

3. Research Questions and Hypotheses

This chapter deals with all research questions and hypotheses of this study. Questions concerning patients' psychological and physical health are presented in the first section. Then hypotheses pertaining to patients' personal and social resources are presented in a following section. The third section involves patients coping with cancer and changes in coping strategies used by patients across different measurement points in time. The fourth section deals with the central hypotheses of the study regarding finding meaning in cancer, its development overtime, its associations with both patients' resources and the way they cope with cancer, and its relationships to other indicators of psychological and physiological health overtime.

3.1. Cancer Patients: Psychological and Physical Health

The diagnosis, treatment, and aftermath of cancer involve a long process of adjustment to different array of threats and stressors. In this study multiple measurements used to investigate how patients adjust themselves over time. Physical and psychological health status was measured across different measurement points in time. Indicators used include negative affect, global quality of life, pain, fatigue, impairment attributed to illness, and some medical data (e.g., cancer recurrence).

Because of the multiple and diverse threats that cancer patients may be dealing with at any moment and the difficulty in specifying when certain stressors starts or cease to affect the patient (e.g., role changes, problems associated with returning back to work), the present study specifies particular stressors including the diagnosis, the surgery, and cancer recurrence as events that may affect patients' adjustment to cancer.

3.1.1. Cancer Diagnosis

The experience of receiving the diagnosis results in a crisis that usually precipitates emotional distress and varying degrees of inability to function in daily roles. Holland and Goen-Piels (2000) have identified three phases of responding to cancer initial diagnosis. These phases include the *initial response phase* that consists of disbeliefs,

denial, and shock, the *dysphoria phase* during which the patient starts slowly acknowledging the reality of the diagnosis through ruminating about the disease and surviving, and the *adaptation phase* during which patients start to use a variety of coping strategies and styles trying to adjust themselves to the demands of cancer-related situations. According to Holland and Goen-Piels, the first two phases usually last about 3 to 4 weeks, whereas the last phase may extend over weeks and months. Accordingly, this study hypothesizes that recently diagnosed patients (i.e., within-one-month diagnosed patients) are more distressed compared to post-one-month diagnosed patients.

3.1.2. Cancer Treatment

Cancer treatment does not only include surgery but also undergoing adjuvant chemo- and radio-therapies among others. Cancer treatment is usually associated with apprehension and fears about painful treatment, side effects including hair-loss, nausea, fatigue, and pain, and disruption in daily life. According to Holland and Goen-Piels (2000), questions regarding existential crisis (e.g., *will I survive this?*) usually occur during and after treatments. In order to reduce the stress-related effect associated with this phase, patients usually apply coping strategies that help reduce distress and treatment-related symptoms (e.g., fatigue). In this study, it is expected that patients' reports of negative affect, pain, fatigue, and impairment attributed to illness increase around surgery.

3.1.3. Cancer Recurrence

Many research findings showed that cancer recurrence is often associated with renewed distress, extreme anguish, physical symptoms, and existential crisis of death (e.g., Cherny et al., 1994). This transformation from curative to palliative treatment is usually accompanied by shock, disbelief, and denial as with the initial diagnosis. Consequently, the second onset of cancer is predicted to be related to higher levels of distress.

Hypotheses

- Within-one-month diagnosed patients are predicted to report higher level of negative affect at t1 compared to post-one-month diagnosed patients. On the other hand, high levels of pain, fatigue, and impairment attributed to illness, and low level of quality of life are expected to be reported around the surgery and under conditions that patients experience cancer recurrence.
- Reports of negative affect, fatigue, and impairment attributed to illness should decrease significantly overtime as patients adjust themselves to living with cancer. Consequently, level of quality of life is expected to increase markedly in post-surgery assessments.

3.2. Personal and Social Resources

With respect to patients' personal resource, the general self-efficacy beliefs scale is used to assess this personality aspect. Concerning patients' social resources, measurements are used in all waves to assess changes in level of support received over time and quality of received support, (e.g., high support, low support). Received social support includes emotional, instrumental, and informational support, however, a sum score of these three types of support is used to indicate a general level of received social support across different measurement points in time. At the pre-surgery assessment (t1) patients are expected to report receiving high levels of support from partners, family members, friends, relatives, other patients, and the medical staff. Number of resources of support is also used, in this study, to signify the structural aspects of social support. The presence of more than one resource of support is expected to be associated with receiving high level of support in all waves.

The relationship between personal and social resources has been the focus of many studies. Some findings attest to the strong effect of personal resources on mobilizing the network support (Holahan & Holahan, 1987; Bandura, 1992), other findings showed evidences that receiving support from the individual's social network strengthens one's beliefs about his/her competence in dealing with stressful situations (Merluzzi & Martinez-Sanchez, 1994). These findings indicate an

existence of a reciprocal influence between the two types of resources. Therefore it is expected that report of support received and the presence of a number of resources are associated with patients' self-efficacy beliefs.

Hypotheses

- Patients are predicted to report higher levels of social support after the initial cancer diagnosis (t1), around the surgery (t2, and t3) and under conditions that patients experience recurrence. In addition to that, the presence of more than one resource is expected to be positively associated with the level of support received.
- The study also hypothesizes that high self-efficacious patients will report receiving higher level of support and more support resources compared with low self-efficacious patients.

3.3. Coping with Cancer

Coping with cancer is a continuous process in which the individual tries to manage emotional distress and gain control over cancer-related life events by solving specific cancer-related problems (Brenan, 2001). Patients with cancer usually face multiple challenges and stressors that vary with the clinical course of the disease. Thus, patients have to cope with the suspicion of cancer, diagnosis, treatment (e.g., surgery, chemotherapy, recurrence) among other problems.

Studies on coping with cancer have generally showed that coping strategies that are directed at addressing the problem (e.g., problem focused coping based on fighting the disease and participation regarding treatment decisions) and coming to term with its consequences (e.g., accommodation) are associated with lower levels of distress, whereas avoidant coping such as avoid thinking about the disease was related to higher levels of distress (Culver et al., 2002; Carver et al., 1993; Dunkel-Schetter et al., 1992). On the other hand, other research findings showed that avoidant coping could be related in different ways to distress depending on the *cancer stage*. As an example when patients are confronted with the diagnosis and waiting for medical treatment, avoidant coping, rather than active coping, would be more effective in dealing with the distress-related symptoms associated with this stage (Tedeschi &

Calhoun, 1996). According to this view avoidant coping can be considered as a *temporary solution* or defence against too painful information that threaten individuals assumptions about their world. Avoidant coping is expected to prevail after the cancer diagnosis and under conditions that patients experience cancer recurrence (Brenan, 2001).

In this study different types of coping including active coping, accommodation, and avoidant coping are examined. Measurements are used to examine how patients cope with cancer at both the pre-surgery and post-surgery phases. Avoidant coping is expected to be high following diagnosis (t1) and under conditions that patients experience recurrence. However, avoidant coping is predicted to decrease over time as patients adjust more to living with cancer, while active coping and accommodation are predicted to increase significantly in all post-surgery measurement points in time.

The present study also examines associations between coping strategies used by patients and their resources. It is expected that the availability of social and personal resources enhance patients' use of active and confrontative coping strategies. According to Diener and Fujita (1995), individuals with many assets are better able to fulfill their needs and thereby achieve a sense of competence or mastery, consequently, the presence of both personal and social resources should be associated with coping strategies used by patients. Based on this assumption, strong associations between personal and social resources, and active and accommodatory coping strategies across different measurements are expected to appear.

Hypotheses

- Avoidant coping strategies used by patients are expected to be high in newly diagnosed patients (i.e., within-one-month diagnosed patients) and patients with cancer recurrence compared to other patients, and to decrease significantly in all post-surgery assessments in all patients. On the other hand, a marked increase in active coping and accommodation are predicted in all post-surgery assessments.

- Personal resources measured by self-efficacy beliefs are predicted to be associated with the use of active and accommodatory coping strategies rather than with avoidant coping strategies across all waves.
- Social resources measured by social support and the presence of multiple support resources are expected to be related to the use of active and accommodatory coping strategies rather than with avoidant coping strategies in all measurement points in time.

3.4. Finding Meaning in Cancer

This part deals with the central research questions and hypotheses of the study. These questions and hypotheses could be divided in to four divisions. The first part concerns the development of meaning found in cancer and the demographic and disease variables associated with it. The second part is related to the role of personal (i.e., self-efficacy) and social resources (i.e., social support and having a number of resources) for the search for and finding meaning in cancer. The third question concerns the mediator status of certain coping variables in the relationship between both finding meaning and patients' resources (i.e., self-efficacy and social support). Finally, the last part concerns the relationship between finding meaning and adjustment (i.e., negative affect, pain, fatigue, impairment attributed to illness, and quality of life).

Many research findings showed that a significant proportion of individuals find meaning in aversive events (Antoni et al., 2001; Park et al., 1996; Tedeschi and Calhoun, 1996). However, meaning assessed in most of these studies was measured as benefits and gains reported by individuals many months or years after the occurrence of the traumatic events. The justification for this time-lag between the events and the measurements of meaning was that individuals may be *too busy* coping with the initial impact of the event to consider the meaning associated with the experience, and later on they may reflect on the meaning of the experience in their lives (Tomich & Helgeson, 2002). Finding meaning in traumatic experience, as early as the confrontation with the traumatic event, is not yet investigated.

In this study, a longitudinal and prospective design was used to investigate patients' ability to find meaning in cancer, mainly through an increased appreciation of life, as early as the pre-surgery stage, and the development of this type of meaning over time.

Previous research findings also showed that other types of meaning found in aversive and traumatic life events were reported as perceived benefits and gains precipitated by negative experiences. At least three broad categories of gains and benefits were reported; these categories include changes in self-perception, changes in interpersonal relationships, and changed philosophy of life (Tedeschi & Calhoun, 1996). In the present study, five indicators of these broad categories of meaning are assessed one year post-surgery. In addition to an increased appreciation of life measured in all waves, the study also assessed an increased acceptance of life imperfection, personal growth, positive changes in family relationships, and an increased sensitivity to other people. The aforementioned four types of meaning found in cancer were measured only at one year post-surgery (t5).

Hypotheses

- In line with the literature on meaning, it is postulated that cancer patients will be too busy coping with the diagnosis and treatment of cancer to consider searching for or finding meaning in cancer. Thus, report of an increased appreciation of life in response of being diagnosed with cancer should be low at the first measurement point in time (t1), in particular, among the recently diagnosed patients.
- Following the same line, finding meaning in cancer, through increased appreciation of life, is predicted to develop over time, that is, significant increase on reports of meaning over the five measurement points is expected.

3.4.1. Finding Meaning in Cancer: the Demographic Variables

The literature on meaning and post-traumatic growth showed contradicting results concerning the associations between finding meaning and both age and sex. Whereas some research showed no associations between age, growth or finding meaning in

cancer and other traumatic experiences (Tedeschi and Calhoun, 1996; Abraido-Lanza et al., 1998; Mohr et al., 1999; Antoni et al., 2001), age was inversely related to finding meaning in cancer in other research findings (Dunkel-Schetter et al., 1992) indicating that younger cancer patients are more likely to report benefits and gain than older patients. With regard to the relationship between finding meaning and sex, many research findings showed that women were more likely to report more benefits, growth, and meaning found in traumatic events than men did (Tedeschi & Calhoun, 1996; Park et al., 1996). Other findings indicated no significant sex differences in meaning (Abraido-Lanza et al.; 1998; Mohr et al., 1999). In addition to that, literature on meaning emphasizes the effect of social integration and support on meaning found in aversive events (Updegraff & Taylor, 2000). Thus, being married, and having children are theoretically expected to affect levels of meaning found in cancer.

Hypotheses

- All types of meaning found in cancer are expected to be associated with both age and sex. Women should be more likely to find meaning and report more benefits in cancer than men do.

- Married patients or patients with partners and those having children should find more meaning in cancer than other patients. This ability to perceive different types of meaning in cancer should be due to patients' social integration and to the presence of multiple social support resource.

3.4.2. Finding Meaning in Cancer: The Medical Data

The relationships between finding meaning in cancer and some medical data including type of surgery, comorbidity, multimorbidity, recurrence, indicators of stage of disease (e.g., number of lymph nodes involved), type of surgery, and undergoing another surgery are investigated.

Sever traumatic events are postulated to trigger rumination focused on search for meaning and, thus, leads to readjustment of goals and plans and perceiving gains and benefits (Tedeschi & Calhoun, 1995, 1996). Accordingly, the degree of severity of a

traumatic event should be positively correlated with the level of meaning arising from the experience. On the other hand, according to Tomich and Helgeson (2002), individuals, when confronted with a traumatic experience, may be too busy trying to cope with the initial impact of the event to consider the meaning associated with the experience. Consequently, the degree of severity signified by these medical data should be negatively associated with meaning found in cancer. These two contradicting views raises questions regarding the amount of distress necessary for the initiation and maintenance of meaning and whether meaning could be recognized in the midst of trauma or in its aftermath. In this study, medical data are assessed to indicate the severity of stage of cancer and the presence of other comorbid diseases or symptoms that can signify the severity of the experience. These data include type of surgery (e.g., curative, palliative), recurrence, indicators of stage of disease (e.g., number of lymph nodes involved), comorbidity, and multimorbidity. These variables are expected to be associated with levels of meaning found in cancer.

Hypotheses

- Finding meaning in cancer is expected to relate to indicators of severity of cancer experience. That is, palliative type of surgery, recurrence, indicators of stage of disease (e.g., the presence of metastasis), comorbidity, and multimorbidity.

3.4.3. Finding Meaning in Cancer: Personal and Social Resources

3.4.3.1. Meaning and Personal Resource

Some research findings showed that personality traits including optimism and hope are associated with individuals' abilities to generalize expectancies for positive outcomes and to generate plans to achieve goals (Sears, Stanton, & Danoff-Burg, 2003). In this study, the self-efficacy beliefs, a personal competence to deal effectively with a variety of stressful events, is expected to be associated with patients abilities to find meaning in cancer through an increased appreciation of life, increased acceptance of life imperfection, positive changes in family relationships, and an increased sensitivity to other people.

Hypotheses

- Personal resources measured by self-efficacy beliefs is expected to be associated with all types of meaning measured in this study, i.e., with an increased appreciation of life, an increased acceptance of life imperfection, personal growth, positive changes in family relationships, and an increased sensitivity to other people.

3.4.3.2. Meaning and Social Resource

Concerning the relationships between the presence of social resources indicated by reports of received social support and availability of a number of support resources (e.g., a partner, a child), and meaning found in cancer, received social support, in general, enhances patients' abilities to grow and benefit from the experience of having had cancer. Previous research findings showed that social support correlated positively with posttraumatic growth in women with multiple sclerosis (Mohr et al., 1999), and in individuals experiencing a variety of stressful life events (Park et al., 1996). In the present study different indicators of patients' social integration is predicted to be associated with certain types of meaning and benefits that are produced by patients' interaction with their social networks. These types include positive changes in family relationships, and an increased sensitivity to other people.

Hypotheses

- Received social support and the presence of a number of resources of support are predicted to be associated with all types of meaning and benefits measured in this study.

3.4.4. Finding Meaning in and Coping with Cancer

With regard to the associations between coping and finding meaning, three types of coping strategies are selected. These types include active coping, accommodation, and avoidant coping strategies. According to the literature on coping, active coping is related to better adjustment and improvement by both reducing distress-related symptoms often associated with traumatic events, and by contributing to the

perception of stress-related growth (Updegraff & Taylor, 2000). On the other hand, whereas active coping is more effective in controllable and modifiable situations, accommodation is more effective in dealing with uncontrollable and not modifiable circumstances (Carver et al., 1989). By accommodating the self to such events, individuals not just adjust themselves to the unchangeable situations, but also can focus on the positive aspects and implication of their situations (Park et al., 1996).

Regarding avoidant coping, some research findings showed that using this coping strategy may reduce short-term distress but it is less adaptive in the long run (Holahan & Moos, 1987; Suls & Fletcher, 1985; Updegraff & Taylor, 2000). Aldwin, Sutton, and Lachman (1996) studied community-dwelling adults who reported dealing with low points in their lives by using instrumental and problem-focused coping. Their result proved that these coping strategies were positively related to experiencing positive outcomes and gains, whereas using escapism was negatively related to experiencing positive outcomes.

Consequently, it is expected that active coping strategies and accommodation rather avoidant coping used by cancer patients are associated with all types of meaning found in cancer.

Hypotheses

- Active and accommodatory coping strategies used by patients are expected to be associated with all types of meaning found in cancer.
- On the other side, no association between meaning found in cancer and avoidant coping strategies used by patients should be found.

3.4.5. Does Coping Mediate the Relationships between Patients' Resources and Meaning?

The role of coping as a mediator in the relationship between stress and the stress related-growth or meaning found in adversities has been investigated in many studies (Park et al. 1996; Tedeschi & Calhoun, 1996; Folkman & Greer, 2002). However, coping strategies being investigated were, mostly, what Folkman and Greer described as meaning-based coping strategies, that is, strategies that help individuals

relinquish unattainable goals and formulate new ones, making sense of what is happening, and appraise benefits when it is possible. These coping strategies include positive reframing, search for meaning, focusing on the positive and benefit reminding. The role of other coping strategies such as active coping, accommodation and avoidant coping in the development of meaning has been rarely investigated. In addition to that, their role as mediators in the relationships between individuals' resources (personal and social resources) and meaning found in adversities was not profoundly examined.

In this study, the role of active coping and accommodation and avoidant coping in the relationship between patients' personal and social resources and meaning found in cancer are examined. The study hypothesizes that active coping and accommodation rather than avoidant coping mediate the relationships between self-efficacy beliefs, received social support and meaning found in cancer across different measurement points in time.

Hypotheses

- Active coping and accommodation are predicted to mediate the relationship between self-efficacy beliefs and all types of meaning and benefits measured in this study. On the other hand, avoidant coping is not expected to play a role as a mediator in these relationships.
- Active coping and accommodation rather than avoidant coping strategies are predicted to mediate the relationship between received social support and all types of meaning and benefits found in cancer.

3.4.6. Change in Patterns of Associations between Resources, Coping, and Meaning over Time.

Cancer is not a unitary stressor. Every stage in living with cancer is associated with a different array of new demands that may overtax patients coping resources. Mulin (1990), described the period between the diagnosis and one year post-diagnosis as an acute survival stage in which patients usually suffer from emotional distress, decrease in physical functioning, changes in body-image, problems returning back to work, and re-establishing previous social roles among others. Therefore, it will not

be surprising if patients use different levels of avoidant coping, active coping, and accommodation, and mobilize resources of support over time with the increase of these demands.

Previous research findings also showed that patients' reports of received social support tend to decrease over time (Hobfoll, 2001). Thus, the expected changes in coping strategies used by patients, and support received from their social networks should affect the pattern of associations between patients' social resources and coping, and, consequently, the different facets of meaning they find in cancer. In the present study three models examining the associations between patients' personal (i.e., self-efficacy) and social resources (i.e., received social support), the three measured coping strategies (i.e., active coping, accommodation, and avoidant coping), and the different types of meaning found in cancer are designed (see Figure 1). In every model coping, mainly through accommodation and active coping strategies, is predicted to mediate the relationship between patients' resources (i.e., both personal and social resources), and the different types of meaning reported. Data used to examine the three models are selected from different sets of measurement points in time.

Hypotheses

- Patterns of associations between patients' personal and social resources, different types of coping, and meaning found in cancer are expected to change over time due to changes in resources and coping strategies used by patients across different measurement points in time.

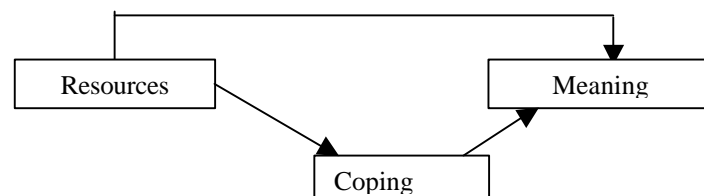


Figure3. Mediator model.

3.4.7. Finding Meaning in Cancer and Adjustment: Solving the Paradox?

Adjustment to cancer is a term used in oncology and health psychology to refer to the absence of psychological morbidity in patients with cancer, and a return to their premorbid functioning. However, due to the presence of multiple stressors and implications associated with living with cancer (e.g., diagnosis, treatment, recurrence, and survival issues), it is difficult to assess adjustment as the end-point of successful coping with the global threat of cancer (Brenan, 2001). In addition to that, this definition restricts adjustment to cancer to the absence of negative sequelae, including distress, and ignore positive sequelae (e.g., personal growth) usually reported by individuals as a result of life crisis. Thus, it may be more convenient to view adjustment to cancer in a different way other than the absence of psychological distress.

Brenan (2001) proposes a more psychosocial and developmental approach to define adjusting to cancer. According to him, adjustment to cancer refers to the processes of adaptation that usually occur over time as the individual manages, learns from and accommodates to the multitude of changes which have been precipitated by the changed circumstances in his/her life (Brenan, 2001; p 3). Consequently, positive changes (e.g., personal growth) and distress may co-occur depending on the level of the cancer-related stressor and the way the patient copes with it. This point of view emphasizes what Parkes (1971), and Aldwin and Sutton (1998) considered as an opportunity for both personal positive growth and distress that crisis of a life event usually brings on individuals.

This aforementioned definition can also explain contradictions in results concerning associations between personal growth or meaning perceived in cancer and other indicators of psychosocial adjustment to cancer (e.g., depression). As an example, personal growth was reported to be negatively associated with distress (Affleck & Tennen, 1996; Taylor, 1986), other results indicated either no association between them (Mohamed & Böhmer, 2004; Schulz & Mohamed, (in press); Antoni et al., 2001) or a presence of positive relationship (Tedeschi & Calhoun, 1996).

Alternatively, according to the literature on meaning, stress-related growth, or benefit finding, concentrating on the positive outcomes and gains precipitated by aversive and traumatic events should enhance patients' positive affect and reduce their distress. However, since meaning and personal growth emerge from distress precipitated by life crisis, a negative as well as positive associations between distress and meaning may be found depending on the time factor and the degree of severity of life events. Thus, it is expected that these two indicators of adjustment will be positively correlated in the midst of trauma (e.g., cancer diagnosis) and negatively correlated in its aftermath (e.g., cancer remission).

Along these lines, questions regarding levels of distress necessary to initiate the process of searching for and finding meaning were raised. Tedeschi and Calhoun (1996) proposed a presence of curvilinear relationship between finding meaning and level of distress, that is, a particular level of distress is necessary for the initiation of meaning and stress-related growth. Thus, very low and very high distress may prohibit the development of finding meaning in adversities and consequently affect adjustment to the life threatening events.

In this study the relationships between meaning found in cancer and other indicators of psychological well-being across different measurement points in time (pre-surgery and post-surgery) are examined. The study hypothesizes that finding meaning in cancer is positively associated with level of distress in newly diagnosed patients, around the surgery and under conditions that patients experience recurrence.

Hypothesis

- Around the cancer surgery, and experience the initial diagnosis of cancer or cancer recurrence, finding meaning should be positively associated with levels of negative affect, pain, fatigue and impairment attributed to illness, and negatively associated with quality of life reported at the these stages.
- Finding meaning in cancer should be negatively associated with negative affect, pain, fatigue and impairment attributed to illness and positively associated with quality of life at the late assessments (t3, t4, and t5).