-being during the cancer experience and represents a non-pathologizing form of assessment. Few cancer patients seek psychological support prior to a cancer diagnosis and many cancer patients experience shame associated with accessing supportive care. There is stigma associated with mental health concerns and having a non-pathologizing language to address patient issues can be extremely empowering. Using the language of time perspective instead of the language of anxiety or depression, we can instead discuss a negative-future or past-negative time perspectives while also readily having access to past-positive, present-hedonistic, and future-positive time perspectives. Intervention would no longer be geared to improving mental health concerns but rather to helping patients find temporal balance. The language of time perspective is more accessible and less intimidating than that of mental health, and it may allow more culturally diverse individuals to see themselves within these conversations.

Second, hope emerges as a factor in mitigating depression and anxiety in this population, emphasizing the need for interventions that foster hope. As elusive as hope may be, many excellent therapeutic interventions exist that are designed to foster hope in a clinical setting. Edey et al. (2005) developed a toolkit of hope focused interventions to use in counselling. Based on the work of Dufault and Martocchio (1985), Edey et al. (2005) considered the multidimensional properties of hope in their seeking of ways to integrate hope into practice using hope activating questions and activities. Edey and their colleagues (2005) highlight the importance of the relational qualities of hope and how the person in the helper role can share their hope with the client. Similarly, Thorton and colleagues (2014) found that a combination of hope and mindfulness-based therapy improved mood and decreased distress in cancer patients with recurrent breast or gynecologic cancers. Furthermore, Berg and colleagues (2020) found positive results using a hope intervention with young adult cancer survivors with patients reporting increased hope, less depression, and less substance use. Hope-based interventions should be used to help cancer patients bolster their experience of hope that may in turn help improve coping throughout the cancer trajectory.

Psychosocial Oncology. The field of psychosocial oncology has grown steadily over the past 30 years. Psychosocial oncology is increasingly viewed as important part of whole-person care. The Canadian Association of Psychosocial Oncology (CAPO) in 2010 released a revised *Standards of Psychosocial Health Services for People Affected by Cancer*. These standards define this speciality of care as being "concerned with the social, psychological, emotional, spiritual, quality of life and functional [practical] aspects of cancer, from prevention through bereavement" (Howell et al., 2009, p. 10). These standards also emphasize that distress be viewed at the *6th Vital Sign* of cancer care. Screening for distress is standard for Cancer Care Alberta, with the use of a patient screening tool that assesses physical, emotional, functional, and spiritual concerns, and with referrals sent to appropriate cancer care providers when patients score high in an assessment area. The acceptance of the importance of psychosocial oncology in patient-centred care is far more common and better integrated into the care process than it was a couple of decades ago.

One challenge that remains for those working in psycho-oncology and wanting to do research in this area is the lack of operationalization of the terms "survivor" and "survivorship" within this field of inquiry. As I reviewed the psycho-oncology literature for this project, it became clear that the terms "survivor" and "patient" are often used interchangeably and that researchers rarely provide a definition of exactly where in the cancer continuum (active treatment to long-term survivorship) participants fall (Rowland, 2008). The National Coalition for Cancer Survivorship states that a person should be allowed to call themselves a survivor "from the moment of diagnosis and for the balance of [their] life, regardless of the ultimate cause of death" (p. 29). This broad definition encompasses those with a diagnosis but does not provide structure of delineation of the survivorship continuum. Early writing on seasons of survivorship by Mullan (1985), describe "acute survival," "extended survival" and "permanent survival", and Stanton and colleagues (2015) provided us with the categories of active treatment, re-entry, early and late survivorship. More recently Wood (2018) attempted to explore the challenges with language related to survivorship by doing a concept analysis of the terms related to *transitioning to cancer survivorship.* Wood's results revealed six attributes that would most closely align with Stanton et al (2015) challenges associated with the re-entry phase.

While there have been some attempts at defining phases of survivorship, a universal agreement in psycho-oncology is far from implementation, resulting in challenges with time-frame specific psycho-oncology supports or interventions. It would benefit all psycho-oncology professionals (and thus benefit cancer patients) to develop a shared and consistent language around the different phases of treatment and recovery. Doing so would allow researchers to better explore and understand what interventions would be of most benefit at different phases of the cancer experience, thus meeting calls for more evidence-based interventions in the field of psycho-oncology (Rankin et al., 2019)

Having used the language of active treatment, re-entry, and early survivorship for several years clinically with patients to help provide structure and validation to their difficulties, I have found patients greatly benefit from articulating how the experience changes as they shift from active treatment to re-entry and then into early survivorship. Moving towards a shared language of experience would facilitate creating targeted interventions and help address mental health concerns in a more timely and efficient manner, resulting in more patients thriving in survivorships versus simply surviving cancer.

Ideally, patients have timely access to psychosocial support at any point throughout their cancer experience to ensure that cancer-related concerns and distress are addressed effectively. The lived reality of what patients experience is often far more complex due to resourcing issues and other structural and systemic factors over which they have little control. Patients in urban areas have more access to psychosocial support than those in rural areas. This lack of access leads to a variety of detrimental outcomes such not having informational needs met, poorer quality of life, and higher levels of anxiety and depression (Husson et al., 2011; Palmer et al., 2020). It would behoove the Cancer Care Health System to consider how to allocate resources to ensure that all patients with cancer who want to access psychosocial oncology are able to do so.

Oncology Treatments. As cancer treatments become more sophisticated, more patients live longer than before, however, many of these patients find themselves dealing with medically complex bodies. Treatment and treatment side effects can significantly alter an individual’s body (e.g., heart disease, neuropathy, chronic pain, nerve damage, lymphoedema) and the reality is that for many patients, there is no return to previous functioning. Ellingson (2017) argues that the dominant narrative around cancer survivorship overly emphasizes the *happy ending* survivors and sorely neglects the stories of long-term survivors who have late treatment effects or permanent changes resulting from cancer treatments. Those offering oncology treatments must walk the fine line of providing hope while offering a realistic appraisal of how life may change from cancer treatments. Oncology team members must remember they are treating a person, not a disease, and taking the time to get to know the patient as a person is a critical step in person-centred care.

As many patients' complete treatment and move through the re-entry phase, they are often discharged from their cancer care physicians and advised that their medical care will be managed by a family physician. Many patients struggle with this transition as they have found comfort in the expertise found within cancer care and some find their family physicians have little understanding of the complexity that living in a post-treatment body can hold. To address this knowledge gap, Smith and colleagues (2021) piloted a continuing medical education (CME) module on cancer survivorship for provide primary care and family physicians. As the numbers of cancer survivors continues to grow, it is imperative that more primary care physicians are empowered in their understanding of the challenges that can come with cancer survivorship and how to best support their patients with these challenges.

Overall, supporting patients comes down to getting to know them and understanding their unique cancer experience. Having a system that is set up for them to access the supports that they need (e.g. psychosocial oncology) as well as a system that understands how to treat their needs is key as we move into a future where, increasingly, patients are surviving their cancer(s) and living with complex health needs from the same treatments that have saved their lives.

Limitations

It is essential to acknowledge some limitations to this study. First, the cross-sectional design of this project restricts my ability to make causal inferences. For psycho-oncology treatments to be most effective, we need research from which we can draw causal inferences. Doing so allows for more targeted treatments to happen in a timely fashion with the end goal being patients having better support in adjusting to the changes brought by cancer.

Second, my small sample is unlikely to be representative of all cancer patients. As my knowledge of cancer-care has grown, so too has my understanding of the unique differences brought by differing cancer diagnoses. This project provides a starting point to understand time perspective in cancer patients, but this broad cross-section of patients may hide differences unique to each specific cancer diagnosis. Moreover, this research focused solely on cancer survivors and the sample was comprised primarily of those individuals for whom treatment will have a definitive end. Not everyone survives cancer or has a cancer where a cure is possible. Better understanding the unique time perspectives of these patients where living with cancer and not living beyond cancer is their reality is important.

In addition, the online sampling method utilized, specifically accessing participants from Prolific.com, may have inadvertently introduced a confounding variable in that there can be significant discrepancies in healthcare systems (i.e., access, treatment, and follow-up care services may be different based individuals accessing care from a publicly versus privately funded treatment facility) based on the country in which care was accessed. As a health service, cancer care is publicly funded in Canada, however, that does not mean that all services are consistent across the entire country. Indeed, even within Alberta what services may be available to cancer patients in the large urban settings differs from what may be available in smaller rural areas. Future research needs to clearly articulate aspects related to model and types of care accessed to further ascertain what role this plays in cancer patient and survivors time perspective, hope and mental health outcomes.

Finally, this project provided no qualitative information about the time perspectives of cancer patients. We do not get the entire story or depth of experience that individuals have as they face a cancer diagnosis and its treatments from scale scores alone. As someone whose job it is to live in the power of the stories of cancer patients, I feel it is imperative that the complexity of these experiences be given voice and respect in guiding the future of psycho-oncology and supportive care services.

Future Directions

Future research should consider employing longitudinal designs to explore the changes in time perspective, hope, depression, and anxiety throughout the cancer experience. Longitudinal designs provide clarity around if and how time perspectives change as an individual goes through cancer treatments and into recovery. Moreover, longitudinal designs provide critical information about how mental health and hope fluctuate over the course of time and through the treatment and recovery process. Longitudinal research would help identify critical time periods in the cancer trajectory where psycho-oncology interventions could have most benefit for patients. Similarly, mixed methods research a la Wiberg et al. (2017) that combines longitudinal research that integrates measures of time perspective, mental health, hope, with qualitative interviews would help tease apart time perspective changes over time while also gaining the richness of stories and voice offered by cancer patients. I also envision a qualitative project that would function both narratively and as an advocacy project. In this project, I would speak with patients who live with cancer long-term as well as with patients who will not survive their cancer to deeply understand their cancer experiences and to allow them to provide potential future avenues for psycho-oncology and supportive care practices to explore.

Zimbardo, Sword and Sword (2012) found TPT to be beneficial when working with war veterans with Post-Traumatic Stress Disorder (PTSD). Given that a number of cancer patients meet criteria for a diagnosis of PTSD, it would be illuminating to conduct research on applying this therapeutic model to adjust patients’ time perspectives more closely with the balanced time perspective. This non-pathologizing model with accessible language around time could provide patients a connection to psycho-oncology where they experience less stigma and shame for accessing supportive care resources.

It is also important to look at young adult cancer patients to examine how their time perspectives, mental health, and hope may look different from older adults with cancer; my project focused more on older adult experiences, with a mean participant age of 47 years old. Young adults experience a more severe temporal disruption when facing a cancer diagnosis than their older counterparts and may be overwhelmed by developmentally inappropriate tasks like facing ones' mortality and severe health challenges. Given that many young adults survivor beyond their initial cancer diagnosis for many years, it is important to ensure their experience is represented in future psycho-oncology research.

Concluding Thoughts

In conclusion, this study sheds light on the complex relationships between time perspective, hope, and mental health outcomes among cancer patients in active treatment and early survivorship. Since the design and onset of this project, my experience working with cancer patients has grown and my understanding of how unique and complex each patient experience is has deepened. Each patient has their own reaction to diagnosis and treatment. Where some experience terror, others find hope. Where some struggle immensely with treatment others describe it as a "speed bump". I have noticed that neither stage nor grade of diagnosis always yield similar experiences. I have worked with those diagnosed with stage 0 cancer (pre-cancerous cells) with more existential fear than those with advanced stage IV cancers and vice versa. There is no one singular cancer experience and no one singular way to respond. Over the years, I have also grown in my understanding of how the social and structural determinants of health impact an individual's cancer experience. Financial stability, housing, support system (or lack thereof), timely access to care, cultural background, and pre-existing mental health challenges or trauma can all have great impacts on how an individual copes with cancer. As a society, we must work towards addressing these challenges not just for cancer patients but for the betterment of our entire community.

The beauty and challenge of this project is taking three exceedingly complex areas research areas (time perspective, hope, and psycho-oncology) and seeing where they interact. Whatever contribution this project makes is done with great thanks and acknowledgment to my patients and their family members who share so openly and honestly about the complexity of their experiences. The fragility of being human is ever-present in psycho-oncology and for those who work in this field, an awareness of death becomes part of life. You go home daily with reminders that life can change in an instant, so you had better pay attention and live life fully. The privilege of this work has changed me, both personally and professionally, making me a more thoughtful and gentler version of myself. It is this growth that has allowed me to navigate the challenge of now finding myself being the family member supporting my loved one, my dear father, as he faces a palliative cancer diagnosis. Time may not be on our side, but we have an abundance of hope, and we will use that to face what comes.

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Appendix A

Information & Informed Consent

Study: Exploring the Relationship of Time Perspective and Hope in Cancer Patients
Principal Investigator: Jesse McElheran, MEd - jesse.mcelheran@ualberta.ca; (780) 937-4143
Supervisor: Dr. William Whelton - wwhelton@ualberta.ca; (780) 492-7979

My name is Jesse McElheran and I am a graduate student at the University of Alberta completing my PhD in Counselling Psychology. Working with the support of Dr. William Whelton, I need 300 individual diagnosed with cancer (those who are in active cancer treatment and those who completed treatment 2-5 years ago) to participate in this online research survey with results from this survey being used for my doctoral dissertation project.

Purpose

This study looks the time perspectives and experience of hope for individuals with cancer. Time perspectives are a person's tendency to focus more on the past, present or future. They can play a role in influencing our thoughts, emotions, and actions, and have been linked to the experience of hope. This project aims to explore the relationship between time perspectives and hope in individuals with cancer.

Who is eligible to participate?

Canadian residents older than age 18 who have been diagnosed with cancer who:

1) Are currently in active cancer treatment (e.g., chemotherapy, radiation therapy, etc.)

Or those who:

2) Completed cancer treatment between 2 – 5 years ago.

Participation Involves:

If you choose to take part in this study, you will complete an online survey of approximately 100 items that will ask you questions about your background (e.g., age, gender, etc.) details related to your cancer diagnosis (e.g., type of cancer, when you were diagnosed, etc.), your time perspective, and your experience of hope. It will take less than 20 minutes to complete.

Participation is completely voluntary. You have the right to withdraw (i.e., quit the survey) at any time. You will be unable to withdraw your survey once it has been submitted.

Upon completing the survey, you will be given the opportunity to enter a draw to win one of four $50 gift certificates to a business of your choice.

Confidentiality:

Your participation will be kept confidential. We will not be collecting any identifying information as part of the survey. Data collected will be downloaded to a digit datafile and will be kept indefinitely on a password protected computer.

Should you wish to be entered for the draw for one of four prizes, you will need to email the research team directly. The email to enter the draw will be provided after the survey has been completed.

Consent:

By completing the online survey you are consenting to participate in this study.

Further Information:

If you have any questions regarding this study, OR

If you would like to complete a paper-based copy of this survey, please contact:

Jesse at jesse.mcelheran@ualberta.ca or (780) 937-4143.

The plan for this study has been reviewed for its adherence to ethical guidelines by Health Research Ethics Board – Alberta Cancer Committee. For questions regarding participant rights and ethical conduct of research, contact the Research Ethics Office at (780) 423-5727. If you have concerns about this study, you may contact the Research Ethics Office, at cancer@hreb.ca. This office has no direct involvement with this project.

*Disclaimer: Please note that the data is collected through a confidential online program "Survey Monkey© which houses it's data on servers located in the U.S. and is subject to review by U.S. Federal Authorities under the U.S. Patriot Act (section 215 Access to Records).

Appendix B

Debriefing Form

Thank you for participating in this study! I truly appreciate the time you gave to support me in my research efforts!

If you would like to be entered into the draw for one of four $50 gift certificates, please send an email to hopetimestudy@gmail.com with the word "Draw" in the subject line.

This project was inspired by my counselling work with individuals with cancer whose stories highlighted the interwoven relationship between hope and time. Hope is a fundamental human experience and one that can be challenged by a cancer diagnosis. How we understand and use time (i.e., whether we focus on the past, present, or future) has an impact on our experience of hope.

The purpose of this study was to (1) examine the time profiles of individuals with cancer specifically exploring the idea of a balanced time perspective, (2) to explore if and how time profiles shift from active cancer treatment to survivorship, (3) explore how time perspectives influence the experience of hope in individuals with cancer.

If you feel you need additional support we suggest you contact your family doctor or local crisis line for resources in your area. The Edmonton Distress Line Phone number is 780-482-4357.

Again, thank you for participating in this study.

Sincerely,

Jesse McElheran

Appendix C

Measures

Start Questionnaire – Please mark an “X” in the box to indicate your answer.

1. I have read and understand what is required for participation:
   - ☐ Agree
   - ☐ Disagree
2. I am over the age of 18 years and was diagnosed with cancer. I am… (Check only one)
   - ☐ Currently in active treatment (e.g., surgery, chemotherapy, radiation treatment, etc.)
   - ☐ Completed my cancer treatment between 2-5 years ago.
3. What type of cancer were you diagnosed with?
   - ☐ Breast cancer
   - ☐ Prostate cancer
   - ☐ Lung cancer
   - ☐ Colorectal cancer
   - ☐ Brain Cancer
   - ☐ Leukemia/Lymphoma/other blood cancers
   - ☐ Skin Cancer
   - ☐ Pancreatic Cancer
   - ☐ Gynecological (Ovarian, Uterine) Cancer
   - ☐ Urinary (bladder, kidney) Cancer
   - ☐ Head & Neck Cancer
   - ☐ Other (specify below)

   ____

4. What did you cancer treatment consist of? (Check all that apply)
   - ☐ Surgery
   - ☐ Chemotherapy
     - o How many treatments? ____
   - ☐ Radiation therapy
     - o How many treatments? ____
   - ☐ Immunotherapy
   - ☐ Hormone/Endocrine therapy (e.g., Tamoxifen, ADT Therapy, etc.)
   - ☐ Other (specify below)
5. Are you currently in active treatment?
   - ☐ Yes
   - ☐ No

6. What was the approximate date you completed treatment?

7. Is your cancer metastatic?
   - ☐ Yes
   - ☐ No

8. Age: ____

9. Gender
   - ☐ Female
   - ☐ Male
   - ☐ Transgender
   - ☐ Other

10. What one ethnic origin do you primarily identify with? (Check only one)
   - ☐ North American Aboriginal origins (e.g., First Nations, Inuit, Métis)
   - ☐ Other North American origins (e.g., Acadian, Canadian, Québécois)
   - ☐ European origins (e.g., English, Flemish, Scandinavian)
   - ☐ Caribbean origins (e.g., Haitian, Jamaican, West Indian)
   - ☐ Latin, Central, and South American origins (e.g., Brazilian, Hispanic, Mexican)
   - ☐ African origins (e.g., African-Canadian, Egyptian, South African)
   - ☐ West Asian and Middle Eastern origins (e.g., Afgani, Armenian, Saudi Arabian)
   - ☐ South Asian origins (e.g., East Indian, Pakistani, Punjabi)
   - ☐ East and Southeast Asian origins (e.g., Chinese, Filipino, Thai)
   - ☐ Oceania origins (e.g., Maori, Pacific Islander, Polynsian)
   - ☐ Multi-ethic / mixed race origins
   - ☐ Other (please specify): ___________________________

11. Marital status:
   - ☐ Single / Never Married
   - ☐ Married
   - ☐ Common law
   - ☐ Separation
   - ☐ Divorced
   - ☐ Widowed

12. Highest level of Education:
   - ☐ Less than Grade 12
   - ☐ Grade 12 Diploma
   - ☐ Some post-secondary/trade
   - ☐ Diploma program or trade program
   - ☐ Bachelors degree
   - ☐ Masters degree
   - ☐ Doctorate degree (Ph.D. ,M.D., etc.)

Instructions: ZTPI

Read each item and, as honestly as you can, answer the question: "How characteristic or true is this of you?" Check the appropriate box using the scale. Please answer ALL of the following questions on both sides.

No.	Item	Very Untrue 1	2	Neutral 3	4	Very true 5
1	I believe that getting together with one's friends to party is one of life's important pleasures.					
2	Familiar childhood sights, sounds, smells often bring back a flood of wonderful memories					
3	Fate determines much in my life.					
4	I often think of what I should have done differently in my life.					
5	My decisions are mostly influenced by people and things arounds me.					
6	I believe that a person's day should be planned ahead each morning.					
7	It gives me pleasure to think about my past.					
8	I do things impulsively.					
9	If things don't get done on time, I don't worry about it.					

10	When I want to achieve something, I set goals and consider specific means for reaching those goals.					
11	I often think I do not have time for everything I have planned to do in one day.					
12	Often, I do not know how I will be able fulfill my goals in life.					
13	On balance, there is much more good to recall than bad in my past.					
14	When listening to my favorite music, I often lose all track of time.					
15	Meeting tomorrow’s deadlines and doing other necessary work comes before tonight’s play					
16	Since whatever will be will be, it doesn’t really matter what I do.					
17	I enjoy stories about how things used to be in the “good old times.”					
18	Painful past experiences keep being replayed in my mind.					
19	I try to live my life as fully as possible, one day at a time.					
20	It upsets me to be late for appointments.					

21	Ideally, I would live each day as if it were my last.					
22	Happy memories of good times spring readily to mind.					
23	I meet my obligations to friends and authorities on time.					
24	I’ve taken my share of abuse and rejections in the past.					
25	I make decisions on the spur of the moment.					
26	I take each day as it is rather than try to plan it out.					
27	At night I often think about tomorrow’s challenges.					
28	I often feel that I cannot fulfill my obligations to friends and authorities.					
29	The past has too many unpleasant memories that I prefer not to think about.					
30	It is important to put excitement in my life.					
31	I’ve made mistakes in the past that I wish I could undo.					
32	I feel that it’s important to enjoy what you’re doing than to get work done on time.					
33	I get nostalgic about my childhood.					

34	Before making a decision, I weigh the costs against the benefits.					
35	Taking risks keeps my life from being boring.					
36	It is more important for me to enjoy life's journey than to focus only on the destination.					
37	Things rarely work out as expected.					
38	It's hard for me to forget unpleasant image of my youth.					
39	If I have to make a quick decision I often worry that it was wrong.					
40	I feel pressure if I cannot finish different projects on time.					
41	It takes joy out of the process and flow of my activities, if I have to think about goals, outcomes, and products.					
42	Even when I am enjoying the present, I am drawn back to comparisons with similar past experiences.					
43	You can't really plan for the future because things change so much					
44	My life path is controlled by forces I cannot influence.					

45	It doesn’t make sense to worry about the future, since there is nothing that I can do about it anyway.					
46	I complete projects on time by making steady progress.					
47	I find myself tuning out when family members talk about the way things used to be.					
48	I take risks to put excitement in my life.					
49	I make lists of things to do.					
50	I often follow my heart more than my head.					
51	I am able to resist temptations when I know that there is work to be done.					
52	I find myself getting swept up in the excitement of the moment.					
53	Life today is too complicated; I would prefer the simpler life of the past.					
54	I prefer friends who are spontaneous rather than predictable.					
55	I like family rituals and traditions that are regularly repeated.					
56	I think about the bad things that have happened to me in my life.					

57	I keep working at difficult, uninteresting tasks if they will help me get ahead.					
58	Spending what I earn on pleasures today is better than saving for tomorrow’s security.					
59	Often luck pays off better than hard work.					
60	I think about the good things that I have missed out on in my life.					
61	I like my close relationships to be passionate.					
62	There will always be time to catch up on my work.					
63	To think about my future makes me sad.					
64	The future contains too many boring decisions that I do not want to think about.					

Instructions: HHI

Listed below are a number of statements. Read each statement and mark an "X" in the box that best describes how much you agree with that statement right now.

No.	Item	Strongly Disagree 1	Disagree 2	Agree 4	Strongly Agree 5
1	I have a positive outlook toward life.				
2	I have short and/or long range goals.				
3	I feel all alone.				
4	I can see possibilities in the midst of difficulties.				
5	I have faith that gives me comfort.				
6	I feel scared about my future.				
7	I can recall happy/joyful times.				
8	I have deep inner strength.				
9	I am able to give and receive caring/love.				
10	I have a sense of direction.				
11	I believe that each day had potential.				
12	I feel my life has value and worth.				

Instructions: DASS

Please read each statement and mark a number 0, 1, 2 or 3 which indicates how much the statement applied to you *over the past week.* There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

0 = Did not apply to me at all
1 = Applied to me to some degree, or some of the time
2 = Applied to me a considerable degree, or good part of time.
3 = Applied to me very much, or most of the time

No.	Item	**0**	**1**	**2**	**3**
1	I found it hard to wind down.x				
2	I couldn't seem to experience any positive feeling at all.				
3	I found it difficult to work up the initiative to do things.				
4	I tended to over-react to situations.				
5	I felt that I was using a lot of nervous energy.				
6	I felt I had nothing to look forward to.				
7	I found myself getting agitated.				
8	I found it difficult to relax.				
9	I felt down-hearted and blue.				

10	I was intolerant of anything that kept me from getting on with what I was doing.				
11	I was unable to become enthusiastic about anything.				
12	I felt I wasn't worth much as a person.				
13	I was aware of the action of my heart in the absence of physical exertion (eg., sense of heart rate increase, heart missing a beat).				
14	I felt that life was meaningless.				

Instructions: (HS)

Read each item carefully. Using the scale shown below, please select the number that best describes YOU and put that number in the blank provided.

1 = Definitely false
2 = Mostly false
3 = Somewhat false
4 = Slightly false
5 = Slightly true
6 = Somewhat true
7 = Mostly true
8 = Definitely true

____ 1. I can think of many ways to get out of a jam.

____ 2. I energetically pursue my goals.

____ 3. There are lots of ways around any problem.

____ 4. I can think of many ways to get the things in life that are important to me.

____ 5. Even when others discouraged, I know I can find a way to solve the problem.

____ 6. My past experiences have prepared me well for my future.

____ 7. I've been pretty successful in life.

____ 8. I meet the goals I set for myself.