Psychological consequences of cancer from the salutogenic and dyadic perspective

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ABSTRACT

Previous empirical research has shown that positive, i.e. salutogenic, psychological resources and social support, have health-promoting effects in stressful life situations. In the present study the associations between sense of coherence (SOC), dispositional optimism, partner support, psychological distress, and quality of life among cancer patients and their partners were examined. The data was collected from Helsinki University Central Hospital in 1997 – 2000 by self-report questionnaires in three phases: approximately 2, 8, and 14 months post diagnosis. Participants in studies I-IV were 155, 123, 153, and 147 cancer patients and their partners, respectively.

The sample of the present study consisted of physically relatively well-functioning patients, whose overall psychological wellbeing was generally good as compared to the healthy population. The illness seemed to have only minor effects on the patient’s psychological distress. Partners in this study, however, reacted more strongly to their partners’ illness and treatment. The partners displayed e.g. higher levels of anxiety and depression than the patients.

The results of this study indicated that cancer patients and their partners with strong SOC and who are optimistic report fewer symptoms of distress. Moreover, patients who display an optimistic attitude to life, who receive support from their partner, and who control how they express anger have a better quality of life.

The findings also confirmed that the role of the partner is significant in coping with cancer. The symptoms of depression and anxiety in patients and partners were associated, and the partner’s optimism seemed to protect also the patient from elevated levels of anxiety. The role of the partner was also highlighted in the couples’ anger-expression styles. The patients’ and partners’ tendency to inhibit anger was associated with decreased partner support and worse patient quality of life.

Finally, in the present study we found substantial gender differences that appear to be unrelated to the severity of the illness. For the patients, partner support was more significant for the women than for the men. Furthermore, for the female patients, the husband’s tendency to openly express anger (anger-out) had a negative impact on their psychological quality of life, whereas the wives’ high anger-out seemed to predict good
psychological quality of life in the men. Also, in this study the female partners reported higher levels of anxiety and depression as compared to the male partners.

The results of the present study extend the previous literature on positive psychological resources and psychological wellbeing among cancer couples. Furthermore, these findings support the theory on SOC and optimism as health-promoting factors. However, the construct of SOC seems to include other important elements besides optimism. The findings of this study are applicable in designing new rehabilitation programmes for cancer patients and their partners.
TIIVISTELMÄ


Aineiston syöpäpotilaat olivat fyysisesti hyväkuntoisia ja heidän elämänlaatunsa oli yleisesti hyvä verrattuna terveen väestöön. Sairauden vakavuudella tai lääketieteellisen hoidon tavoitteella ei ollut yhteyttä potilaiden psykkiseen kuormittuneisuuteen. Sairastuminen syöpään sen sijaan vaikutti puolisoihin psykkiseesti enemmän kuin potilaisiin. Puolisoilla havaittiin mm. enemmän masentuneisuus- ja ahdistuneisuusireita kuin potilailla.


Tutkimustulokset toivat myös esiin sukupuolieroja potilaiden ja heidän puolisoidensa psykkiseestä sairauten sopeutumisesta. Puolison tuki vaikutti olevan tärkeämpää syöpään sairastuneille naispotilaille kuin miehille. Havaittiin myös, että puolison avoimella vihan ilmisuulla oli negatiivinen yhteys naispotilaiden psykkiseen elämänlaatuun, kun taas miespotilailla puolison avoin vihan ilmiasu paransi heidän
psyykkistä elämänlaatuaan. Lisäksi naispuolisot raportoivat tilastollisesti merkitsevästi enemmän masentuneisuus- ja ahdistuneisuusoireita kuin miespuolisot.

Tutkimustulokset tuovat uutta tietoa positiivisten psykykkisten resurssien ja potilaspuolisoparin psykykkisen hyvinvoinnin välisistä yhteyksistä ja tukevat koherenssin tunteen ja optimismin stressiltä suojaavia vaikutuksia käsittelevää teoriaa. Koherenssin tunteen vaikutusmekanismista vain osa näyttäisi selittyvän optimismilla. Tutkimuksen tuloksia voidaan hyödyntää mm. suunniteltaessa uusia kuntoutuspalveluja syöpää sairastaville potilaille ja heidän puolisoilleen.
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LIST OF ORIGINAL PUBLICATIONS


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### ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>HRQL</td>
<td>Health-related quality of life</td>
</tr>
<tr>
<td>QL</td>
<td>Quality of life</td>
</tr>
<tr>
<td>MCS</td>
<td>Mental component summary of quality of life</td>
</tr>
<tr>
<td>PCS</td>
<td>Physical component summary of quality of life</td>
</tr>
<tr>
<td>SOC</td>
<td>Sense of coherence</td>
</tr>
<tr>
<td>WHO</td>
<td>World health organization</td>
</tr>
<tr>
<td>GRD</td>
<td>General resistance deficits</td>
</tr>
<tr>
<td>GRR</td>
<td>General resistance resources</td>
</tr>
<tr>
<td>LOT-R</td>
<td>Life orientation test - revised</td>
</tr>
<tr>
<td>OLQ</td>
<td>Orientation to life questionnaire</td>
</tr>
<tr>
<td>FS</td>
<td>Family support scale</td>
</tr>
<tr>
<td>RAND-36</td>
<td>36-item health survey</td>
</tr>
<tr>
<td>BDI</td>
<td>Beck depression inventory</td>
</tr>
<tr>
<td>EMAS</td>
<td>Endler multidimensional anxiety scale</td>
</tr>
<tr>
<td>RMSEA</td>
<td>Root mean square error approximation</td>
</tr>
<tr>
<td>GFI</td>
<td>Goodness of fit index</td>
</tr>
<tr>
<td>CFI</td>
<td>Comparative fit index</td>
</tr>
<tr>
<td>TLI</td>
<td>Tucker-Lewis index</td>
</tr>
<tr>
<td>ML/MLR</td>
<td>Maximum likelihood method/ maximum likelihood for robust standard errors</td>
</tr>
<tr>
<td>SMR</td>
<td>Standardized mortality ratio</td>
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1 INTRODUCTION

1.1 CANCER DISEASES

1.1.1 Prevalence and risk factors of cancer

Along with cardiovascular diseases, cancer is a major cause of death in Western countries. In Finland cancer is the cause of death in every fifth case of mortality. Every year about 25,000 people are diagnosed with cancer and the number continues to increase. By 2020, it is predicted that the prevalence of cancer will have risen to more than 35,000 new cancer cases every year (Finnish Cancer Registry, 2009). In Finland breast cancer is the most common cancer among women (number of incident cases 4,313 in 2008), and prostate cancer the most common among men (number of incident cases 4,237 in 2008) (Finnish Cancer Registry, 2008). Consequently, cancer patients will require a considerable amount of health care resources in the future.

Although the number of incident cases of cancer increases every year, the age-adjusted mortality rate is predicted to decrease by 19 % in males and 11 % in females (Finnish Cancer Registry, 2009; Hakama, Hakulinen, Johansson, Rautalahti, & Vertio, 2006). The reason for lower cancer mortality is more precise, earlier diagnostics and development in treatment methods. A considerable number of cancer diseases will be treatable in the future, and more people will survive the illness. At the moment about 205,000 people in Finland have been diagnosed with cancer at some point during their lives (Pukkala, Sankila, & Rautalahti, 2006). This number is predicted to increase to almost 300,000 by 2020 (Finnish Cancer Registry, 2009).

An ageing population is the most common explanation for the increase in several cancer diseases. Other common risk factors are: smoking, sunlight, radiation, nutrition, certain chemicals and other substances, some viruses and bacteria, certain hormones, socio-economic status, and family history of cancer (Pukkala et al., 2006).

Some attempts have been made to explain the initiation and promotion of cancer using psychosocial factors. There is growing evidence that maladaptive coping styles linked to health behaviour, such as tobacco and alcohol abuse, as well as poor diet and lack of screening, are related to cancer diseases (Garssen, 2004). In addition, stress has
been shown to have a significant role in developing cancers in some previous studies (O’Leary & Ann, 1990). However, conflicting findings have been found in relation to cancer and life events, depressive mood, negative emotional states, fighting spirit, personality factors, and locus of control (Garssen, 2004).

1.1.2 Common cancer treatment methods and their side effects

The first action in cancer treatment is confirming the diagnosis and clarifying the stage of the illness, the size of the tumour and metastases. The aim of the treatment methods may be curative or palliative, and they may vary according to the cancer in question, malignancy, molecular biology, and the stage of the disease. Other aspects that affect the selection of the treatment are age, general health status and other illnesses. The most common treatments are operational therapy, radiation therapy, hormonal therapy, chemotherapy, monoclonal antibodies, and other targeted therapies.

Chemotherapy is a treatment involving the use of single drugs or combinations of drugs. These drugs are administered through a vein or injected into a body cavity or delivered orally. In addition to chemotherapy, hormone therapy is another systemic treatment, because it also affects cancer cells throughout the body by circulating the drugs in the blood system to parts of the body where the cancer may have spread and can eliminate cells at locations other than where the original cancer was.

Radiation therapy and surgery are local treatments used to eliminate or eradicate visible tumours. In radiation therapy, high-energy x-rays are used to damage or kill cancer cells by preventing them from growing and dividing. Surgery is used to diagnose cancer, and to determine its stage as well as treatment. In monoclonal antibody therapy, monoclonal antibodies are bound only to cancer cell-specific antigens, causing an immunological response against the target cancer cell.

The most common symptom requiring special attention in cancer care is pain. Other common, short-term side effects causing discomfort are effects involving chemotherapy. Most frequently reported short-term side effects include anemia, fatigue, hair loss, infections, low blood counts, mucositis, diarrhea, and nausea (Bloom, Petersen, & Kang, 2007; Hakama et al., 2006). Localized skin reactions will occur from exposure to radiation treatment.
Cancer treatments sometimes cause damage to healthy cells not affected by the cancer. Late side effects of radiation therapy may consist of scarring and genetic mutations in the chromosomes as well as damage to other internal organs. In addition, hormone therapy can cause a number of temporary, long-lasting or permanent side effects. In women, hormone therapy may cause swelling or weight gain, hot flashes, interrupted menstrual periods, vaginal dryness, and, sometimes, loss of fertility. Hormone therapy in men is known to cause impotence, loss of sexual desire, or loss of fertility, as well as fatigue (Hakama et al., 2006; Pukkala et al., 2006).

1.2 PSYCHOLOGICAL CONSEQUENCES OF CANCER

1.2.1 Theoretical framework of the study: The psycho-oncological approach

In the past decades, researchers have shown growing interest in subjects’ comprehensive wellbeing in clinical health research. The wide spectrum of illnesses, alterations in the population structure and progressive treatment practices have raised the need to evaluate patient-perceived outcomes, such as quality of life.

Facing a serious illness, such as cancer, is usually a major life crisis and causes significant psychological distress. Difficult physical and psychological consequences may have implications for individuals’ overall psychological coping and quality of life. Common psychological reactions to the diagnosis and procedures are pronounced feelings of despair, fear, anxiety and denial, as well as feelings of sorrow and anger (Carlson & Bultz, 2003; Stark et al., 2002; Stark & House, 2000). Previous studies on prevalence of psychiatric disorders in people facing cancer show that nearly 50 % of cancer patients report having psychological symptoms that can be diagnosed as a mental adjustment disorder (Miovic & Block, 2007; Aapro & Cull, 1999).

However, regardless of the above-mentioned statistics and the fact that the prognosis of cancer has improved during the decades, a stigma is still associated with cancer itself, as well as with having a mental illness. As recently as the 1960s and ‘70s, cancer was seen as equivalent to inevitable death and suffering, and revealing the diagnosis to the patient was considered cruel and inhumane (Holland, 2002). Only after the 1970s, when
most people began to be routinely told about their condition, did it become possible to explore their psychological responses.

During the new millennium, a significant number of research and training programmes have evolved into the field of psycho-oncology. Presently psycho-oncology is defined as a subspecialty of oncology, which deals with the psychological reactions of cancer patients and their family members at all stages of the disease, as well as the psychosocial and behavioural factors contributing to causes and survival of cancer (Holland, 2001; Dolbeault, Szporn, & Holland, 1999). Nonetheless, health care systems today still lack a comprehensive integrative cancer care model in many countries. This would bring together physical symptoms, related psychological reactions, coping options, family concerns and a supporting structure of beliefs and values.

For example, Holland (2002, 2001) has presented a research model that has guided the work of psycho-oncologists. The model includes 1) cancer and its treatment as independent factors, 2) personal, medical, social and life stresses as mediators and 3) quality of life and survival as outcome (Figure 1). This research model suggests that mediating variables influencing patient-perceived outcomes and survival are a) personal variables; b) variables associated with the stage of illness, relationship with the treatment environment and rehabilitation; c) available social resources, and d) concurrent stresses associated with the illness and other life stressors. According to Holland (2002, 2001), these mediating variables are the core of psycho-oncological research and should be addressed properly.
1.2.2 Health-related quality of life; conceptualization and operationalization

Generally, health-related quality of life (HRQL) stands for individuals’ subjective perception of the effects of a health problem or illness and its treatment modalities on their different areas of life. WHO (1985) has defined health ‘as not merely the absence of disease or infirmity, but a state of complete physical, mental and social wellbeing’. Furthermore, a person’s age, experiences, gender and health history may influence perceptions of health (Bloom et al., 2007).

WHO’s quality of life assessment group (WHOQOL, 1988) defines quality of life (QL) as individuals’ perception of their position in life in the context of the culture and value systems in which they live, and in relation to their goals, expectations, standards and concerns. According to WHOQOL (1998), quality of life is a wide-ranging concept affected in a complex way by a person’s physical health, psychological state, levels of independence, social relationships and their relationship to the salient features in their environment.
The ambiguity of the concept of quality of life is a major problem in the research field. Further, there is unanimity concerning the multi-dimensionality of the concept. For example, in 2005 PubMed identified 5,345 articles that used the term ‘quality of life’ as a keyword (Kaplan & Ries, 2007). Nevertheless, there is a consensus that quality of life is a subjective estimation of an individual’s situation at a given time. In any case, quality of life research lacks a well-defined and unambiguous definition.

The loose definition of quality of life has reflected on its assessment and, therefore, various assessment tools are used in its research. Over the past 30 years researchers of the medical and health service field have developed quantitative methods to assess wellness. These measures are often called quality of life measures. Global instruments assess quality of life with one question: ‘How do you perceive your health?’ Although these assessment tools are found to be reliable and valid, they are too broad to use for a meaningful comparison of, for example, specific cancer treatment methods. Multidimensional profile questionnaires that assess general health status, such as RAND-36/SF-36 (Hays & Morales, 2001; Hays, Sherbourne, & Mazel, 1993), are more appropriate in comparing groups and different populations.

These profile questionnaires, called generic instruments, provide a summary health profile of various health-related dimensions involved in daily living, such as physical, social, emotional, and cognitive functioning, pain and energy and overall satisfaction with life (Pekkonen, 2010; Hays & Morales, 2001; Hays et al., 1993). The disadvantage of the generic instrument tools is their inability to assess disease-specific symptoms or experiences sufficiently and sensitively. Attention therefore has recently turned towards disease-specific instruments, such as the cancer-specific EORTC-QLQ (Aaronson et al., 1993), which is nowadays available for a variety of cancer diseases (e.g. de Haes et al., 2000; Sprangers et al., 1998).
1.2.3 Health-related quality of life among cancer patients

Cancer has an impact on a patient’s quality of life, above all, at the stage of the diagnosis. Anxiety, worries and fears (Stark et al., 2002; Stark & House, 2000; Rustoen, Moum, Wiklund, & Hanestad, 1999) as well as the stage of cancer, and the number and quality of symptoms have been found to decrease patient HRQL (Bloom et al., 2007; Courtens, Stevens, Crebolder, & Philipsen, 1996; Dorval, Maunsell, Deschenes, Brisson, & Masse, 1998). Paying attention to the HRQL of the patients receiving palliative care is therefore extremely important.

HRQL of cancer patients tends to decline during treatment (Helgeson, Snyder, & Seltman, 2004; Yost, Haan, Levine, & Gold, 2005). The surgical procedures and treatments, as well as their side effects (such as fatigue, hair loss, or nausea), have an impact on patients’ physical and social capacity. Several studies have reported that lingering effects, for instance, menopausal symptoms, sexual dysfunctions and pain, are the most often cited problems influencing HRQL (Bloom et al., 2007). Moreover, emotional problems have a downward influence on HRQL, especially at the time of diagnosis and at the terminal stage (or advanced disease) (Helgeson et al., 2004). Patients, especially women suffering from breast cancer, often report problems with doing routine tasks such as housework, or with mobility of the limbs (Bloom et al., 2007). Further, loss of energy, problems attending work, and financial problems have been found to impact cancer patients’ HRQL (Rustoen et al., 1999).

HRQL of cancer survivors, however, tends to show an improvement during the first year after diagnosis (Bloom et al., 2007; Yost et al., 2005; Helgeson et al., 2004). On the other hand, the disease can have a long-lasting influence on HRQL. Reported examples relate to reduced physical capacity, sexual dysfunction, and fear of disease recurrence (Bloom et al., 2007; Rustoen et al., 1999). It is known that patients whose disease recurs or whose health status deteriorates suffer more psychological distress and report lower levels of HRQL than patients with a better prognosis (Ganz, Greendale, Petersen, Kahn, & Bower, 2003; Ganz et al., 2002).

Within the psychological domain, cancer survivors have reported lower levels of general mental wellbeing than healthy comparisons. Nevertheless, recent literature shows that adult cancer survivors, regardless of the cancer site, experience good to excellent overall, long-term quality of life (Yost et al., 2005), although quality of life
among cancer survivors varies by treatment type and age of the survivors. On the other hand, a study among Finnish newly diagnosed melanoma and breast cancer patients reported that it was not the type or treatment of cancer, but instead, psychosocial factors that provided the strongest predictor of HRQL (Lehto, Ojanen, & Kellokumpu-Lehtinen, 2005). Generally, older cancer survivors report better HRQL (Sammarco, 2009, 2003; Helgeson et al., 2004), with the exception of head and neck and Hodgkin’s disease survivors (Bloom et al., 2007).

1.2.4 Anxiety and psychological distress in cancer patients

Elevated levels of distress are natural emotional reactions following a life-threatening diagnosis. In psycho-oncology, distress is often defined as a state in which an individual is unable to adapt completely to stressors caused by a medical condition, and shows some kind of maladaptive behaviour, anxiety and depressed mood being the most prevalent symptoms (McLean & Jones, 2007).

In general, increased anxiety and depression are known to be more common in clinical populations than in those free of chronic medical conditions (Reich, 2008; Miovic & Block, 2007). In a frequently cited study by Derogatis and associates (1986), 47% of cancer patients reported having a psychiatric diagnosis. A majority (68%) of these patients suffered from an adjustment disorder with depressive or anxious mood. Recently, Miovic and Block (2007) reported a prevalence psychiatric disorders (50%) in patients with an advanced cancer, the most common being adjustment disorders (14 – 35 %) and major depression (5 – 26 %). However, the prevalence of psychiatric morbidity varies from 10 % – 50 % depending on the cancer illness, stage of cancer, treatment methods and time since diagnosis (Roy-Byrne et al., 2008; van’t Spijker, Trijsburg, & Duivenvoorden, 1997).

Anxiety is often detected in cancer patients during cancer screening and diagnosis, and it may increase as the disease progresses or as treatment becomes more aggressive. About 25 % – 48 % of all cancer patients experience significant anxiety symptoms, whereas 2 % – 14 % of the patients with advanced disease meet the criteria for an anxiety disorder (Miovic & Block, 2007). A study by Stark et al. (2002), for example, indicated that about 44 % of cancer patients reported some anxiety and 23 % reported significant anxiety. Symptoms of post traumatic stress syndrome (PTSD), such as
intrusive thoughts, flashbacks, distressing dreams, and emotional distress, occur in 20 % – 80 % of cancer patients (Miovic & Block, 2007).

Despite an accumulating body of research devoted to the psychosocial determinants of distress in cancer, most research seems to focus on depression. Several reports have indicated that depression affects approximately 15 % to 25 % of cancer patients (Fann et al., 2008; Reich, 2008; van't Spijker et al., 1997). The DSM-IV defines major depression by persistent low mood or anhedonia lasting for at least two weeks and accompanied by at least four of the following symptoms: sleep disturbance, change in appetite, fatigue or loss of energy, changes in psychomotor functions, feelings of worthlessness or guilt, problems with concentration, recurrent thoughts of death or suicide.

An association between poor functional status and maladaptive coping styles, weak social support network (i.e. unmarried, few friends, a solitary work environment), younger age, and fatigue symptoms, have been found by researchers including Miovic & Block (2007). Severe disease-specific side effects, such as severe pain, functional limitations, and advancing disease have been shown to relate to increased anxiety (Stark et al., 2002). However, the patients’ previous history, and their level of anxiety and depression at the time of diagnosis and early treatment seem to be the strongest predictors of experiencing the same problems later (Miovic & Block, 2007). Since anxiety and depression adversely interfere with the quality of life of cancer patients, they should be assessed and treated properly.

Depressive symptoms have also been shown to have an association with adverse health behaviour, such as physical inactivity, smoking, alcohol abuse, unhealthy diet, and BMI (Igna, Julkunen, Vanhanen, Keskivaara & Verkasalo, 2008). Moreover, several studies have reported an increased suicide risk after a cancer diagnosis (Fang et al. 2010, Henriksson, Isometsä, Hietanen, Aro & Lönnqvist, 1995; Lönnqvist et al., 1995). For example, in a very recent large cohort study Fang et al. (2010) reported that the suicide risk for prostate cancer patients was 40 % higher during the first month after the diagnosis (SMR = 1.4, Cl=1.2 – 1.6) as compared with the healthy population, and seemed to be even higher for patients with metastatic tumors (SMR = 3.22, Cl=2.68 – 3.84). Consequently, depressive symptoms may have an indirect effect on disease progression via health behaviour, and even mortality.
It has been suggested that at least 50% of all people diagnosed with cancer successfully adapt to their condition (Miovic & Block, 2007; van't Spijker et al., 1997). Some studies have reported that factors which increase successful adaptation relate to maintaining an active involvement in daily life, minimizing the disruptions to one's life roles caused by the illness (e.g., spouse, parent, and employee) and regulating the normal emotional reactions to the illness (Stark et al., 2002; Stark & House, 2000).

Gender-related differences in the prevalence and severity of anxiety and depressive symptoms have been contradictory. Several earlier studies have indicated that women report consistently more distress than men (Hagedoorn, Sanderman, Bolks, Tuinstra, & Coyne, 2008; Tuinstra et al., 2004; Hagedoorn, Buunk, Kuijer, Wobbes, & Sanderman, 2000). However, surprisingly, recently Goldzweig et al. (2009), among others, have reported that men diagnosed with colorectal cancer were found to be more distressed than women. In a critical review by Hagerdoorn and co-workers (2008), the authors point out that the majority of psycho-oncological research has studied patients of breast cancer and their partners. The results of these studies, nevertheless, have often been discussed without any reference to gender.

1.3 POSITIVE RESOURCES IN STRESSFUL LIFE SITUATIONS

1.3.1 The salutogenic theory

Over the past decades, the research field of behavioural medicine has adopted a more salutogenic approach, exploring factors which promote health and wellbeing in stressful situations, instead of a pathogenic orientation. The salutogenic theory was developed by the Israeli medical sociologist Aaron Antonovsky as a response to the holocaust survivors in the Second World War (Lindstrom & Eriksson, 2005).

The theory is an all-encompassing world view; based on the assumption that the way people view their lives has a significant impact on their health. The fundamental aspect of the theory is to consider health as having a position on an ease – dis/ease axiom or continuum and the perspective is towards the health end instead of pathology. According to Antonovsky (1996, 1987), the paradigm of western medicine creates a dichotomy as it seeks to categorize health or a disease. Curative medicine is too focused on removing illness and preventive medicine on those in danger of falling ill. In
salutogenic orientation the focus is on health promotion. The theory of salutogenesis not only concerns individuals but also the structures of the society and the interaction between people. The salutogenic orientation is also connected to the personal environment of the individuals confronting stressful conditions.

In accordance with the theory of salutogenesis, Antonovsky (1996, 1987) introduced the concepts of generalized resistance deficits (GRD) and generalized resistance resources (GRR). GRDs are stressors that in Antonovsky’s view are ‘demands to which there are no readily available or automatic responses’. Furthermore, the stressor is a life experience characterized by inconsistency, under- or overload, and exclusion from participation in decision making.

GRRs refer to positive resources an individual can call upon to help them to deal with the stress they experience. Antonovsky (1987) defined the GRRs as any phenomenon that is effective in avoiding or combating a wide variety of stressors. These include physical, biochemical, artifactual-material, cognitive, emotional, valutative-attitudinal, interpersonal-relational and macro-sociocultural characteristics of an individual, primary group, subculture or society. In Antonovsky’s proposition it is common to all GRRs that they facilitate making sense out of the various stressors which people constantly face.

1.3.2 Sense of coherence, conceptualization

The key construct of the salutogenic theory is sense of coherence (SOC), developed by Antonovsky (1996, 1993, 1987). This theoretical construct has been used in order to explain individual differences in how people cope with stressful life experiences. Antonovsky’s (1987) theory on salutogenesis suggests that SOC is a factor comparable to several general resistance resources, a phenomenon combating or buffering against a variety of stressors.

SOC is a construct that explains why some people stay well in stressful situations, and even improve their health and some do not. SOC is defined as the ability to comprehend stressful situations and cope with the resources available. People with strong SOC have the ability to manage tension, reflect on their external and internal resources, identify and mobilize them, promote effective coping resources and resolve tension caused by the stressful situation in a health-promoting way. Furthermore, the
theory hypothesizes that an individual with a strong SOC maintains and enhances health through effective and flexible coping with stressors by adopting health-enhancing behaviours, and avoiding unhealthy ones (Antonovsky, 1987).

SOC has been defined as a global orientation. It is based on a person’s pervasive feeling of confidence that 1) the stimuli causing stress are structured, predictable and explicable 2) the resources are available to meet the demands of the stimuli, and 3) the demands and challenges are worthy of investment and engagement and are ameliorable to the person’s effort. Moreover, persons with strong SOC expect that there is a high probability of as favourable an outcome as can reasonably be expected. These are the components in the SOC construct referred to as comprehensibility, manageability, and meaningfulness.

The theory assumes that SOC develops over the life span. Consistent experiences provide the basis for comprehensibility, a good load balance for manageability and participation in shaping the outcome for the meaningfulness component. In Antonovsky’s (1996, 1993, 1987) theory of SOC he claims that the SOC continuum becomes fixed by the end of early adulthood. However, many studies have raised the question, whether SOC has the degree of stability as a personality disposition that Antonovsky has argued for it (Feldt et al., 2007; Feldt, Leskinen, Kinnunen, & Ruoppila, 2003; Karlsson, Berglin, & Larsson, 2000; Geyer, 1997).

1.3.3 Sense of coherence and wellbeing

In his book, Unraveling the Mystery of Health, Antonovsky (1987) suggested that SOC has different pathways leading to health: first, persons with strong SOC are able to select particular coping strategies that seem most appropriate to deal with the stressor. Second, persons with strong SOC are likely to experience more emotions that are more amenable to self-regulation than those with weak SOC. Moreover, persons with strong SOC are more aware of their emotions. Third, SOC seems to have direct physiological consequences; persons with strong SOC mobilize through the central nervous system, neuroimmunological and neuroendocrinological resources in preventing illness.

Research evidence has supported Antonovsky’s (1987) views of the SOC construct as a salutogenic, health-promoting factor, for both physical (Veenstra, Moum, & Roysamb, 2005; Kivimaki et al., 2002a; Kivimaki, Vahtera, Elovainio, Lillrank, &
Kevin, 2002b; Suominen, Helenius, Blomberg, Uutela, & Koskenvuo, 2001; Kivimaki, Feldt, Vahtera, & Nurmi, 2000) and mental wellbeing (Kouvonen et al., 2010; Julkunen & Ahlstrom, 2006; Karlsson et al., 2000). Earlier studies, such as Kivimäki et al. (2002a) have found that strong SOC accurately predicted sickness absences in the four-year follow-up period among women. In addition, Suominen and co-workers (2001) exhibited an association between SOC and the subjective state of health in women and men after a four-year follow-up period. The association between SOC and smoking has also been demonstrated by Igna, Julkunen and Ahlström (2008).

Recent empirical research also supports the association between SOC and severe end points of health, such as mortality. Surtees and associates (Surtees, Wainwright, & Khaw, 2006a; Surtees, Wainwright, Luben, Khaw, & Day, 2006b; Surtees, Wainwright, Luben, Khaw, & Day, 2003) demonstrated that a strong SOC was associated with a 30% reduction in mortality from all causes in a large (n = 20,000) population-based cohort using a three-item SOC-scale. However, the relationship between SOC and physical health is somewhat weaker than with mental health, and it needs more clarification. Nevertheless, SOC seems to have main, mediating or moderating effects on health. While, of course, SOC does not explain overall health alone, it seems to act as a health-promoting resource.

Previous research has shown a strong relationship between SOC and distress, particularly between SOC and depression (Kivimaki et al., 2002a). For example, Karlsson and associates (2000) found that coronary artery bypass patients with strong SOC reported lower levels of depressed mood, stress and anxiety before and after surgery than those with weak SOC. There is, however, surprisingly little research investigating the SOC - distress association in cancer patients. In addition, the importance of the clinical implications of SOC research has recently been underlined (Eriksson & Lindstrom, 2005; Lindstrom & Eriksson, 2005).

1.3.4 Optimistic attitude to life, conceptualization

Dispositional optimism refers to generalized outcome expectancies that good things, rather than bad things, will happen; pessimism refers to the tendency to expect negative outcomes in the future. Dispositional optimism is initially related to a general model of behavioural self-regulation by Scheier and Carver (Carver, Scheier, & Weintraub, 1989;
Scheier, Weintraub, & Carver, 1986; Scheier & Carver, 1985). This model represents goal-directed behaviour as guided by a hierarchical negative feedback system.

According to Scheier and Carver (1985) behaviour is organized around the pursuit of goals. The behaviour is fitted to the values individuals see as desirable and undesirable. Another important element in the self-regulation approach is expectancy, which is defined by Scheier and Carver (1985) as a sense of confidence that the goal is attainable. Without sufficiently valued goals, and an adequate sense of confidence, there will be no action. The discrepancy-reducing loop then diminishes the discrepancy between the incoming function and the reference value by giving further information on how to act in order to attain the goal.

Scheier and Carver (Scheier, Carver, & Bridges, 2001; Carver et al., 1993) maintain that dispositional optimism is a generalized outcome expectancy that is believed to maintain focus and effort. Optimism influences an individual’s willingness to stay focused on reducing discrepancies between the present behaviour and a goal or standard. According to the theory, if the expectancy of the goal’s attainability is optimistic, the person continues in pursuing the goal. If a considerable amount of the generalized expectancies are negative, internal, and global, that will lead to a response style termed ‘pessimistic explanatory style’, and the person will give up the action. According to Carver and Scheier (1993), as well as other researchers (e.g. Korkeila et al., 2004; Heinonen et al., 2006), optimism is a general and stable dispositional resource developed by nature and nurture.

In order to measure the favourability of a person’s generalized outcome expectancies Scheier and Carver (1985) have developed a measure: the Life Orientation Test (LOT). The LOT has been later reevaluated and revised (LOT-R) to remove some content overlap with coping (Scheier, Carver, & Bridges, 1994). Evidence exists that both measures load on two separate factors, optimism and pessimism, instead of being a unidimensional measure (Räikkonen & Matthews, 2008; Kubzansky, Kubzansky, & Maseko, 2004; Marshall, Wortman, Kusulas, Hervig, & Vickers, 1992). On the other hand, according to Scheier and Carver (1994) optimism and pessimism should be considered as opposite poles of a single continuum.

Further, SOC and dispositional optimism have in some previous studies been found to correlate positively (Ebert, Tucker, & Roth, 2002; Pallant & Lae, 2002). In his latest
report Antonovsky (1996) mentions optimism as a closely related construct to SOC but does not discuss these concepts further, and the reciprocal relationship between these constructs has previously been greatly overlooked. This may be due to the fact that dispositional optimism and SOC originate from very different theoretical backgrounds, leading to a shortage of investigations that bring the two into a single context.

Another approach to assessing optimistic attitude to life derives from Snyder’s (Snyder, 2002; Snyder, Symson, Michael, & Cheavens, 2001; Snyder et al., 1991) theoretical position on hope and hopelessness. Hope is defined as ‘a positive motivational state that is based on an interactively derived sense of successful agency and pathways’. In Snyder’s (2002, 1991) approach hope is defined as having two interrelated and reciprocal components: 1) agency, that is, the mental motivation that a person uses to initiate and sustain a movement toward a goal, and 2) pathway, the ability to generate successful routes to attain the goal, including the formation of sub goals along the way. In hope theory, emotion is driven by the perceptions about one’s success in goal pursuits.

The agency component in the hope theory is analogous to the expectancy component of Carver and Scheier’s (1985) dispositional optimism. While both theories highlight the importance of the belief in one’s ability to strive and maintain the action towards goals, the role of self-efficacy in optimism is underestimated. The distinction between the hope theory and Scheier’s and Carver’s approach lies in how the expectancies are considered to influence behaviour. The hope theory puts a great deal more emphasis on the pathways component, whereas Carver and Scheier’s (1985) model of optimism places less emphasis on the bases of the outcome-expectancies.
### 1.3.5 Optimism and well-being

Previous evidence has indicated that optimism may act as a stress buffer and protect one from experiencing distress in stressful situations. In several behavioural medical reports, dispositional optimism has been shown to have beneficial effects on physical health (Stanton, Revenson, & Tennen, 2007; de Moor et al., 2006; Segerstrom, 2005; Matthews, Räikkonen, Sutton-Tyrrell, & Kuller, 2004; Allison, Guichard, Fung, & Gilain, 2003).

For example, Rasmussen, Scheier, & Greenhouse (2009) conducted a quantitative review summarizing 84 studies showing that optimism is a significant predictor of health outcomes or markers, such as cardiovascular and cancer outcomes, immune function, physical symptoms, and pain, as well as mortality and survival. Moreover, recently, Nabi et al. (2010) reported an association between low levels of pessimism and reduced incidence of stroke in a large sample of Finnish adults. Hopelessness has also been linked to all-cause mortality and cause-specific mortality (Everson et al., 1996; Everson, Kaplan, Goldberg, Salonen, & Salonen, 1997).

Besides the salutogenic effects on somatic health, optimism has been found to be a predictor of good adjustment to a variety of somatic illnesses, including different types of cancer in patients (Matthews & Cook, 2009; Carver & Miller, 2006; Carver et al., 2005, 1994, 1993; Friedman et al., 2006, 1992) as well as in their caregivers (Kurtz, Kurtz, Given, & Given, 1995). Furthermore, optimistic cancer patients appear to demonstrate better psychological health (Carver et al., 2005; Schou, Ekeberg, Ruland, Sandvik, & Karesen, 2004) and better quality of life (Carver, Smith, Petronis, & Antoni, 2006; Schou, Ekeberg, & Ruland, 2005; Allison, Guichard, & Gilain, 2000) than less optimistic cancer patients.

For example, in a study of patients diagnosed with early breast cancer, Carver et al. (2005) found that optimists were significantly more likely than pessimists to recover well after surgery. In addition, optimists were more likely to adjust to their illness 5 - 13 years later. It should be noted, however, that contradictory to numerous studies of other cancers, optimism has also failed to predict the quality of life (de Moor et al., 2006).

There also appear to be connections between dispositional optimism and other approaches to disease, including the successful use of more active, approach-oriented, and problem-focused coping strategies, affective social support, as well as reduction of
disease-related threat appraisals and less avoidant coping (Schou et al., 2005; Trunzo & Pinto, 2003; Carver et al., 1993, 1989). The problem with the salutogenic approach in coping with severe illnesses, however, lies in the possibility of reversed causality. Longitudinal studies that have been able to measure the level of dispositional optimism or SOC before the traumatic event has happened are rare.

1.3.6 Other theoretical constructs related to positive resources

SOC, dispositional optimism and hope are not entirely new concepts in personality and stress-health research. Among others, Geyer (1997) has stated that two concepts in particular seem to be highly correlated with SOC. Central elements of SOC can also be found in Kobasa’s (1979) theory of hardy personality and Bandura’s (1977) concept of self-efficacy.

Kobasa (1979) defines hardiness as cognitive appraisal processes composed of three components. In Kobasa’s (1979) framework these are control, commitment and challenge. The components are defined as: 1) a belief that people can control or influence the events of their experience; 2) an ability to feel deeply involved in the activities of their lives; and 3) anticipating change as an exciting challenge to further development. The implications of a hardy personality could profoundly affect the way health-promotion and preventative measures are used in the health field.

The concept of self-efficacy as developed by Bandura (1977) has dimensions and aims similar to SOC and optimism in trying to explain how people cope with stressors. According to Bandura, self-efficacy is the belief in one’s capabilities to organize and execute the courses of action required to manage prospective situations. In other words, self-efficacy is a person’s belief in his or her ability to succeed in a particular situation. Bandura (1977) described these beliefs as determinants of how people think, behave, and feel.

In his book Antonovsky (1987) thoroughly discussed the above mentioned theories, and argued that SOC is the foremost among predictive models in explaining how differences in personality can lead to enhanced health. However, in Geyer’s (1997) critical overview of the SOC theory he pointed out that Kobasa’s (1979) approach can be translated directly into the concept of SOC. The difference between hardiness and SOC appears to be between their operationalization. While Antonovsky (1987) designed
a special scale in order to measure SOC, Kobasa’s (1979) hardy personality is assessed via instruments developed for other purposes.

The difference between SOC and self-efficacy on the other hand concerns the stability of the dimensions. Bandura (1977) assumed that in order to be maintained, self-efficacy needs to be confirmed over time, while Antonovsky (1987) assumed SOC to be constant. The stability of SOC has, however, recently been questioned by several studies (Feldt et al., 2007, 2003), particularly when considering people with weak or moderate SOC (Hakanen, Feldt, & Leskinen, 2007). Nevertheless, in his discussion on self-efficacy and SOC, Antonovsky (1987) does not differentiate between these concepts.

1.4 THE PSYCHOLOGICAL IMPACT OF CANCER ON COUPLES

1.4.1 Conceptual underpinnings of dyadic coping processes

Over the past decade, a major focus of research into stress and coping has been concentrated almost entirely on the individual’s coping strategies and the effect on their physical and mental wellbeing. One of the most important stress theories is Lazarus and Folkman’s (1984) transactional theory. In this approach, stress is seen to interact between the demands facing the person, and their individual and social resources. An individual’s primary and secondary appraisals are the key variables in determining the onset and course of the stress process. Primary appraisals refer to the person’s view of the importance of that which is at stake or under threat in the situation. Secondary appraisals involve the assessment of the coping resources available.

Another approach in health psychology has been based on Sarason’s et al. (1986, 1985) studies on stressful life events, social support and illness. For example, Sarason and associates (1985) found that negative life events in the recent past were associated with illness. Furthermore, the relationship between negative life events and illness was stronger for those participants who reported low rather than high social support.

In recent decades, the transactional stress approaches by Lazarus et al. and Sarason et al. have been the basis of several other theories and models of dyadic coping. One such approach expanding on Lazarus’ work is Revenson’s approach (1994), the coping congruence model. The theory assumes that stress is an individual phenomenon of each
partner, but each partner’s coping with stress is related to the other partner’s coping. The congruence or fit between marital partners’ coping processes is seen as a predictor of adaptation.

Another approach that has expanded Lazarus and Folkman’s (1984) approach is the systemic-transactional perspective developed by Bodenmann (Randall & Bodenmann, 2009; Bodenmann, Pihet, & Kayser, 2006; Bodenmann, 2005). This approach defines dyadic coping as a process on the dyadic level in which the coping reactions of one partner take into account the stress signals of the other partner. Stress appraisals can be communicated verbally or nonverbally. Thus, the couple’s adaptation process can be described as a spiral or a cascade in which a patient’s distress affects the way a spouse copes or provides support, which again affects the patient’s distress and coping, in turn affecting the spouse and so on. The interpersonal processes occurring when the psychological reactions of one person affect the reactions of another person in the same environment is also referred to as crossover (Westman, Keinan, Roziner, & Benyamini, 2008; Kinnunen & Feldt, 2004; Westman, Vinokur, Hamilton, & Roziner, 2004) or transmission (Luszczynska, Boehmer, Knoll, Schulz, & Schwarzer, 2007; Knoll, Schulz, Schwarzer, & Rosemeier, 2006; Schroeder & Schwarzer, 2001).

Dyadic stress has been defined as a stressful event concerning both partners of the dyad, 1) indirectly or directly, 2) through its origin, and 3) through the timing of the stressors (Bodenmann et al., 2006). For example, a cancer diagnosis influences both partners simultaneously, but the experience and the coping may be very different. The patient is likely to experience pain, treatments and psychological distress, as well as fear of death, whereas the spouse may experience stress related to care giving and potential fear of losing the partner.

1.4.2 Significance of partner support in coping with cancer

Social support has been found to have a crucial impact on the psychological adjustment of individuals suffering from chronic illnesses (Kornblith et al., 2001; Bloom, 2000). In studies of cancer patients, a low amount of support in the living environment and an avoidant coping style have been reported to relate to less successful adjustment, higher levels of physical symptoms, and a lower degree of life satisfaction (see, for example, Schulz & Schwarzer, 2004; Bloom, 2000).
Social support has been defined in several ways. According to Cohen & Wills’s (1985) theory, social support can be defined by the number of friends an individual has, and satisfaction with the level of support those friends provide when needed. Social support can also be classified into several types of support: social companionship, esteem, informational, and instrumental support. Cohen & Wills (1985) have also suggested that social support helps individuals to cope with stress either by reducing the effect of stressors (main effect hypothesis) or mediating the stress-illness link by buffering the individual from the stressor (stress buffering hypothesis).

The main effect hypothesis suggests that social support is beneficial itself and its absence leads to psychological stress (Cohen & Wills, 1985). According to the stress buffering hypothesis, social support is seen to influence the individual’s appraisal of the potential stressor in question. The theory further suggests that other people can enable those confronting a stressor to select more appropriate coping strategies. This happens because of individuals comparing themselves to others. This process, called the social comparison theory, is essential also in dyadic coping.

A life-threatening illness, such as cancer, is a major life stressor forcing the patients to rely on their intimate family members. Support provided by other close relationships, such as friends or extended family, has been shown to be of benefit, particularly for women (Revenson, Abraido, Lanza, Majerovitz, & Jordan, 2005; Carlson, Ottenbreit, St Pierre, & Bultz, 2001). Studies, nonetheless, show that cancer patients living alone do not adjust as well as married or co-habitating patients (Pistrang & Barker, 1995).

Some previous studies on marriage and health have illustrated that survival of married cancer patients is more likely than those without a partner. In their thorough overview, Kiecolt-Glaser and Newton (2001) have suggested that individuals living alone, particularly those who are widowed, may delay seeking treatment and neglect their health behaviour. In addition, patients that experience a higher quality and amount of social support have been found to demonstrate lower levels of cortisol and a better immune system (Turner-Cobb, Sephton, Koopman, Blake-Mortimer, & Spiegel, 2000).

Family members’ psychological reactions to the illness and their interactions with the patient affect the psychological adjustment of the individual with cancer. This is particularly notable with partners who are usually the main source of patient support, in that patient-perceived partner support appears to be an important predictor of patient
adjustment (Baider, Ever-Hadani, Goldzweig, Wygoda, & Peretz, 2003; Ben-Zur, Gilbar, & Lev, 2001; Northouse, Mood, Templin, Mellon, & George, 2000) as well as good quality of life (Bloom et al., 2007; Helgeson et al., 2004; Mellon & Northouse, 2001; Northouse, Templin, & Mood, 2001; Northouse et al., 2002, 2002). Partner support that occurs as part of dyadic coping seems to differ from the support provided by other persons, such as friends, neighbours, and relatives. The social support given by the spouse is usually seen as most important in association with the psychological wellbeing of the patient (Pistrang & Barker, 1995). The structure of the family environment is uppermost, since it can facilitate or hinder the provision of supportive interactions.

Literature on social support in medical conditions shows that people facing a serious illness particularly need emotional support (Carlson et al., 2001; Helgeson & Cohen, 1996). For example, a study by Carlson (2000) demonstrated that cancer patients’ perception of higher support from their spouse was related to positive discussions with the spouse, spousal hope, encouragement, and relevant realism. In addition, according to Pistrang & Barker (1995), ‘a helping dyadic relationship’ is associated with a high level of empathy and a low level of avoidance.

1.4.3 Partners’ psychological reactions to their spouse's illness

While the role of the partner as a source of support is generally recognized, the partner’s psychological reactions are often ignored in psycho-oncological empirical research. Patients require ongoing evaluation and treatment for depression and anxiety throughout their course of treatment. However, anxiety and depression not only affect the patients themselves but also have a major negative impact on the patients’ families.

A great number of cancer patients’ caregivers suffer from high levels of emotional distress even though the mean scores seem to be below clinical cutpoints (Hagedoorn et al., 2008), and only a minority develop psychiatric disorders (Pitceathly & Maguire, 2003; Hagedoorn et al., 2000). Nonetheless, it has been previously reported that 15 % – 50 % of cancer patients and their partners report clinically significant distress, including symptoms of depression and anxiety, and role adjustment problems (McLean & Jones, 2007). Furthermore, caregivers’ distress is known to increase at the end-of-life stage of cancer.
There is also some evidence showing that female partners of seriously ill patients are more distressed than male partners. The literature shows that gender is an important factor in predicting distress in couples coping with cancer (Hagedoorn et al., 2008, 2000; Tuinstra et al., 2004). That is, women are found to experience more distress than men, regardless of whether they are cancer patients or partners.

1.4.4 Family functioning, communication, and anger expression

Family functioning is an important factor impacting on patient and family distress. In an earlier study with adult cancer patients (n = 48) and their adult relatives (n = 99), families that acted openly, expressed feelings directly, and solved their problems effectively, had lower levels of depression (Edwards & Clarke, 2004). In addition, direct communication within the family was associated with lower levels of anxiety.

Depressive symptoms in spouses of cancer patients can also have a negative impact on their marital communication (Giese-Davis, Hermanson, Koopman, Weibel, & Spiegel, 2000). It seems obvious that there is a need for keeping the patients and their partners well informed, helping them to cope and alleviate their symptoms of anxiety and depression. Simultaneous psychosocial care of the patients and the caregivers would improve quality of life in patients as well as their partners.

Anger is often defined as the emotion that is felt in occurrence of offence. Hostility is referred to as a characteristic attitude of cynicism and mistrust, and aggression is the end point of angry feelings when they escalate (Thomas, 2007). According to Spielberger, Jacobs, Russell, & Crane’s (1983) state-trait anger theory, anger expression has three modes: anger-in, in which anger is kept inside, anger-out, when anger is directed outwards, and anger-control, a way of calming down quickly and refraining from losing one’s temper when anger is aroused. Trait anger, a stable aspect of the personality over time, is seen as an individual’s overall propensity to become aroused to anger. State anger on the other hand refers to an emotional experience at a particular moment.

Earlier research has suggested that habitual inhibition of anger (anger-in) has negative effects on available social support, whereas controlling one’s anger (anger control) is more adaptive, and is known to be positively related to social support (Dahlen & Martin, 2005; Palfai & Hart, 1997; Julkunen, 1996b). Furthermore, high
levels of anger expression (anger-out) among patients with a pulmonary illness have been associated with decreased social engagement among support providers (Lane & Hobfoll, 1992). On the other hand, greater anger-out has recently been associated with a higher quality of life and lower depression in patients with breast cancer (Lieberman & Goldstein, 2006).

Thus, given the previous results that social support has a positive impact on adjustment to a serious illness and quality of life, and anger expression is apparently related to social support, it seems reasonable to assume that social support may serve as an important mediating factor between anger expression and patient-perceived outcome, such as HRQL. Although high levels of anger have been associated with other psychological problems, research on anger and anger reduction in the research field of family functioning and communication among cancer dyads has lagged behind research on other emotional problems (Deffenbacher, Oetting, Lynch, & Morris, 1996a; Deffenbacher et al., 1996b).

1.4.5 Empirical studies on the impact of cancer on the couple

A growing literature resource has provided a general consensus that patients and partners are fundamentally involved in each other’s coping and support processes. This crossover or transitive effect has been studied earlier in non-clinical samples (Westman et al., 2008, 2004; Matthews, Del Priore, Acitelli, & Barnes-Farrell, 2006; Kinnunen & Feldt, 2004), and recently in clinical samples as well (Hagedoorn et al., 2008; Luszczynska et al., 2007; Knoll et al., 2006; Ruiz, Matthews, Scheier, & Schulz, 2006). For example, spouses’ psychological characteristics have been found to play a significant role in the psychological wellbeing of patients recovering from coronary artery bypass surgery (Ruiz et al., 2006).

In recent years, researchers have demonstrated significant correlations between patient and their spouse emotional distress and similar trajectories in distress (McLean & Jones, 2007; Segrin et al., 2005), as well as between levels of adjustment within cancer dyads, irrespective of cancer type or illness stage (Hagedoorn et al., 2008; Pitceathly & Maguire, 2003). Moreover, reciprocal patient-partner support appears to protect against high levels of distress (Eton, Lepore, & Helgeson, 2005; Fang, Manne,
& Pape, 2001). If the partner’s distress level is high, he or she is likely to be less of a support to the patient, and vice versa.

Few studies have investigated the stress buffering effects of SOC or dispositional optimism on distress among dyads. For example, Ruiz et al. (2006) found a negative association between dispositional optimism and distress among chronically ill people and their spouses. In addition, Schröder & Schwartzer (2001) reported that dispositional optimism was associated with less depression in a sample of heart patients and their partners.

It seems that alleviating the cancer patient’s and partner’s distress is best achieved by focusing on the couple’s coping than on individual factors. However, even today there is little evidence of these dyadic, reciprocal effects in cancer patients and their partners. In psycho-oncology, dyadic coping has been studied mostly among breast cancer patients and their husbands, and studies rarely report on associations between SOC, dispositional optimism and distress among dyads.
2 AIMS OF THE PRESENT STUDY

Cancer patients and their partners offer an important context for investigating generalized positive resistance resources. Therefore, the general aim of the present study was to investigate the psychological consequences of cancer in patients as well as in their family members from the salutogenic and dyadic perspective. The focus was on investigating the interrelations of positive resources, including sense of coherence (SOC), dispositional optimism, hope, partner support and anger expression styles, in patient and spouse perceived outcomes, such as health-related quality of life and distress (i.e. depression and anxiety) (see Figure 2). To investigate these interrelations, as well as the mediative and moderate effects of the factors, four sub-studies were completed.

![Diagram](https://via.placeholder.com/150)

**Figure 2.** General theoretical model of the aim of the present study. The arrows demonstrate hypothesised links in sub-studies I-IV.
Study I

The aim of study I was to investigate the role of patient and partner dispositional optimism, hopelessness and patient-perceived partner support as predictors of HRQL in cancer patients.

It was hypothesised that partner optimism enhances a patient’s perception of partner support, while partner hopelessness has a negative impact on a patient’s perception of partner support. Furthermore, it was assumed that a high level of partner support increases patient’s own optimism and reduces hopelessness after a diagnosis of cancer. Finally, it was hypothesised that patient optimism and low hopelessness predict good patient HRQL.

Study II

The aim of study II was to investigate the SOC-distress association in cancer patients as well as in their partners. Special interest was given to possible mediator effects in the SOC-distress association. The changes in distress and SOC during the 14 months after diagnosis were also studied.

It was hypothesised that strong SOC at the time of diagnosis is associated with low levels of distress, i.e. anxiety and depression, 14 months post diagnosis. Low levels of distress at the baseline were also assumed to strengthen the 14-month follow-up SOC. The direct crossover effect of patient baseline SOC on partner levels of follow-up distress, and partner baseline SOC on patient follow-up distress levels, was also studied. Patient and partner distress were assumed to correlate.

Study III

Study III examined the anger expression styles of cancer patients and their partners, and the impact of these factors on patient-perceived partner support as well as on long-term health-related quality of life (HRQL) of the patients. Possible differences related to gender were explored among the study variables.

It was expected that anger-in (i.e., anger suppression/inhibition) and anger-out (i.e., anger expression) in either of the partners would be inversely related to partner support and patient’s HRQL. Anger control, a constructive way of coping with anger, was
expected to be associated with high levels of partner support and good HRQL. Anger-expression styles were expected to vary by gender.

Study IV

The aim of study IV was to clarify the associations between SOC, optimism and distress in cancer dyads. In addition, the aim was to investigate the mediator effects of dispositional optimism between SOC and distress as well as the crossover pathways between cancer patients’ and their partners’ optimism and distress.

Optimism was hypothesised to predict lower levels of distress (i.e. symptoms of anxiety and depression) at the time of diagnosis and at eight-month follow-up (Model 1). Moreover, patient and partner optimism were assumed to have a crossover effect on distress at follow-up. In addition, strong SOC was assumed to predict high dispositional optimism, which in turn was expected to predict lower distress fully (Model 2) or partially (Model 3).
3 METHODS

3.1 OUTLINE OF THE STUDY

This study is part of a longitudinal research project, PSYCA, investigating the psychological consequences of cancer in Finnish cancer patients and their immediate families. The original sample was recruited from the Helsinki University Central Hospital in 1997 – 2000. Research nurses delivered self-report questionnaires to patients as well as to family members visiting the hospital during the time of diagnosis. Follow-up questionnaires were mailed to the participants.

The baseline data was collected about two months (Time 1) after the diagnosis ($M = 1.8$, $SD = 1.3$). The range was from 0.5 to 6 months, with a median of one month. Of the participants, 88.2 % answered within three months. The first follow-up survey was conducted about eight months after the diagnosis (Time 2); consequently the mean assessment interval between baseline and follow-up was about six months ($M = 6.2$, $SD = 1.8$). The second follow-up was conducted about 14 months post diagnosis (Time 3), the mean interval between the baseline and the second follow-up being about 12 months ($M = 12.4$, $SD = 1.7$).

In addition to the questionnaires, basic clinical information (diagnosis, the time of diagnosis, the stage of the disease, and the treatment modalities) was collected from the hospital records. Furthermore, before starting the study we obtained: information concerning the treatment of the cancer and the aim of the treatment (curative or palliative), informed written consent from the participants, and the approval of the hospital ethics committee.

3.2 PARTICIPANTS

The subjects were patients diagnosed with the ten most common types of cancer in Finland and these patients’ significant others. The original baseline sample consisted of a consecutive series of 396 cancer patients (67 % women) and 269 family members. In studies I-IV we included only those patients who reported being married or living with
their partner and whose heterosexual partner was also willing to participate. Also, only those patients whose general condition was good enough to allow filling in the questionnaire were included. In addition, participants who did not return the baseline questionnaires within a six-month period were excluded \((n = 25)\), as well as subjects with missing data. Because of logistic reasons related to the large number of clinics and study nurses in this study we could not obtain accurate information on patients who declined to take part in the study.

At baseline, 172 couples were identified. The participants in study I were 155 couples who filled in the questionnaire at the baseline and at the eight-month follow-up. Of the patients, 88 were women and 67 men. The subjects of study II were 123 couples who answered the questionnaires at the baseline and at the first and second follow-up. The sample of this sub-study consisted of 68 female and 55 male patients. Complete data on the study variables in study III at baseline and at the first follow-up was available for 153 patients and their partners; these couples formed the sample of study III. Of these patients, 86 were women and 67 men. The sample of study IV consisted of 81 female and 66 male patients and their spouses, i.e. 147 couples, who answered the questionnaires at baseline and at the first follow-up. No statistically significant differences in the study variables were found between the dropout couples and the final sample \((all \; p\text{-values} \; >.10)\).

The couples had been married or living together for an average of 31 years \((range 0 – 52 \; years)\). The mean age of the patients was 58 years, range \(34 – 76 \; years\) \((SD = 8.6)\) and of the partners 59 years, range \(30 – 77 \; years\) \((SD = 9.4)\). By the eight-month follow-up 71 % of the patients had completed the cancer treatments; by the 14-month follow-up 79 % had completed the treatments. Clinical data of the baseline sample are shown in Table 1.
Table 1. Medical data of the married or cohabiting patients (n = 172) at the time of diagnosis.

<table>
<thead>
<tr>
<th>%</th>
<th>Men n = 77</th>
<th>Women n = 95</th>
<th>$\chi^2$ value (df)</th>
<th>p</th>
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<td>-</td>
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<tr>
<td>Other cancers</td>
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<tr>
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<tr>
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<td>31</td>
<td>32.7</td>
</tr>
<tr>
<td>Advanced</td>
<td>11</td>
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<tr>
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<td>5</td>
<td>5.3</td>
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</tr>
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<td>1.3</td>
<td>1</td>
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<td><strong>Aim of treatment</strong></td>
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<td>84.4</td>
<td>85</td>
<td>89.5</td>
</tr>
<tr>
<td>Palliative</td>
<td>12</td>
<td>15.6</td>
<td>10</td>
<td>10.5</td>
</tr>
</tbody>
</table>

Note. $\chi^2$-test in the categorical variables. For statistically significant difference between two groups *p < .05; ** p < .01; *** p < .001

3.3 MEASURES

3.3.1 Dispositional optimism (Studies I, IV)

Dispositional optimism was measured at the time of diagnosis (Time 1) with a Finnish adaptation of the revised Life Orientation Test (LOT-R) (Scheier et al., 1994). LOT-R measures positive and negative expectancies and consists of three items each (plus four filler items). The items on the positive side are: ‘In uncertain times I usually expect the best’, ‘I’m always optimistic about my future’, ‘Overall, I expect more good things to happen to me than bad’. On the negative side they are: ‘If something can go wrong for me, it will’, ‘I hardly ever expect things to go my way’, ‘I rarely count on good things to happen to me’.
The items are rated using a five-step Likert scale (0 = completely disagree… 4 = completely agree). The negative items are reverse scored. A higher sum-score reflects a higher optimistic life orientation. In previous studies (Matthews et al., 2004; Scheier et al., 1994), LOT-R has proved to be reliable and valid in measuring dispositional optimism. The Finnish adaptation has been used widely and has been shown to be reliable and valid (Heinonen et al., 2006; Korkeila, 2004; Härkäpää, 1995). In the current studies the Cronbach’s alphas were acceptable: patients $\alpha = 0.71$ and partners $\alpha = 0.67$.

3.3.2 Hopelessness (Study I)

Hopelessness was measured at baseline with a two-item Hopelessness Scale (Everson et al., 1996). The items were ‘I feel it is impossible to reach the goals I would like to strive for’ and ‘The future seems to me to be hopeless, and I cannot believe that things are changing for the better’. These items have been introduced into Finland as a part of a large Kuopio Ischemic study, and the items have been shown to be associated with risk of coronary heart disease and cancer (Everson et al., 1997, 1996). The reliabilities for the patients were $\alpha = 0.58$ and for their partners $\alpha = 0.63$. For a two-item scale these were seen as acceptable.

3.3.3 Partner support (Studies, I, III)

Partner support was measured at the baseline and at eight-month follow-up with a 12-item Family Support (FS) scale (Julkunen & Greenglass, 1989). This scale was originally developed in Finnish and has been used in numerous studies with coronary heart disease or cancer patients in Finland (Greenglass, 1993; Okkonen & Vanhanen, 2006). The items are rated using a five-step Likert scale (1 = completely disagree… 5 = completely agree) and the range of the total score is 12 – 60. The sum-score of the scale reflects the respondents’ perceived degree of emotional and instrumental support received from other family members.

Representative items are, for example: ‘My family supports me in all my efforts,’ and ‘Conflicts at home often take all of my energy’ (reverse scored). For this study, two items of the original scale, ‘I am the one mainly responsible for work in our home’ and
'My family is always doing things for me to make my life easier’ were replaced by new items which referred to the impact of the illness on the family atmosphere. The new items were: ‘After being diagnosed with this illness I feel left alone with my worries’ (reverse scored) and ‘Facing the illness has made us feel more close to each other.’

The internal consistency of the scale in previous research has been good or excellent (Okkonen & Vanhanen, 2006), and in this study the Cronbach’s alpha was = 0.90 for the patients. Furthermore, in study III the test-retest (six months) correlation was r = 0.83 for the men and r = 0.76 for the women.

3.3.4 Health-Related Quality of Life (Studies I, III)

HRQL was measured with the Finnish version of the RAND-36-Item Health Survey (Aalto, Aro, & Teperi, 1999) at Time 2, about eight months post diagnosis. The RAND-36 is a generic health-related survey consisting of 36 items with eight sub-scales: 1. general health, 2. bodily pain, 3. physical functioning, 4. role limitations/physical, 5. role limitations/emotional, 6. vitality, 7. mental health, and 8. social functioning. Higher scores on the scale indicate a better quality of life.

In the present study, as well as in previous research (Järvinen et al., 2004; Hays & Morales, 2001; Aalto et al., 1999), component summary scores were used. Physical Component Summary (PCS) equals the mean value of the first four sub-scales, and Mental Component Summary (MCS) equals the mean value of scales 5 to 8. The RAND-36 has gone through extensive psychometric testing and has been found to have adequate internal consistency and validity (Pekkonen, 2010; Aalto et al. 1999). The Finnish adaptation of the RAND-36 measure has also proved to be a useful instrument in estimating the benefits of rehabilitation and in effectiveness research (Pekkonen, 2010). The Cronbach’s alphas for MCS (α = 0.90) and PCS (α = 0.86) in this study were acceptable.
3.3.5 Sense of coherence (Studies II, IV)

SOC was assessed at baseline and at the 14-month follow-up using a 12-item Finnish short version of the original 29-item Orientation to Life Questionnaire (OLQ) developed by Antonovsky (1987). The OLQ items are assessed using a seven-point Likert scale in which higher scores indicate higher SOC (score range for SOC-12 is from 12 to 84).

Four items are scored inversely. The widely used short form (SOC-13) of the scale consists of five comprehensibility items (e.g. ‘Do you have the feeling that you are in an unfamiliar situation and don’t know what to do?’), four manageability items (e.g. ‘How often do you have feelings that you are not sure you can keep under control?’), and four meaningfulness items (e.g. ‘Do you have the feeling that you don’t really care about what goes on around you?’).

The internal consistency of the 13-item scale in previous research has been good or excellent (Pallant & Lae, 2002; Antonovsky, 1993). In the Finnish 12-item adaptation, one item measuring manageability (number 25 in the original scale) has been omitted due to translation difficulty. The Finnish adaptation has been used as a valid method by several researchers (Julkunen & Ahlström, 2006; Feldt et al., 2010, 2007, 2003; Eriksson & Lindstrom, 2005). Recent studies on validity of the scale have pointed out that an 11-item version of the scale would be even better, since items nr 5 and 6 seem to measure the same thing (Hakanen et al., 2007; Feldt et al., 2007). The shortest version of the SOC scale is only three items. This scale has been used in wide population-based studies (Surtees et al., 2006a, 2006b, 2003). In this study the Cronbach coefficient alpha for the SOC-12 scale was good (patients, \( \alpha = 0.88 \) and partners, \( \alpha = 0.87 \)).

3.3.6 Depression (Studies II, IV)

Depressive symptoms were assessed at all three assessment points with a 14-item short form of the Beck Depression Inventory (BDI) (Beck, Steer, & Garbin, 1988). The original 21-item scale has been the most widely accepted measure of depression, and it has been used in numerous studies of depression in seriously ill people as well as in psycho-oncological studies (Mystakidou et al., 2007; Gerend, Aiken, West, & Erchull, 2004; Love, Grabsch, Clarke, Bloch, & Kissane, 2004).

In Finland, the BDI-14 has often been used in studies of coronary and bypass patients (Julkunen, Saarinen, Idänpää-Häikkilä, & Sala, 2000; Julkunen & Saarinen, 1994), as
well as in oncological studies (Ollonen, Lehtonen, & Eskelinen, 2005), and has proven to have good internal consistency. The depression scores could range from a low of 0 to high of 42. The reliabilities of the BDI-14 in this study were acceptable: $\alpha = 0.79$ for patients and $\alpha = 0.85$ for partners.

### 3.3.7 Anxiety (Studies II, IV)

Anxiety was assessed at the baseline and at the two follow-ups with the state-anxiety sub-scale of the Endler Multidimensional Anxiety Scales (EMAS-State) (Endler, Parker, Bagby, & Cox, 1991). The state-anxiety sub-scale consists of 20 items evaluated on a five-point Likert scale (score range 20 – 100). EMAS-State assesses two components of state-anxiety: a cognitive-worry component and an autonomic-emotional component. Both components consist of 10 items. In previous research EMAS has demonstrated good or excellent validity and reliability (Endler et al., 1991). The Finnish adaptation has previously been used among Finnish coronary heart patients (Julkunen, Salonen, Kaplan, Chesney & Salonen, 1994; Julkunen & Saarinen, 1994). The Cronbach coefficient alphas for our patients and their partners were excellent (patients, $\alpha = 0.95$ and partners, $\alpha = 0.96$).

### 3.3.8 Anger expression (Study III)

Anger expression was measured at baseline with the Finnish adaptation of the Spielberger et al. (1988) Anger Expression scale, which is a 24-item questionnaire developed to measure characteristic styles of coping with anger arousal. Respondents are asked to rate the level of feeling angry across a four-point Likert-type scale ranging from 1 to 4. The eight-item anger inhibition sub-scale assesses anger-in. Sample items for anger-in include ‘I am irritated a great deal more than people are aware of’ and ‘I boil inside but don’t show it.’ The second sub-scale consists of eight items that assess anger expression, or anger-out. Sample items are ‘I do things like slam doors’ and ‘I say nasty things.’ The anger control scale determines the extent to which an individual is able to restrain himself from expressing anger (e.g. ‘I control my temper’).

The Finnish adaptation of the scale developed by Greenglass and Julkunen (1991) has been used in several earlier studies of healthy subjects as well as of coronary heart
patients in which context the reliability of the translation has been tested (Julkunen & Ahlstrom, 2006; Julkunen, Salonen, Kaplan, Chesney, & Salonen, 1994; Greenglass & Julkunen, 1991). In this study, the Cronbach’s alphas (patients/partners) for anger-in, anger-out and anger control were acceptable: 0.76/0.71, 0.75/0.72, and 0.85/0.88, respectively.

3.4 STATISTICAL METHODS

Study I. Hierarchical linear regression analysis was used to test the main and mediator effects of optimism, hopelessness, partner support and HRQL. Age, education, stage of illness, aim of treatment and time between the baseline and the follow-up were controlled for. Moderator effects were tested by multiple regression analyses. An interaction term was created by multiplying optimism/hopelessness and partner support, which were centred for this analysis. To avoid multicollinearity, optimism and hopelessness, which showed a considerable negative correlation (women r = -.65, and men r = -.54), were analysed separately. In addition, separate analyses were conducted for women and men.

The mediator effects were tested using hierarchical regressions as follows: optimism and partner support on MCS (Model 1), hopelessness and partner support on MCS (Model 2), optimism and partner support on PCS (Model 3), and hopelessness and partner support on PCS (Model 4). Reflect and square root transformations were performed on the negatively skewed variables, and logarithmic transformation was performed on the positively skewed variable (Tabachnick & Fidell, 1996) in studies I and II.

Study II. A repeated-measures ANOVA was used to test the change in symptoms of distress and SOC from the time of diagnosis to the 14-month follow-up. Moderator effects were tested by multiple regression analyses. An interaction term was created by multiplying SOC and depression/anxiety, which were centred for this analysis. The predictors of 14-month distress and possible mediators were analysed with path analysis using LISREL 8.71 (Jöreskog, Sörbom, & Simplis, 1993). The chi square test ($\chi^2$), the root mean square error of approximation (RMSEA), the comparative fit index (CFI), and the goodness-of-fit index (GFI) were used to judge the goodness-of-fit of the
model. The RMSEA value < 0.05, CFI > 0.95, GFI > 0.90 and a non-significant (p > 0.05) $\chi^2$-test indicate an acceptable model (Kline, 2005).

**Study III and Study IV.** Path analysis was used to test predictors of HRQL and distress in studies III and IV. The models were calculated using the Mplus program version 5.0 (Muthén & Muthén, 2007).

In study III maximum likelihood estimation with robust standard errors (MLR) was used in testing the path analyses according to Muthén & Muthén, 2007. Possible interactions of gender with psychological predictors of partner support and HRQL were analysed separately using multivariate analysis of covariance (ANCOVA).

In study IV maximum likelihood estimation (ML) was used in testing the path analyses. Also, direct, indirect and total effects were evaluated in the full structural model that included all the direct and indirect paths and estimated the significance of the effects by using the bootstrap method (Mackinnon, Lockwood, & Williams, 2004; Shrout & Bolger, 2002). One thousand bootstrap re-samples were generated to estimate 95% confidence intervals. Age, education and stage of illness were controlled for in the analyses.

Finally, in study IV patient and partner psychological measures were compared with paired-samples $t$-tests. Also, partial correlations, addressing the association of the study variables after controlling for the effect of the dyad, were used to analyse the relationships between dispositional optimism, SOC, anxiety, and depression at baseline and at the eight-month follow-up. Statistical methods and study variables in different study phases are presented in Table 2.
Table 2. Characteristics of the data, methods and study variables in different study phases

<table>
<thead>
<tr>
<th></th>
<th>Study I</th>
<th>Study II</th>
<th>Study III</th>
<th>Study IV</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Participants</strong></td>
<td>n = 155, cancer dyads</td>
<td>n = 123, cancer dyads</td>
<td>n = 153, cancer dyads</td>
<td>n = 147, cancer dyads</td>
</tr>
<tr>
<td><strong>Study variables and measures</strong></td>
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<td><strong>Baseline, at the time of diagnosis</strong></td>
<td><strong>Baseline, at the time of diagnosis</strong></td>
<td><strong>Baseline, at the time of diagnosis</strong></td>
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<td></td>
<td>Dispositional optimism (LOT-R)</td>
<td>SOC (OLQ-12)</td>
<td>Anger expression (Spielberger AX)</td>
<td>Dispositional optimism (LOT-R)</td>
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<td>Distress</td>
<td>Partner support (FS)</td>
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<td>- Depression (BDI-14)</td>
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<td>- Depression (BDI-14)</td>
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<td>Pearson correlations</td>
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</table>

*Note.* Sample sizes (n) in studies I-IV vary due to different follow-up times and missing values.
4 RESULTS

4.1 EFFECTS OF THE ILLNESS ON THE PSYCHOLOGICAL WELLBEING AMONG CANCER COUPLES

The HRQL summary scores of the present sample were compared to the reference values, which were derived from a representative population sample (Aalto et al., 1999). The results showed a lower mean value for cancer patients on PCS ($p = 0.016$), while on MCS the difference was insignificant. Comparing the mean values of depression and anxiety with reference values of a sample of coronary heart patients indicated that the levels of patient distress in the present study variables were surprisingly low (Julkunen, 1996a). However, in this study the standard deviations of the distress variables were rather high (see Table 3), indicating a wide range of distribution, and about 6% of the cancer patients displayed moderate to severe depression.

We found a statistically significant decline in anxiety from the baseline to the eight-month follow-up in patients $F(1, 120) = 6.0, p = .016$ and in partners $F(1, 120) = 6.6, p = .012$. The level of anxiety did not change statistically significantly after the eight-month follow-up. For depression, the change from Time 1 to Time 2 was not statistically significant in patients or partners, $p > .10$. In partners, however, we found a gender difference. At all assessment times, the female partners of the patients reported statistically significantly more symptoms of anxiety and depression at Time 1 and Time 2, as compared to the male partners (see Table 3).

Effects of the cancer illness were controlled for in the statistical analyses. However, the illness had minimal effects on the psychological factors in patients. The aim of treatment and stage of the illness were not statistically significantly associated with patient HRQL or patient distress variables. Nor was the stage of cancer significantly associated with either SOC, ($F(2, 147) = 2.488, p = .087, \eta^2 = 0.33$), or optimism, ($F(2, 147) = 0.777, p = .462, \eta^2 = 0.11$). Nevertheless, in this study, patients with a more advanced stage of cancer perceived more support from their partners. The initially

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1 In the original article the decline of partner anxiety is wrongly stated as between the first and second follow-ups.
rather high mean values of partner support for the patients tended to decline somewhat, however, from baseline to follow-up ($F(1, 151) = 9.2, p = .003, \eta^2 = 0.06$).

Partners reported more anxiety symptoms than the patients at the time of the eight-month follow-up ($t(146) = -2.04, p = .043$). Furthermore, the patient’s stage of illness was associated with depression in the partners at the eight-month follow-up period ($F(2, 120) = 3.1, p = .05$, and with SOC ($F(2, 120) = 4.0, p = .02$) at the 14-month follow-up. The diagnostic category of cancer was related to partner depression at all three assessment points (all $p$-values < .05) and also to 14-month anxiety.

**Table 3.** Means and standard deviations of the distress variables and SOC in patients and their partners.

<table>
<thead>
<tr>
<th></th>
<th>Women n = 68</th>
<th>Men n = 55</th>
<th>M</th>
<th>SD</th>
<th>M</th>
<th>SD</th>
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</thead>
<tbody>
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<td>4.9</td>
<td>4.6</td>
<td>4.6</td>
<td>ns</td>
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<tr>
<td>Depression T2</td>
<td>4.1</td>
<td>4.8</td>
<td>4.3</td>
<td>5.3</td>
<td>ns</td>
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<tr>
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<tr>
<td>Anxiety T1</td>
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<tr>
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<td>5.4</td>
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<td>4.6</td>
<td>5.4</td>
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<td>6.1</td>
<td>5.5</td>
<td>5.4</td>
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<td>13.9</td>
<td>18.5</td>
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<td>.044*</td>
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<td>61.5</td>
<td>8.9</td>
<td>9.4</td>
<td>ns</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOC T3</td>
<td>64.9</td>
<td>62.9</td>
<td>10.2</td>
<td>9.7</td>
<td>ns</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* T1 = baseline, T2 = 8-month follow-up, T3 = 14-month follow-up. Independent samples $t$-test for statistically significant difference between two groups *$p < .05$; **$p < .01$; ***$p < .001$
4.2 PREDICTORS OF HRQL

4.2.1 Dispositional optimism, low hopelessness, and partner support

In this study high partner support at the time of diagnosis predicted good HRQL at the eight-month follow-up. The association between HRQL component summary scores, mental (MCS) and physical (PCS), and partner support was statistically significant in women. In male patients partner support failed to predict PCS, but the association between partner support and MCS was statistically significant (see Table 4).

In addition, optimism was a statistically significant predictor of MCS and PCS (see Models 1 and 3, Table 4) in women. Hopelessness was not a significant predictor of women’s MCS but it did predict PCS (Model 4, Table 4). In men, low hopelessness predicted good HRQL (MCS and PCS; Table 4), whereas optimism was not associated with HRQL.

The association between female patients’ perceived partner support and optimism was statistically significant (β = 0.41), as was that between partner support and hopelessness, (β = 0.32). With optimism in the model, partner support still exhibited a statistically significant association with female patients’ MCS, but the strength of this association diminished (Sobel test = 2.490, \( p = .012 \)).

The association between partner support and hopelessness in men was statistically significant (β = 0.37). When hopelessness was included in the model while controlling for male patients’ perceived partner support, the effect of partner support diminished (Sobel test = 2.13, \( p = .03 \); see Table 4, Model 2).

Partner optimism and hopelessness were not associated with patient-perceived partner support or HRQL. Also, no statistically significant moderator effects in either gender could be found. Neither optimism nor hopelessness demonstrated a statistically significant interaction with partner support in predicting HRQL summary measures, \( p \)-values > .30. Furthermore, the mediating role of partner support between optimism/hopelessness and HRQL could not be confirmed in this study.
**Table 4.** Predictors of 8-month follow-up HRQL: Standardized β coefficients and adjusted R² for hierarchical regression models. Model 1 = optimism and partner support on MCS, Model 2 = hopelessness and partner support on MCS, Model 3 = optimism and partner support on PCS, Model 4 = hopelessness and partner support on PCS.

<table>
<thead>
<tr>
<th>Predictor variables</th>
<th>Women (n = 88)</th>
<th>Men (n = 67)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MCS</td>
<td>PCS</td>
</tr>
<tr>
<td></td>
<td>Model 1</td>
<td>Model 2</td>
</tr>
<tr>
<td>Step 1</td>
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<td></td>
</tr>
<tr>
<td>Age</td>
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<td>-.06</td>
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<td>Education</td>
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<td>-.05</td>
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<tr>
<td>Time 2</td>
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<td>.30**</td>
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<tr>
<td>Aim of treatment</td>
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<td>-.11</td>
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<tr>
<td>Stage of cancer</td>
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<td>-.05</td>
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<tr>
<td>Adjusted R²</td>
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<td>.06</td>
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<tr>
<td>Step 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partner support</td>
<td>.45****</td>
<td>.45****</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>.24****</td>
<td>.24****</td>
</tr>
<tr>
<td>Step 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optimism</td>
<td>.37****</td>
<td>-</td>
</tr>
<tr>
<td>Hopelessness</td>
<td>-.20</td>
<td>-</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>.19***</td>
<td>.09*</td>
</tr>
<tr>
<td>Step 4</td>
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<td></td>
</tr>
<tr>
<td>Partner support</td>
<td>.36**</td>
<td>.43***</td>
</tr>
<tr>
<td>Optimism</td>
<td>.24*</td>
<td>-</td>
</tr>
<tr>
<td>Hopelessness</td>
<td>-.07</td>
<td>-</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>.27*</td>
<td>.23</td>
</tr>
</tbody>
</table>

Note. Time 2 = time between baseline and follow-up (approx. 6 months). MCS = Mental Component Summary, PCS = Physical Component Summary. *p < .05; ** p < .01; *** p < .001.

### 4.2.2 Couples’ anger expression styles and partner support

The results of this study mainly supported the hypothesized role of partner support as a mediator of the impact of anger expression variables on HRQL component summary scores. Patient anger control was positively associated, and patient and partner anger-in negatively associated, with partner support. This predicted MCS and PCS at follow-up. Apparently, due to the strong negative correlation between patient anger control and patient anger-out, only one (anger control) had a significant direct effect on partner support.

In addition to the hypothesized mediational model, we also found a direct positive effect of the patient’s anger control on MCS. The variables in the model (Figure 3)
explained 23% of the variance of partner support, 18% of the variance of MCS and 8% of PCS.

Furthermore, the results of this study indicated that the patient’s own anger-out, as a predictor of MCS, seemed to have a more pronounced negative effect on MCS for women than for men; the significance for interaction was: \( F(1, 152) = 6.0, p = .015, \eta^2 = 0.040 \). A similar trend was observed for PCS, \( F(1, 152) = 5.5, p = .020, \eta^2 = 0.036 \). Also, the partner’s anger-out was associated with poor MCS for women, while for men there was a positive correlation, with the significance for interaction as: \( F(1, 152) = 6.2, p = .014, \eta^2 = 0.041 \) (see Figure 4). However, no statistically significant mean gender differences among the study variables were found (all p-values > .10).

![Figure 3](image.png)

**Figure 3.** The path analysis model including both patient and partner anger expression variables, partner support measured at the time of diagnosis (Time 1) and at 8-month follow-up (Time 2), as well as the two components of patient HRQL. The values along the paths are standardized regression coefficients (betas). For clarity of presentation, only significant direct and indirect effects are shown. Dotted lines are insignificant paths.
Figure 4. Interaction of partner anger-out and patient gender as predictors of patient HRQL / MCS.
4.3 PREDICTORS OF DISTRESS AMONG CANCER COUPLES

4.3.1 Sense of coherence

The results of this study indicated that the levels of depression and anxiety of patients and their partners at the 14-month follow-up were predicted by their baseline distress symptoms and 14-month follow-up SOC (Figure 5). Baseline SOC was negatively associated with baseline distress symptoms in patients and in partners, and high baseline SOC predicted high SOC 14 months post diagnosis. For partners, baseline SOC, the patient’s stage of cancer and baseline depression, but not anxiety, predicted 14-month follow-up SOC. This was not the case with patients’ baseline anxiety and depression levels.

Patient SOC strengthened statistically significantly, $F(1, 120) = 5.7, p = .018$ during the 14-month follow-up period (for mean values see Table 3). In partners the change regarding SOC was not statistically significant, $p$-values $> .20$. In addition, no gender differences in relation to SOC were found in patients or partners.

No significant paths indicating a crossover effect between patient and partner baseline SOC and patient/partner 14-month follow-up distress variables were found. Moreover, neither anxiety nor depression in patients or partners showed a statistically significant interaction with SOC in predicting distress 14 months after the diagnosis. However, associations between the patient and partner distress symptoms and patient and partner 14-month follow-up SOC were found. In patients 49 % of the variance in depression and 41 % of the variance in anxiety were explained by the variables in the model. For partners the variance explained in follow-up distress was even higher (depression $R^2 = .54$, anxiety $R^2 = .63$).
Figure 5. The path analysis model of patient and partner SOC, patient and partner anxiety and patient and partner depression at the time of diagnosis (Time 1) and at 14-month follow-up (Time 3). The values along the paths are standardized regression coefficients (betas). For clarity of presentation, only significant direct and indirect effects are shown. Dotted lines are insignificant paths.
4.3.2 Dispositional optimism and SOC

The overall within-subject and cross-partner partial correlations between optimism, SOC, anxiety and depression are presented in Table 5.

This study indicated that high dispositional optimism was associated with less anxiety and fewer depressive symptoms in cancer patients and their partners (Figure 6a, Model 1). This result was also found regarding follow-up anxiety in partners, and was close to being significant ($p = .055$) in patients even though baseline anxiety was controlled for. Optimism and baseline distress explained 28 % of the variance in patient anxiety, and 32 % of the variance in patient depression at the eight-month follow-up. For partners the corresponding figures were 53 % for anxiety and 58 % of depression.

We also detected a marginally significant ($p = .053$) crossover association between partner dispositional optimism and patient anxiety at Time 2. Moreover, significant cross-partner correlations were found between the study variables, except for patient and partner optimism. Also, in this sub-study, gender was related to partner anxiety and depression at baseline, indicating that female partners displayed more symptoms of depression and anxiety than male partners. Furthermore, SOC and optimism correlated positively, $r = .58$.

We also tested whether dispositional optimism fully or partially explained the association of SOC with symptoms of anxiety and depression. The results supported Model 3, showing that optimism explained the association of SOC with distress partially. SOC was statistically significantly associated with optimism, anxiety and depression at baseline and eight months post diagnosis. In Model 3 optimism was not associated with patient/partner anxiety at baseline while optimism was still significantly associated with baseline depression in patients and partners (Figure 6b, Model 3).

SOC, dispositional optimism and baseline anxiety/depression explained 33 % of the variance in patient anxiety, and 39 % of the variance in patient depression at follow-up. In the partners, 56 % of the variance in eight-month follow-up anxiety was explained by SOC, optimism and baseline anxiety, and 60 % of depression at follow-up was explained by dispositional optimism and baseline depression.
Table 5. Partial correlations between the model variables within subjects ($n=294$) and cross partners ($n=147$).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Optimism</th>
<th>SOC</th>
<th>Anxiety T1</th>
<th>Depression T1</th>
<th>Anxiety T2</th>
<th>Depression T2</th>
</tr>
</thead>
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<td>-.07</td>
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<td>-.07</td>
</tr>
<tr>
<td>SOC</td>
<td>.58***</td>
<td>.22***</td>
<td>-.12*</td>
<td>-.19**</td>
<td>-.12*</td>
<td>-.11</td>
</tr>
<tr>
<td>Anxiety T1</td>
<td>-.37***</td>
<td>-.49***</td>
<td>.24***</td>
<td>.22***</td>
<td>.18**</td>
<td>.13*</td>
</tr>
<tr>
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<td>-.59***</td>
<td>.73***</td>
<td>.24***</td>
<td>.19**</td>
<td>.19**</td>
</tr>
<tr>
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<td>.60***</td>
<td>.23***</td>
<td>.22***</td>
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<td>-.52***</td>
<td>.56***</td>
<td>.71***</td>
<td>.75***</td>
<td>.25***</td>
</tr>
</tbody>
</table>

Note. Overall cross-partner correlations are presented on and above the diagonal (bolded); overall within-subject correlations below the diagonal. Interdependence of the dyad has been controlled for. * $p < .05$.  ** $p < .01$. *** $p < .001$. 

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Figure 6. The final path models: Model 1 (a) and Model 3 (b). The values along the paths are standardized regression coefficients (betas). Results of the marginally significant paths (p < .06) are shown in italics. For clarity of the presentation associations between anxiety and depression at Time 1 among patients and partners as well as statistically insignificant paths are not displayed in the figures (for partial correlations, see Table 5). Dotted lines are insignificant paths. Note. Time 1 = baseline, Time 2 = 8-month follow-up.
5 DISCUSSION

5.1 MAIN FINDINGS

5.1.1 General psychological wellbeing of cancer patients and their partner

The results of this study showed that cancer seemed to have only minor effects on the psychological wellbeing of the patients. This conclusion is supported by, for example, the relatively low mean level of depressive symptoms in the present sample, which does not significantly differ from healthy controls. In addition, the mean values of the psychological summary scores of the HRQL measure were comparable to population values.

It should be noted, however, that the sample consisted for the most part of physically fit patients mainly suffering from a localized cancer. We are inclined to speculate therefore that the present sample is biased towards patients coping better psychologically than average cancer patients. However, this patient population also included patients who reacted more strongly to their illness, and experienced more psychological distress and a lower quality of life.

Nonetheless, the patients seemed to adjust to their situation and illness during the first year after diagnosis. The levels of anxiety in this patient population declined significantly during the eight months of the follow-up period. The decline in depressive symptoms was, however, less marked. Also, as expected, the baseline levels of distress were the strongest predictors of follow-up symptoms of anxiety and depression.

Our results are in line with the results of some previous studies. Miovic & Block (2007), for example, have reported that cancer patients’ levels of anxiety and depression at diagnosis predict a similar status later. While individuals being diagnosed with cancer often experience different levels of emotional distress, serious depression or anxiety is not experienced by everyone who is diagnosed with cancer. Sadness and grief are normal reactions to the crises faced during cancer. However, it is important to distinguish between normal degrees of sadness and depressive symptoms. Psychological wellbeing, such as low levels of depression, has also been shown to have a favourable
association with health behaviour (Igna, Julkunen, Vanhanen, Keskivaara & Verkasalo, 2008).

A decline in symptoms of psychological distress was also observed in relation to partners. Nevertheless, the partners in this study seemed to react more strongly to their partners’ illness and treatment after the first eight months than the patients themselves. Levels of partner anxiety and depression were significantly higher than patient levels. Similar findings have also been reported by Hagedoorn et al. (2008). Furthermore, in this study, a more advanced patient stage of cancer was more closely related to partner psychological distress than to patient distress.

The relatively low levels of depressive and anxiety symptoms of the patients in this sample could be explained by the use of denial and repression as coping mechanisms. For example, Paika et al. (2010) have reported that denial was positively associated with all aspects of HRQL, including the physical, mental, environmental and social relationship aspects of health status. However, the authors point out that denial may also cause delay in seeking treatment for symptoms and, therefore, be a disadvantageous coping mechanism.

5.1.2 Salutogenic and positive resources as distress-protecting factors

In this study, SOC and an optimistic attitude to life seemed to act as distress-protecting factors at the time of cancer diagnosis. Cancer patients as well as their spouses with strong SOC and high optimism reported fewer distress symptoms eight months after the diagnosis than patients and partners with weak SOC or less optimism. Moreover, an optimistic attitude to life enhanced patients’ HRQL.

Corresponding results have been reported in several other studies. Among others, de Moor and her co-workers (2006) found that optimistic women receiving chemotherapy for ovarian cancer reported less anxiety, stress and depression than women with less situational and dispositional optimism. Friedman et al. (2006) recently reported that dispositional optimism accounted for most of the variance in measures of cancer-specific distress, quality of life and mood disturbance in women with breast cancer. Although research on cancer-related distress has been mostly on women with breast cancer, similar results have also been found in men with localized prostate cancer (Steginga & Occhipinti, 2006).
Our findings regarding the distress protective effects of SOC in cancer patients and their partners are also in line with several previous reports based on other clinical samples (Siglen, Bjorvatn, Engebretsen, Berglund, & Natvig, 2007; Snekkevik, Anke, Stanghellie, & Fugl-Meyer, 2003) and provide further support to Antonovsky’s (1987) theory on SOC as a salutogenic factor. While a number of studies show evidence of the various health-promoting effects of SOC in different populations, there is surprisingly little evidence of SOC and its distress-protecting factors in cancer patients. However, recently also Black and White (2005) found an association between SOC, fear of recurrence and post-traumatic stress symptomatology in haematological cancer patients.

According to Antonovsky (1987, 1993, 1996) the level of SOC should be more or less fixed by the end of young adulthood, after which changes in the SOC are supposedly negligible. Individuals with moderate or weak SOC may strengthen their SOC but this change is only temporary without a considerable, long-lasting change in a person’s social and cultural settings. Our results, however, did not clearly support this part of the SOC theory. Levels of patient SOC in this study appeared to increase during the 14-month period, but this result was not found in partners. Nevertheless, our finding that the patient stage of cancer had an impact on partner follow-up SOC also raises the question of the stability of SOC in this kind of stressful situation.

Several other researchers have previously questioned the stability of SOC. It has been hypothesised that SOC may also depend on present life experiences. In their five-year follow-up study, Feldt and co-workers (2003) found that individuals younger than 30 did not differ in stability of SOC from individuals over 30 years of age. Furthermore, Kivimäki et al. (2002b) found that major life events were associated with a weakened SOC that occurred about two years later. Contrary to assumptions in Antonovsky’s (1987) theory, Volanen and associates (2007) concluded that negative life events decreased the level of SOC among Finnish women and men irrespective of the timing of the event. In addition, initially strong SOC was not more stable than initially mediocre or weak SOC.

On the other hand, in a very recent report Feldt et al. (2010) used a five-year prospective population-based study among four age cohorts including Finnish men and women and found results supportive of Antonovsky’s theory, thus suggesting that SOC is more stable among high-SOC individuals than persons with low SOC. Hakanen et al.
(2007) have had results similar to Feldt and her co-workers. It is possible that a stressful life experience such as cancer may affect levels of SOC. In this study, however, the illness did not have as strong an effect on patient SOC as on partner SOC.

Another aim of this study was to investigate the role of optimism in the SOC construct. We wanted to ascertain to what extent the possible health-promoting effects of SOC are based on optimism. To our knowledge this is the first psycho-oncological study to investigate the interplay of optimism, SOC and distress symptoms in cancer patients and their partners. Dispositional optimism and SOC in other populations have been investigated simultaneously in only a few previous studies (Ebert et al., 2002; Pallant & Lae, 2002; Chamberlain, Petrie, & Azariah, 1992).

In agreement with Antonovsky’s (1987) description of SOC, we found that cancer patients and their partners with strong SOC displayed more optimistic expectations of the future. The present results indicated approximately 30% of shared variance between these concepts, which is comparable with previous results (Ebert et al., 2002; Pallant & Lae, 2002). Our results, however, showed that optimism only partially explained the impact of SOC on distress. SOC predicted lower levels of anxiety and depression at both assessment times even when dispositional optimism was included in the model. This result is in line with Chamberlain et al. (1992), who found that SOC was a more important predictor of recovery after elective surgery for joint replacement than optimism.

The results here further support the notion that SOC and dispositional optimism are closely related theoretical concepts with health-promoting effects. Yet, these concepts are not analogous. The construct of SOC seems to include other important elements besides optimism. These results support Antonosky’s theory on SOC as a higher order, common factor. The results of the present study also raise an interesting question for future research: which one of these constructs, SOC or dispositional optimism, develops earlier?
5.1.3 Cancer as a we-disease – The significance of the partner in coping with cancer

The results of this study indicated that partners play a significant role in coping with a serious illness, such as cancer. In this study high baseline partner support predicted good patient HRQL eight months after the cancer diagnosis. Furthermore, patients with a more advanced stage of cancer perceived more support from their partners. Also, the mean values of partner support experienced by patients were relatively high at the time of diagnosis, which is indicative of comparatively well-functioning families. Supporting one’s partner at the time of diagnosis seems to be a natural reaction to the new, frightening situation, and a parallel trend has been found in other research as well (Bolger, Foster, Vinokur, & Ng, 1996). The amount of support, nevertheless, seems to decrease over time, as also Hinnen, Hagedoorn, Sanderman, and Rancho (2007) have demonstrated.

We identified a marginally statistically significant crossover effect between partner dispositional optimism and patient anxiety eight months after cancer diagnosis. In other words, patients with partners who had optimistic generalized expectations of the future reported fewer symptoms of anxiety. However, in this study no direct crossover between patient SOC and partner distress or partner SOC and patient distress was detected, and we could not find any previous research investigating crossover effects of both SOC and dispositional optimism on distress among dyads. It can only be speculated that dispositional optimism comes across in the social interaction of the dyads more evidently than the possibly hierarchically higher construct, sense of coherence.

Our results indicated significant crossover between the patient and partner distress variables. Patient and partner distress at the time of diagnosis, and at eight-month and 14-month follow-up were associated, as were patient and partner baseline and 14-month follow-up SOC. Our findings on crossover give further support to the previously reported results, suggesting an emotional interdependence or even a direct emotional contagion between partners (Hagedoorn et al., 2008; Ruiz et al., 2006). Our results showed that during the first 14 months after cancer diagnosis, the psychological status of patients and their partners become more similar. This might be seen as a slow crossover process of shared experience. The long-term nature of the adaptational
process is also indicated by our finding that patient stage of cancer had an impact on partner SOC at 14 months.

Although we could not find a prior similar study, including cancer patient and partner SOC and optimism with anxiety and depression in the same model, our findings are comparable to the results reported by Knoll and associates (2009), who demonstrated a positive transmission of depressive symptoms from one partner to another in couples going through assisted-reproduction treatment. Also, Eton and associates (2005) discovered that poor mental health and higher general distress among men with prostate cancer were associated with their spouses’ high level of cancer-specific distress. Our results are also in line with findings from Ruiz et al. (2006), who found that higher pre-surgical patient optimism predicted lower post-surgical depression in CABG patients, as well as in their caregivers.

It has been previously suggested that factors such as the partners’ levels of emotional social support, their constructive expression of anger, and open communication in the dyad might be associated with patients’ psychological wellbeing. These may also act as a second process mediator between optimism and mental health (Manne, Badr, Zaider, Nelson, & Kissane, 2010; Manne & Badr, 2009; Manne, Ostroff, Winkel, Grana, & Fox, 2005). One can speculate that the crossover effect found in the present study might be explained by a second process mediator.

It seems reasonable to assume that the emotional support given by the partner is affected by their optimistic expectations of the future, and therefore boosts the patient’s stress buffer and reduces the patient’s anxiety symptoms. In this study, however, the mediating processes between optimism and depression/anxiety were not investigated, and these plausible mediating factors (such as communication between the partners) need more detailed investigation in future psycho-oncological research.

Nevertheless, this study indicated that partner support partly explained the impact of patient and partner anger expression styles on patient HRQL. High levels of suppressed anger, that is, the patient and partner’s anger-in, associated negatively with patient-perceived partner support, whereas anger control had a significant positive correlation with partner support and HRQL approximately two months after the diagnosis. The results of this study also indicated a positive direct link between patient anger control and MCS. Patients controlling their anger seem to have a better MCS.
At least two earlier studies among healthy students demonstrated that greater levels of anger-in were associated with an impoverished sense of support availability (Dahlen & Martin, 2005; Palfai & Hart, 1997). Our results are also congruent with those of Lane and Hobfoll (1992), who showed that both symptoms and resource loss as a consequence of chronic illness were related to angry behaviour, which in turn resulted in the increased anger of the supporters and the depletion of social resources.

Despite the longitudinal design of the study one cannot exclude the possibility of reversed causality. One could speculate that patients with a high psychological quality of life are more likely to cope constructively with their anger, thus leading to a positive, self-assuring feedback loop. It is worth noting that the issue of causal direction is also relevant for the partner support - anger relationship. If social support is lacking, this may lead to anger and low HRQL. This question, however, awaits further research.

The complexity of the influence of the context of marriage has not been thoroughly investigated in the research to date. Instead there are studies on the effects of a single contextual stressor, such as serious illness. However, acute stress and marital satisfaction seem to be related more strongly in a situation in which the couple also experience high levels of chronic stress. If a couple has adequate positive resources they may experience the negative stressor more positively, as an opportunity for partners to support each other and become closer.

5.1.4 Gender differences

This study showed no significant gender differences in the distress symptoms of the patients. Women partners, however, displayed more anxiety as well as more depression than male partners. From a clinical point of view, the level of anxiety in female partners in this study was relatively high; higher than that found in coronary patients, for example (Julkunen et al., 2000). Several studies have examined the role of gender in dyads with chronic illnesses and there is some evidence that female partners of seriously ill patients are more distressed than male partners in the same situation. For example, Hagedoorn and associates (2000) found similar results to ours. In their study, 35 % of cancer patients’ wives suffered from clinical depression as compared to 12 % of the cancer patients’ husbands.
We also detected an unexpected, previously unreported gender difference regarding the optimistic appraisal variables in predicting HRQL. While optimism, low hopelessness, and partner support improved HRQL in women, only low hopelessness predicted better HRQL in men. We were unable to find any obvious explanation for this dissimilarity and can only speculate that this difference is due to the different kinds of cancers represented in this study.

For women, our results regarding optimism were similar to those of Allison et al. (2000, 2003), who reported that high optimism predicted good HRQL in head and neck cancer patients. In their study, however, the sample consisted mainly of men (93.2 %). In contrast to Allison and co-workers, optimism was not a predictor of men’s HRQL in the present study. Furthermore, in previous studies, Northouse and associates (2000) found that hopelessness strongly predicted poor psychological adjustment to colon cancer in both women and men. In another study they demonstrated that low hopelessness predicted good mental HRQL in women with breast cancer (Northouse et al., 2001). It is noteworthy that these results are in line with our results in men despite the use of a different measure of hopelessness.

We could not find any previous studies of the pathways from partner or social support through optimism to HRQL, or studies that included hopelessness together with optimism in the same study. Our findings suggest that optimism might have a different meaning for men than for women when it comes to coping with cancer.

In previous literature social support and expectations for interdependence have been suggested to be more important for women than for men (Berg & Upchurch, 2007; Emery et al., 2004; Cohen & Wills, 1985). The results of this study provide further evidence for this argument. Partner support was a stronger predictor of HRQL in women than in men. For the female patients, partner support had a significant correlation with both HRQL summary scores, PCS and MCS. For the male patients, baseline partner support was only related with MCS. Similarly, in a study by Manne et al. (1999), patient gender moderated the impact of support; for the females, the husband’s support was associated with lower distress, while for the males, the relationship between the wife’s support and the psychological outcome was not significant.
In their review, Kiecolt-Glaser and Newton (2001) proposed that wives’ individual regulatory functions and self-construals are more characterized by the representations of their partners and by thoughts and feelings of marriage than are regulatory functions and self-construals in men. Individuals with more relational self-construals may also be more sensitive to the distress of their chronically ill spouse. The gender difference in partner experience of distress may be due to women’s culturally-based tendency to take a nurturant role, carry a larger burden of the chronic illness of their spouse, and be more affected by their condition than are men with a chronically ill spouse (Berg & Upchurch, 2007; Tuinstra et al, 2004; Hagedoorn et al, 2000). Accordingly, the gender differences found in this study might be, at least in part, explained by self-representations based on culture and gender, as well as the need and ability to make use of social support. Thus, wives’ higher amount of relational self-construals may set higher expectations for dyadic coping, and result in poorer adjustment if the supportive forms of dyadic coping on the behalf of the male patient are not present.

The results of this study also indicated that anger-out seems to have a more negative effect on female patients’ than on male patients’ HRQL. Furthermore, for the female patients the husband’s high anger-out had a negative impact on MCS, whereas in men their wives’ high anger-out seemed to predict high MCS.

It could be that male partners’ anger-out is experienced as being more frightening than female partners’ open expression of anger. In their review, Kiecolt and Newton (2001) also stated that women seem to be more attuned than men to the emotional quality of marital functioning. It is possible that in this context the wife’s ability to express emotions, even anger, has a positive impact on patient-husbands’ HRQL. Furthermore, some authors have previously suggested that expressing negative emotions might temporarily increase distress but benefit long-term health (Lieberman & Goldstein, 2006; Stanton et al., 2000). This interpretation, however, awaits support from further studies. Moreover, one cannot rule out the possibility that the result of the present study is somewhat spurious and caused by random fluctuation.
5.2 METHODOLOGICAL CONSIDERATIONS

Although the significance of the partner as a main support provider when facing cancer has been generally recognized, to our knowledge the current study is the first to investigate the psychological consequences of cancer in Finnish patients as well as their partners. Furthermore, previous dyadic designs have been undertaken principally with breast or prostate cancer patients and their spouses. A major strength of this study is its longitudinal design investigating positive psychological resources among patients with several cancer diseases and their partners.

However, a number of limitations exist, and should be taken into consideration. We included patients with diagnoses representing the most common cancers in Finland with the aim of finding general psychological phenomena related to serious illnesses. Our sample was in fact heavily biased towards breast cancer patients among women as well as towards prostate cancer among men. It should also be noted that the participants who were willing to take part in this study were for the most part physically well-functioning patients and their partners sharing a harmonious intimate relationship. The results of this study may not sufficiently reflect the challenges of an advanced, terminal illness and their impact on patients’ quality of life, intimate relationships, and the psychological reactions of the couple.

Another limitation of this study is that the sample size did not permit valid comparisons between the diagnostic groups and it is difficult to rule out the possibility that different cancers or different medical treatments may have distorted the results somewhat. The stage of cancer and aim of treatment were controlled for in the multivariate analyses. But the stage of illness concept has different meanings in reference to the various forms of cancers, and has nowadays been replaced with more advanced prognosis modifiers. Conclusions, therefore, should be drawn cautiously. For this reason it was not possible to investigate disease-specific differences. This issue awaits further studies with more representative samples.

Furthermore, due to logistic reasons related to working together with several different clinics, we lack an accurate number of the patients who refused to participate in the study. Since the data at baseline were limited to those responding within six months after diagnosis, some of the participants may have returned the questionnaires
after the most critical post-diagnostic period was over. This may explain the relatively low levels in the distress variables, such as depression.

In addition, the low Cronbach’s alpha of the two-item Hopelessness Scale may have had some effect on the reliability of our results concerning hopelessness. For this reason, our results should be confirmed with another instrument. Furthermore, as it may be questioned whether the Family Support scale is a valid measure of partner support, an effort was made to double-check whether it was correlated with partner support as opposed to support from other family members. When the participants were asked from whom they received support (partner, doctor, friends, children, etc.), the correlation between the Family Support scale and partner support was considerable (r = .61 in women and r = .62 in men).

Yet another limitation is that because the SOC level could not be measured prior to diagnosis, we could not determine whether the change in SOC was only due to a temporary drop in patients’ SOC levels at the time of diagnosis. Also, the limitations of the SEM analyses should be remembered. In this study the path models were rather complex with regard to the small sample size.

Finally, there has been active debate recently on the pitfalls of testing mediation in non-experimental settings. It has been stated that statistical analyses may support a mediation hypothesis if the psychological constructs are not theoretically distinct. Furthermore, a valid testing of mediation would need three separate follow-up waves (Spencer, Zanna, & Fong, 2005). Therefore, the interpretation of results as a causal mediation chain must be considered with caution, and mediation between these concepts requires future research for confirmation. However, testing mediation as suggested earlier by Baron and Kenny (1986) is often recommended in examining psychological processes (Spencer et al., 2005).

Despite the limitations, the reliability of our results is supported by the fact that a good proportion (80 – 90 %) of those who participated in the baseline survey also completed the follow-up questionnaire six months later. To our knowledge, prospective studies that have tested an integrative model of dyadic adjustment and theoretically proposed mediating links are rare. Much of the previous research in this area is based on studies that have used purely cross-sectional designs, thereby allowing only the weakest
of causal inferences. Future investigations are needed to confirm the tentative findings of this study.

5.3 GENERAL CONCLUSIONS AND CLINICAL IMPLICATIONS

The results of this study suggest that the overall psychological wellbeing of recently diagnosed cancer patients is generally good as compared to the healthy population. Cancer patients who view the world coherently and are optimistic report fewer distress symptoms. Moreover, patients who not only possess an optimistic attitude to life, but also receive support from their partner, have a better quality of life. Furthermore, patients who control their way of expressing anger, or have less anger in general, report a better quality of life.

On the other hand, some subjects among these well-functioning cancer patients also react with pronounced distress to their situation. These patients are at risk of developing psychiatric conditions, even committing suicide, and they should be detected. Patients struggling with cancer need psychosocial support to cope with their stressful situation. The national health care system today lacks the resources for detecting these subjects and new measures are needed to find these patients.

Valid and reliable cancer-related distress screening methods, computerized screening tools, and checklists and thermometers identifying individual patients’ needs and concerns have been shown to provide an early warning system for psychiatric morbidity among cancer patients (e.g. Meraner et al., 2010; Low et al., 2009; Tuinman, Gazendam-Donofrio & Hoekstra-Weebers, 2008) as well as for their caregivers (Zwahlen, Hagenbuch, Carley, Recklitis & Buchi, 2008). A personal well-being screening system would be useful in future psycho-oncological routine care in Finland.

Clinical interventions including rehabilitation programmes focusing on breast and prostate cancer patients have given promising results in helping patients better adjust to their situation (Saarinen, Julkunen, Nilson-Niemi, & Turunen, 2010). In the future, patient organizations will play an increasingly significant role as sources of peer support and rehabilitation for cancer survivors. In addition, providing interventions focused on crisis therapy methods instead of traditional psychotherapies may help these patients cope better with their illness.
Partners in this study seemed to react more strongly to their partners’ illness and treatment than the patients themselves after the first eight months. Although the general level of anxiety and depression in this sample was relatively low, it seems to be important in clinical practice to give special attention to the partners of cancer patients, especially to female partners. Because of the limited resources of the public health care system one possibility for providing psychosocial support for these partners could be through well-developed patient organizations.

The results of this study also suggest that within clinical interventions, enhancing optimistic expectations of the future and promoting SOC could be expected to reduce distress in cancer couples, especially in partners. Some empirical findings indicate that personal characteristics and positive general expectancies are more susceptible to change than previously assumed (Vastamäki, Moser, & Paul, 2009; Antoni et al., 2006, 2001). Several randomized controlled trials have shown that clinical interventions using positive modification, personal and group guidance and relaxation may also enhance dispositional personal characteristics, such as SOC and optimism (Vastamäki et al., 2009; Weissbecker et al., 2002). A study by Antoni et al. (2001) showed that cognitive-behavioural stress management intervention increased dispositional optimism among women with early-stage breast cancer, especially among those participants who were less optimistic at the start of the study.

Our results confirmed the importance of improving emotional support provision from members of naturally occurring networks, such as family members. The role of the partner is significant in coping with cancer. A harmonious family atmosphere, where the partner is supportive, is an important predictor of patient-perceived outcomes, such as quality of life. Further, in situations in which the spouse displays optimistic generalized expectations of the future, not only does the spouse suffer less distress, but the patient also feels less distressed. The findings of our study suggest that the effects of positive resources, not just stress and strain, may transfer to spouses and have a positive impact on their wellbeing and interactions with their partner. Moreover, the results of this study further support the previously discussed notion (Kayser, 2005) that, taking into account the frequency and intensity of the interaction between the spouses, empirically-based dyadic interventions, instead of individual support or peer support directed exclusively on patients will be needed in the future.
The interactive process and intimacy in a dyadic relationship, however, are very complex issues, and simple correlations between expression of an emotion and outcome variables do not reveal—and may even mask—the complexity of the support process. Data collected with self-reports do not, obviously, reveal the diverseness of life. Therefore, quantitative and qualitative approaches in future psycho-oncological research may supplement each other. Nonetheless, our results suggest that therapeutic interventions should identify the needs of each couple, thereby reducing the risk of distress. Interventions for couples facing cancer should include a focus on the process of communication, with a special emphasis on dealing with anger.

Our findings indicate substantial gender differences that appear to be unrelated to the severity of the illness. Nevertheless, because of the pioneering nature of our findings, and due to the fact that the small size of our sample did not allow adequate controlling of the clinical variables in the multivariate testing, the pathways hypothesized in our theoretical model need further testing with other samples including both women and men. If the gender differences we found here can be confirmed in future research, they should be taken into account in clinical practice, for example in planning rehabilitation programmes.

Future SOC research should address the issue of stability of SOC in clinical samples. Although optimism seems to be significant in coping with a serious illness, the present results indicate that SOC is a major predictor of symptoms of depression and anxiety in cancer patients and their partners, and includes other health-promoting elements in addition to optimism. To clarify the constructs of SOC and optimism, as well as other constructs relating to positive resources, such as self-efficacy and coping, future research should include both SOC and dispositional optimism in the same studies and investigate these constructs further.
6 REFERENCES


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