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A COMPARISON OF YOUNGER  
AND OLDER COUPLES COPING WITH BREAST CANCER:  
EXAMINING THE RELATIONSHIP AMONG MUTUALITY, DYADIC COPING,  
AND QUALITY OF LIFE OF PATIENTS AND PARTNERS

By

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B.A. Psychology, Catholic University of the Sacred Heart, Milan, 2005  
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A Dissertation  
Submitted to the Faculty of the  
Kent School of Social Work of the University of Louisville  
In Partial Fulfillment of the Requirements  
For the Degree of

Doctor of Philosophy  
in Social Work

Kent School of Social Work  
University of Louisville  
Louisville, Kentucky

And

College of Social Work  
University of Kentucky  
Lexington, Kentucky

May 2016

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A Dissertation Approved on

April 6, 2016

By the following Dissertation Committee:

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## DEDICATION

This dissertation is dedicated to my husband,  
Lorenzo Alessandro Stermieri, and to my daughter,  
Ginevra Alessandra Acquati Stermieri.  
Everything I hold dear in my life you have given me.

## ACKNOWLEDGEMENTS

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Words cannot describe the gratitude and love I feel for my parents. They have always valued my education above all, making huge sacrifices to make it possible for me to attend the best schools and to benefit from every opportunity. They have been the

foundation of my life and shared my enthusiasm for the decision to pursue a doctoral program abroad, even if it meant I would have been away from them.

To my husband Lorenzo, for the love, dedication and support you have given me through these years. This wasn't your aspiration, yet you have moved to another country to allow me to pursue my dream and to do what I love. These years have been extremely challenging for us, but our relationship has grown and has been strengthened during this time. I look forward to see where our journey together will take us.

## ABSTRACT

### A COMPARISON OF YOUNGER AND OLDER COUPLES COPING WITH BREAST CANCER: EXAMINING THE RELATIONSHIP AMONG MUTUALITY, DYADIC COPING, AND QUALITY OF LIFE OF PATIENTS AND PARTNERS

Chiara Acquati

April 6, 2016

**Background** Despite the extensive literature available about the psychosocial adaptation to breast cancer, the experience of younger women and their partners has been mostly neglected by the research. While younger couples have been identified at higher risk because of less collaborative behaviors, higher vulnerability to distress, and poorer quality of life, in most contributions couples are treated as a homogeneous group. This study was then designed to examine the differential impact of the illness on younger dyads, by comparing them to a group of older couples. A significant gap in the literature about dyadic coping was also addressed, which is the understanding of how dyadic coping originates and it is associated with higher quality of life.

**Methods** Participants have been recruited among newly diagnosed women with early-stage breast cancer, for a total of 86 couples. Patients below the age of 45 and their partners were considered younger couples and compared to the remaining 51 older couples. The Actor Partner Interdependence Model (APIM) was used to examine actor

and partner effects of mutuality on dyadic coping. A simple mediation model tested whether dyadic coping mediates the relationship between mutuality and quality of life.

**Summary of Findings** Younger women reported significantly worse quality of life, with worse functioning in physical, social and emotional domains than older patients.

Similarly, younger partners experienced higher illness intrusiveness, worse emotional well-being, and maladaptive dyadic coping. Younger couples' positive and negative coping styles were the result of both actor and partner effects of mutuality, indicating higher interdependence in their relationship. Finally, negative dyadic coping mediated the relationship between mutuality and quality of life for younger patients and older partners.

**Conclusions** Younger couples' adaptation to breast cancer is significantly compromised not only because of the more negative impact of the illness on the individual's well-being, but also as a result of higher reciprocal influence of mutuality in predicting both adaptive and maladaptive dyadic coping behaviors. Future studies should continue to examine the developmental trajectory of dyadic coping over the life-span and psychosocial interventions should be developed to promote positive adaptation to cancer in a time of higher vulnerability.

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## CHAPTER I: INTRODUCTION TO PROBLEM

*The chapter presents the experience of women coping with breast cancer at a younger age and the unique impact the illness has on quality of life, psychological distress, body image, sexuality and close relationships. The limited literature addressing the experience of younger couples coping with breast cancer is reviewed in detail. Then, the chapter offers an overview of the psychosocial consequences of cancer on the couple relationship, with a specific focus on quality of life, communication, sexual functioning and benefit finding to support the significance of assuming a relational perspective when addressing couples coping with cancer.*

### **Coping with Breast Cancer at a Younger Age**

The adaptation to a diagnosis of breast cancer continues to be one of the most studied areas of psychosocial oncology research (Rowland & Massie, 2010). This is due in large measure to its prevalence, as recent data from the American Cancer Society indicate that it represents the most frequently diagnosed cancer in women, accounting for 29% of all new female cancers (American Cancer Society, 2015: 2016; Siegel, Miller & Jemal, 2015). But the current interest for breast cancer also reflects the fact that it involves an area of the body with great symbolic meaning for women and their partners,

and it requires complex decision-making in terms of treatment and care. The ability of the individual to cope with breast cancer is influenced by the existing socio-cultural context, psychological characteristics of the woman, and clinical factors (Rowland & Massie, 2010). More recently, the literature has given increasing attention to the quality of close relationships and the couple's coping abilities as essential resources to promote better adjustment (Kayser, Watson & Andrade, 2007; Revenson, Kayser & Bodenmann, 2005; Saita, 2009; Traa, DeVries, Bodenmann & Den Oudsten, 2015b).

Although younger women constitute a minority among breast cancer patients, with approximately just 20% of new cases registered among women younger than the age of 50 (American Cancer Society, 2014), epidemiological and clinical indications isolate them from the rest. Not only breast cancer in younger women is associated to more aggressive biological characteristics such as higher-grade tumors and advanced stage of disease, but worse prognosis and higher relapse rate are common (Ademuyiwa et al., 2015; Beadle, Woodward, & Buchholz, 2011). At the moment, in fact, breast cancer represents the leading cause of cancer death for women between 20 to 39 years of age in the USA, and the trend is maintained also when considering the group between 40 and 59 years of age (Siegel et al., 2015).

Younger women with breast cancer represent a distinct group of patients not only in virtue of medical characteristics, but especially because of the unique challenges and psychosocial needs they are confronted with<sup>1</sup> (Armuand, Wettergren, Rodriguez-Wallberg & Lampic, 2014; Bell, Ziner & Champion, 2009; Fergus et al., 2014; Gorman

---

<sup>1</sup> Since a clear definition of a “younger woman with cancer” is still elusive in the current literature, in the present chapter findings from articles addressing women with breast cancer from the early 30s to the 50s are presented as reflective of the experience of younger women.

et al., 2011; Howard-Anderson, Ganz, Bower & Stanton, 2012; Koch et al., 2013; Morrow et al., 2014). From a developmental perspective, younger women are in a stage of their lives when they are invested in self-realization and accomplishing social milestones. Those are the years when most women are married or involved in a committed relationship, having children and focusing on their professional careers and aspirations (Ahmad, Fergus, & McCarthy, 2015; Fergus et al., 2015). The cancer diagnosis introduces not only an “out of time” confrontation with mortality, but it creates abrupt and premature changes in their quality of life. Younger women with breast cancer face reproductive concerns about fertility and childbearing, changes in their relationships with children and family members, multiple role demands, career concerns related to job security and financial difficulties, and greater concerns about body image and sexuality (Avis, Crawford, & Manuel, 2004; Avis, Crawford, & Manuel, 2005; Dunn & Steginga, 2000; Ganz et al. 2003; Howard-Anderson et al., 2012; Ruddy et al., 2013). Breast cancer in younger women significantly affects the woman’s family and social network, with concerns reported especially for the relationship with the partner and children (Ahmad et al., 2015; Baucom, Porter, Kirby, & Gremore, 2005; Borstelmann et al., 2015; Ruddy et al., 2013).

As a consequence of these greater disruptions to developmental goals and tasks, several domains of functioning are extensively affected by breast cancer and its treatment. Often these effects can only be completely understood and witnessed over time. In the next paragraphs issues related to quality of life and psychological well-being, body image, sexual functioning and the relationship with the partner are reviewed.

### ***Quality of Life and Psychological Well-being***

The literature has consistently revealed that younger women experience significantly higher levels of psychological distress and poorer quality of life compared to patients diagnosed later in life, with particularly worse emotional and social functioning registered both during active treatment and survivorship (Bantema-Joppe et al., 2015; Champion et al., 2014; Cataldo et al., 2013; Hartl et al., 2010; Hau et al., 2013; Luutonen et al., 2011; So et al., 2011).

A recent systematic review has demonstrated that younger women experience more difficulties adjusting to the cancer diagnosis because of its pervasive impact of numerous domains of quality of life (Howard-Anderson et al., 2012). Younger patients lament higher physical symptoms associated with the treatment and the perceived body disfigurement, like pain, lymphedema, sleep problems, and weight gain. They are also more vulnerable to the limitations caused by the illness to their social and intimate relationships, reporting higher concerns for their relationship with partners, difficulties disclosing the diagnosis, and higher feelings of isolation (Ahmad et al., 2015; Ruddy et al., 2013). Finally, younger women diagnosed with breast cancer present higher psychological symptoms, including higher anxiety, depression as well as persistent and intrusive worries that the cancer will return (Thewes et al., 2013). Worse physical well-being has been associated to younger age, absence of a significant relationship, and more aggressive treatment; while an increased risk for psychological difficulties has been identified among younger, unmarried, and low income patients (Antoine et al., 2008; Armer, 2005; Charif et al., 2015; Hopwood et al., 2007; Hoyer et al., 2011; Mertz et al., 2012; So et al., 2011, Tuinman, Van Nuenen, Hagedoorn, & Hoekstra-Weebers, 2015).

When compared to older survivors and age-matched controls, younger breast cancer survivors present more cognitive problems and fatigue (Champion et al., 2014). Longitudinal studies have highlighted functional declines in physical, social and psychological domains over time (Avis et al., 2004, Bloom et al., 2012; DiSipio, Hayes, Newman, & Janda, 2008; Kroenke et al., 2004). Bloom et al. (2012) examined the persistence of problems at 5 and 10 years into survivorship. Again, younger women reported poorer general health, low physical well-being, reduced sexual activity and more chronic conditions. Younger survivors also experience greater psychological morbidity: higher level of depression, anxiety and fear of recurrence are consistently reported within five years post diagnosis (Champion et al., 2014; Crist & Grunfield, 2013; Hopwood et al., 2007; Howard-Anderson et al., 2012; Ganz et al. 2003; Kroenke et al., 2004). In particular, anxiety and depressive symptoms have been found among those who had received chemotherapy and reported low level of support from closed ones and partners (Borstelmann et al., 2015; Gold et al., 2015). The co-occurrence of anxiety and depressive symptoms has a significant impact on the quality life of the individual, with lower levels of physical, psychological and social well-being documented for these women. Furthermore, researchers have noticed that anxiety symptoms influence the ability of the patient to adjust to the disease, leading to increased hopelessness, uncertainty, loss of control and low life satisfaction (Gold et al., 2015).

### ***Body Image and Sexual Functioning***

Body image and sexual difficulties acquire a significant meaning among younger women, as they often represent the most challenging consequences of treatment and the long term legacy of the illness on individual well-being and close relationships (Bantema-

Joppe et al., 2015; Burwell et al., 2008; Champion et al., 2014; Fobair et al., 2006; Geue, Schmidt, Sender, Sauter, & Friedrich, 2015; Hill et al., 2011; Jankowska, 2013).

The loss of a breast, surgical scarring, alopecia, weight changes and lymphedema negatively impact the body image of a younger woman. Furthermore, as treatment is often more aggressive than for older patients, younger women who undergo mastectomy and receive radiation present more numerous complaints compared to patients receiving breast-conserving surgery (Avis et al., 2005; Biglia et al., 2010; Paterson, Lengacher, Donovan, Kip, & Tofthagen, 2016). However, the possibility of reconstruction mitigates the risk for body image concerns (Rosenberg et al., 2013) and seems to promote the ability to enjoy intimacy with a partner, as 80% of younger survivors who were not offered reconstruction continued to covered their body during intimate contacts (Andrzejczak, Markocka-Maczka, & Lewandowski, 2013). The importance of body image for this group of patients has been confirmed by studies that examined its association with physical and psychological distress, impaired sexual functioning, and intimacy (Paterson et al., 2016). Very concerning is the fact that body image issues do not improve with time, with more negative indications in the treatment phase and again after one year (Bloom, Stewart, Chnag & Banks, 2004; Biglia et al., 2010).

A negative body image has often been associated with greater sexual issues (Paterson et al., 2016). Sexual problems of younger breast cancer patients include vaginal dryness, reduced frequency of sexual activity and reduced breast sensitivity (Baucom et al., 2005; Carr, 2013; Cebeci, Yangin & Tekeli, 2010). Treatments like surgery, radiation and chemotherapy can induce premature menopause, and reduced libido. Not only these symptoms directly affect sexual desire and comfort during intercourse, but the resulting

fatigue can contribute to less interest in sexual activity (Avis et al., 2005; Bantema-Joppe et al., 2015; Baucom et al., 2005; Biglia et al., 2010; Champion et al., 2014; Fobair et al., 2006; Burwell et al., 2008; Jankowska, 2013). For example, a recent study revealed that more than 60% of young survivors experience reduced frequency of sexual intercourse since the time of diagnosis (Geue et al., 2015). This is often influenced by the feeling of being less attractive and by higher concerns about physical appearance (Paterson et al., 2016). Sexual difficulties are not short-term for this group. Sexual problems begin immediately after surgery, and although for some women they gradually decrease over time, they are still problematic one year and five year post-treatment (Baucom et al., 2005; Bloom et al., 2012; Burwell, Case & Kaelin, 2006; Fobair et al., 2006).

Compared to their healthy peers, younger breast cancer survivors tend to report reduced sexual interest, decreased arousal, lower frequency of orgasm and less ability to relax (Herbenick, Reece, Hollub, Satinsky & Dodge, 2008). Furthermore, they experience worse sexual relationships across the cancer continuum (Champion et al., 2014; Morrow et al., 2014; Paterson et al., 2016). However, greater involvement from the partner has been associated with better sexual adjustment (Wimberly, Carver, Laurenceau, Harris & Antoni, 2005). As highlighted by Bakewell and Volker (2005), a woman's perceived degree of social support and quality of intimate relations are the strongest predictors of long-term sexual adjustment for this group of patients.

### ***Impact of Breast Cancer on the Couple Relationship of Younger Patients***

Despite the information reviewed in the previous paragraphs and the literature that supports the positive effect of close relationships in the adaptation to illness (Badr & Krebs, 2013; Martire et al., 2010, Regan et al., 2012; Revenson & DeLongis, 2011; Traa

et al., 2015b), only a limited number of studies investigated the experience of younger patients and their partners while coping with breast cancer, with the majority of the contributions including only self-reported data from the patient (Borstelmann et al., 2015; Antoine et al, 2012; Burwell et al., 2008; Champion et al., 2014; Walsh et al., 2005).

Current data indicate that the presence of close relationships and social support has a protective role for the physical and psychological well-being of this group, with greater quality of life and lower levels of depression and anxiety for participants involved in satisfactory relationships (Borstelman et al., 2015; Christophe et al., 2015a; Christophe et al., 2015b; Hoyer et al., 2011; Gold et al., 2015; Vanleemmens et al., 2012a; Vanleemmens et al., 2012b; Wyatt, Beckrow, Gardiner, & Pathak, 2008). However, the literature suggests that not all couples cope effectively with the stress of cancer. In a large prospective cohort study of women diagnosed with breast cancer at age 40 or younger, approximately 20% perceived the partner as unsupportive. For them, an increased likelihood to report anxiety symptoms existed (Borstelmann et al., 2015). Similarly, Avis, Crawford, and Manuel (2004) found that young women with higher levels of marital problems tend to report lower global, physical, emotional, and breast cancer-specific quality of life. This finding extends to survivorship, as younger survivors perceive less intimate or partner support than the older group, more social constraints and lower marital satisfaction (Champion et al., 2014; Stava, Lopez, & Vassilopoulou-Sellin, 2006). For those experiencing difficulties in their relationship, younger survivors of breast cancer showed reduced perceived benefit from the cancer experience and higher negative impact on their well-being and quality of life (Champion et al., 2014). Finally, Walsh, Manuel, and Avis (2005) documented that although most women experienced higher

closeness with their partners, 1 in 4 participants reported increased relational strain which ended in separation or end of the relationship 12% of the time.

Numerous authors affirm that male partners of younger women can be overwhelmed with multiple and competing caregiving demands, higher depressive symptoms, and worse quality of life (Antoine et al., 2012; Baucom et al., 2005; Duggleby, Doell, Cooper, Thomas, & Ghosh, 2014; Fergus et al., 2015; Hasson-Ohayon, Goldzweig, Dorfman, & Uziely, 2014). Only three studies were identified to include both younger breast cancer patients and their partners (Antoine et al., 2012; Vanlemmens et al., 2012a; Vanlemmens et al., 2012b). In a qualitative analysis, Antoine et al. (2012) found that partners tended to be very close and supportive at the beginning of the cancer experience, providing high levels of intimacy and mutual support, while over time they wished for the couple to resume a sense of normalcy. In two other studies investigators tried to measure the impact of breast cancer on the quality of life of younger women and their partners' (Vanlemmens et al., 2012a; Vanlemmens et al., 2012b). Sixty-nine couples were interviewed. Results stressed the impact of the disease on psychological, physical, relational, social, sexual, domestic, professional and economic dimensions. These were mostly negative and still impacting the dyad even after treatment. Couple relationship and psychological well-being were the two dimensions addressed most of the time, with differences reported between the two genders. The analysis of the principal factors in the two resulting questionnaires confirmed these initial findings: in the patients' questionnaires the factor "feeling of couple cohesion" explained 19.8% of the total variance, while in the partners' questionnaires greater relevance was given to the management of the children and of the family's everyday life, the negative affectivity

originated by the disease, and the following apprehension about the future (Christophe et al., 2015a; Christophe et al., 2015b). It is then possible to affirm that, for younger couples coping with breast cancer, the experiences tend to diverge among the two partners, with relationships taking a central role for patients while caregiving concerns and worries about the future become more relevant for the younger partners.

These indications are also confirmed by the literature examining coping and marital functioning among younger dyads and previous findings in the dyadic coping literature. Younger couples' relationships present higher vulnerability to distress, poorer quality of life, negative adaptation and coping abilities (Avis et al., 2005; Baucom et al., 2005; Berg & Upchurch, 2007; Fobair et al., 2006; Iafrate, Bertoni, Donato & Finkenauer, 2012; Revenson, 2003; Revenson & Pranikoff, 2005; Thornton & Perez, 2006). However, they have been largely overlooked by the empirical literature and limited knowledge is available about their psychosocial adaptation to cancer. While the development and evaluation of psychosocial interventions for this group have been recommended since the last decade (Baucom et al., 2005; Harden, Northouse, Cimprich, Pohl, Liang & Kershaw, 2009; Regan et al., 2012), only two psycho-educational programs have been established to target their distinctive needs and the most recent one is currently under evaluation (Bloom et al., 1999; Fergus et al., 2014; Fergus et al., 2015).

Hence, the present work addresses a significant gap in the literature about couples coping with cancer, which is the attention to the developmental trajectory of dyadic coping over the life-span of the dyad and its impact on health and well-being (Aldwin, Skinner, Taylor, & Zimmer-Gembeck, 2011; Berg & Upchurch, 2007; Fingerman, Berg, Smith, & Antonucci, 2001; Revenson & Lepore 2012). This study will contribute to

understand how younger patients and partners cope with a diagnosis of breast cancer, if they are more negatively affected than older couples, and how the individual's quality of life is influenced by relational characteristics and dyadic coping styles at different stages of life.

### **Cancer as a Relational Illness: The Interdependence of Patients and Partners**

The importance of assuming a relational perspective in psychosocial oncology research is supported by the fact that one of the unique aspects of the cancer experience is the interdependence of partners' responses and coping strategies. As patients' adjustment is greatly influenced by interpersonal closeness and the quality of significant relationships, partners have an essential role in providing physical, emotional, spiritual or practical support (Lewis, 2010; Northouse & McCorkle, 2010; Schover et al., 1997; Scott & Kayser, 2009b; Varner, 2015). Similarly, patients' reaction to cancer influences partners' physical and psychological well-being (Götze, Brähler, Gansera, Polze & Köhler, 2014; Kim, Carver, Shaffer, Gansler, & Cannady, 2015; Varner, 2015).

The literature about caregiving and interpersonal relationships in the context of cancer indicates that caregivers experience numerous types of burden including physical, psychosocial and financial difficulties (Desields et al., 2012; Fletcher et al., 2008; Grunfeld et al., 2004; Osse et al., 2006; Song et al., 2011; Stenberg, Ruland, & Miaskowski, 2010; Williams & McCorkle, 2011). Higher risks for stress and burnout have been reported in numerous contributions, with spouses' emotional distress higher or as high as the levels reported by the patients (Fitzell & Pakenham, 2010; Hagedoorn et al., 2008; Manne et al., 2008; Thornton, Perez & Meyerowitz, 2004; Wagner, Tanmoy,

Bigatti & Storniolo, 2011). Moreover, caregivers experience high levels of anxiety and depression, impaired sleep and other health-related issues, as evidenced by an increased use of primary care physicians especially in the context of breast cancer (Götze et al., 2014; Heins, Schellevis, Rijken, van der Hoek, & Korevaar, 2013). The responsibilities associated with caregiving affect also health-promoting behaviors, with less than optimal levels of physical activity attributable to the role and its demands (Beesley et al., 2011; Mazanec et al., 2011).

The bond between patients and their significant ones is particularly evident as caregivers are called to adjust to the impact of the diagnosis on the individual's well-being, participate in the decision-making about cancer treatment, and cope with changes in occupation and family organization (Fitch & Allard, 2007; Houldin, 2007; Lewis, 2010; Mellon, Northouse, & Weiss, 2006; Northouse et al., 2000; Varner, 2015). While managing these issues, partners have to cope with the potential loss of their loved one and face the resulting sense of helplessness (Lewis et al., 2008). Although the emotional and social needs of informal cancer caregivers have been overlooked in the past (Institute of Medicine, 2008), the presence of supportive partners is crucial for the psychosocial well-being of patients and dyads over time (Carver et al., 2006; Kim et al., 2015; Neuling & Winefield, 1988; Northouse, 1988; Roberts, Lepore & Helgeson, 2006), and it will be examined in the next paragraphs.

## **The Impact of Cancer on the Couple Relationship**

### ***Quality of Life and Psychological Well-being***

The quality of life of both partners is negatively impacted by the illness, with patients and partners' scores being significantly lower than the healthy population (Bergelt, Koch & Petersen, 2008; Dumont et al., 2006; Hinnen, Hagedoorn, Ranchor, & Sanderman, 2008; Lewis, 2010; McClure, Nezu, Nezu, O'Hea, & McMahon, 2012; Northouse & McCorkle, 2010; Nakaya et al., 2010; Zenger et al., 2010). Impairments in emotional, physical and social areas have been documented for patients, while partners are at higher risk for worse health-related quality of life, anxiety and illness intrusiveness over time (Bergelt et al., 2008; Gotze et al., 2014; Kuenzler, Hodgkinson, Zindel, Bargetzi & Znoj, 2011; Leung, Pachana & McLaughlin, 2014).

A pattern of interaction, although moderate, has been identified between the distress of the members of the dyad (Baucom et al., 2012; Gotze et al., 2014; Kim et al., 2008; Mertz et al., 2011; Wahwa et al., 2013), suggesting that the stress associated with cancer is interpersonal in nature. These results have been confirmed also in longitudinal studies, where an over-time association between partners' distress and similar trajectories of functioning within the couple have emerged (Kim, van Ryn, Jenses, Griffin, Potosky, & Rowland, 2015; Kraemer, Stanton, Meyerowitz, Rowland & Ganz, 2011; Traa et al., 2014; Traa et al., 2015a; Segrin et al., 2005; Segrin & Badger, 2014). Distress scores of patients and partners are not only associated, but some studies have identified that distress is the strongest predictor of quality of life (Kim et al., 2008). Hence, it is possible to affirm that the couple reacts to cancer as an emotional system, with a reciprocal influence on each other's well-being and interdependent emotional responses (Hagedoorn

et al., 2008; Northouse & McCorkle, 2010; Varner, 2015). Psychological distress is an important element of risk for the couple coping with cancer, because of its association with negative communication, reduced intimacy and worse emotional well-being (Manne, Badr, & Kashy, 2012). It has also been established in bio-behavioral health research that difficulties in marital or intimate functioning have consequences on physiological indicators of distress, like endocrine and cellular immunity (Dorros, Card, Segrin, & Badger, 2010; Heffner, Kiecolt-Glaser, Loving, Glaser, & Mlarkey, 2004; Kiecolt-Glaser, Bane, Glaser & Malarkey, 2003; Kiecolt-Glaser & Newton, 2001).

The interdependence of the partners' quality of life has been supported also when depression, anxiety, physical and mental health have been investigated. Graca Pereira, Figueredo, and Fincham (2012) found that higher scores on depressive symptoms were registered among partners of depressed cancer patients, while in a more recent study by Drabe, Wittman, Zwahlen, Buchi, and Jenewein approximately 40% of variance in female patients' depression was explained by partners' stress and coping resources (Drabe, Wittman, Zwahlen, Buchi & Jenewein, 2013). Low level of functioning in general life domain had a spillover effect on the marital and sexual quality of the relationship (Traa et al., 2015a). Better quality of life of caregivers was associated with patients' higher mental health and better physical well-being (Wadhwa, Burman, Swami, Rodin, Lo & Zimmerman, 2011). This association is confirmed by a more recent contribution (Litzelman & Yabroff, 2015) where cancer survivors whose spouses reported depressed mood at time of diagnosis were more likely to report depression again eight years later. In the same study better mental and physical health-related quality of life of partners at baseline were associated to a 30% reduction in survivors' depressed mood risk, indicating

that depression and poor health quality of life in partners may increase risk of depression for cancer patients, especially for women (Litzelman & Yabroff, 2015).

In terms of predictors or correlates of distress, the role of cancer-related variables, demographic and psychological factors has been well-established by the literature. More recently, the focus of attention has shifted also toward relational factors (McLean & Jones, 2007). Poor conflict resolution skills, pre-illness marital dissatisfaction, lower quality of family functioning, higher conflict rate, low social support, and different perceptions and expectations about the disease are associated with worse psychological well-being for both partners, and higher physical symptoms in the patient (Giannousi, Karademas, & Dimitraki, 2016; Leung, Pachana & McLaughlin, 2014; Mertz et al., 2011). Relationship quality was also predictive of better quality of life in partners of women with breast cancer, while higher mental functioning of the patient significantly contributed to greater physical and mental well-being in the spouse (Bergelt, Koch & Petersen, 2008). Among partner's characteristics associated with patients' worse quality of life, there are critical and avoidant behaviors, reduced communication, and emotional withdrawal (Walsh et al., 2005). On the contrary, partner's distress has been associated to older age, lower level of education, increased concerns for the patient's well-being, caregiving burden and reduced marital satisfaction (Braun, Mikulincer, Rydall, Walsh, & Rodin, 2007; Braun, Hales, Gilad, Mikulincer, Rydall, & Rodin, 2012; Lewis et al., 2008; Lewis, 2010).

### ***Communication***

The ability of the couple to communicate about the illness and its consequences has been investigated widely in the literature because of its implications for adjustment and

positive meaning-making. It has been proved that cancer significantly changes the communication patterns of the dyad, with modifications in communication abilities that have been associated with increased marital dissolution, reduced satisfaction and lack of social support (Badr, Acitelli, & Taylor, 2008; Caughlin, 2002; Reynolds & Perrin, 2004).

Despite these aspects of risk, a large body of evidence has demonstrated that open communication constitutes a resource for the couple (Lewis, 2010; Northouse et al., 2007; Porter, Keefe, Hurwitz & Faber, 2005). Mutual constructive communication, self-disclosure and more frequent relationship-talk have been consistently associated with higher levels of social support, quality of life, better psychological adjustment and relationship functioning for both cancer patients and partners (Badr et al., 2008; Langer, Brown, & Syrjala, 2009, Manne et al., 2007; Manne et al., 2012; Porter et al., 2005; Song et al., 2012). Sharing feelings and concerns has a protective effect on the psychological well-being of cancer patients even when they are experiencing multiple physical symptoms (Manne, Badr, Zaider, Nelson, & Kissane, 2010; Manne et al., 2012; Manne et al., 2015; Robbins, Lopez, Weihs & Mehl, 2014).

However, differences in communication outcomes have been registered between patients and partners. Over time greater levels of communication about the couple relationship were associated to less distress in the partner (Badr, Acitelli & Taylor, 2008), while for breast cancer patients the ability to display positive support-receiving behaviors was negatively impacted by the emotional arousal of the partner (Fischer et al., 2015). The inability of the couple to express their cancer-related concerns and emotions leads to increased psychological distress, strained marital relationships and compromised

psychological adjustment (Manne et al., 2010; Julkunen, Gustavsson-Lilius & Hietanen, 2009; Porter et al., 2005; Song et al. 2012). The underlying relationship between communication, individual and relational outcomes has been investigated in cross-sectional and longitudinal studies, which highlighted that more positive spousal communication contributes to higher satisfaction through the reciprocal reinforcement of the two partners' intimacy (Manne et al., 2010; Manne et al., 2012; Manne et al., 2015).

However, disclosure of thoughts and feelings can be harmful under certain circumstances. For example dissimilar communication patterns among the two partners, like demand-withdraw communication, mutual avoidance and the provision of solutions from the healthy partner, have been associated with higher distress, depression, anxiety, and lower relationship satisfaction (Manne et al., 2010; Pasipanodya et al., 2012; Yu & Sherman, 2015). For example some investigators found that emotional disclosure among partners did not attenuate their depressive symptoms. On the contrary, higher depression scores were identified at follow-up when members of the dyad diverge in their amount of disclosure (Regan, Lambert, Kelly, Falconier, Kissane, & Levesque, 2015a). The negative effect on the couple relationship was identified even when protective buffering was implemented with the goal to prevent negative emotions (Langer et al., 2009; Manne et al., 2007).

### ***Sexuality and Intimacy***

Although this area of the couple relationship has been previously neglected by the literature, a growing body of evidence has established that cancer dramatically impacts sexual functioning of patients and partners across a variety of cancer types<sup>2</sup>. Data show

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<sup>2</sup> For a review please see the following publications: Badr & Taylor, 2009; Charif et al., 2015; Den Oudsten et al., 2012; Den Oudsten, Van Heck, Van der Steeg, Roukema & Vries, 2010; Flynn et al., 2011; Gilbert,

that approximately half of all patients will encounter a sexual problem during their experience with cancer (Huyghe, Sui, Odensky, & Schover, 2009), and that among breast cancer patients this percentage approaches 85% (Ussher, Perz, Gilbert, Hawkins, & Wong, 2012).

Changes in sexual frequency and sexual satisfaction in women with breast cancer have been associated with physical consequences of cancer treatment, psychological factors, body image concerns and relationship characteristics (Carr, 2013; Manganiello, Hoga, Reberte, Miranda, & Rocha, 2010; Moreira & Canavarro, 2013; Ussher et al., 2015). Sex specific difficulties are often associated with isolation, anxiety, depression and sense of inadequacy (Anllo, 20007; Germino, Fife & Funk, 1995; Hawkins et al., 2009; Rolland, 1994). Furthermore, for women who already present personality traits characterized by high levels of anxiety, this personality characteristic represents an independent predictor of worse quality of sexual life, sexual functioning and sexual enjoyment while coping with cancer (Den Oudtsen et al., 2010).

The impact of the disease on the partner is also considerable (DeGroot et al., 2005; Perez, Skinner & Meyerwitiz, 2002; Reichers, 2004): fear of initiating sex and difficulties re-building a sense of normality in the sexual relationship with the patient have been reported (Maughan, Heyman, & Matthews, 2003; Sanders et al., 2006). The dynamics of the caregiving relationship often interfere with the couple's intimate relationship: as the male partner is often providing physical care for the female patient, it becomes challenging to consider the woman as a sexual partner (Carr, 2013; D'Ardenne, 2004;

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Ussher & Perz, 2010; Hawkins, Ussher, Gilbert, Perz, Sandoval & Dundquist, 2009; Kim et al., 2015; Lindau et al., 2011; Loring, Larkin, Shaw & Flowers, 2015; Milbury & Badr, 2012; O'Brien, Roe, Low, Deyn & Rogers, 2012; O'Shaughnessy, Ireland, Pelentsov, Thomas & Esterman, 2013; Panjari et al., 2012; Ussher, Perz, Gilbert & Australian Cancer and Sexuality Study Team, 2015; Wittman et al., 2015.

Hawkins et al., 2009). The presence of sexual dysfunctions has been associated with poorer psychological adjustment (Levin et al., 2010), worse quality of life and increased risks of depression in partners (Nakaya et al., 2010). In a more recent study, Moreira and Canavarro (2013) confirmed the presence of impaired psychological adjustment of partners of women with breast cancer. However, the authors also highlighted that higher levels of intimacy were predictive of reduced depression and greater quality of life for both members of the couple.

Impaired sexual functioning has negative effects on the couple relationship (Carr, 2013; Badr & Taylor, 2009; Galbraith et al., 2008; Ussher et al., 2015). Most couples experience cessation or decreased frequency of sex and intimacy, with only a small group of partners able to renegotiate new forms of sexual activity (Hawkins et al., 2009). The inability of the couple to recover significantly affects the display of other forms of intimate physical contact because these behaviors are perceived as leading to sex (Hughes, 2000; Kuyper & Wester, 1998). On the contrary, couples able to negotiate new forms of intimacy reported increased communication, satisfaction and closeness in their relationship (Gilbert et al., 2010; Gilbert et al., 2011; Loaring, Larkin, Shaw, & Flowers, 2015).

### ***Adjustment and Benefit Finding***

As reviewed in the previous paragraphs, most studies have focused on the negative effect the cancer diagnosis has on the individual and the couple relationship. However, couples also may find benefit from the cancer experience, a phenomenon called “posttraumatic growth”. Defined by Tedeschi et al. (1996) as the “positive psychological change experienced as a result of the struggle with highly challenging life circumstances”

(Tedeschi & Calhoun, 2004, p. 1), post traumatic growth is associated with increased satisfaction with interpersonal relationships, closeness and empathy (Cordova, Cunningham, Carlson, & Andrykowski, 2001; Weiss, 2002; 2004).

When measured in dyads, growth scores in cross sectional and longitudinal studies are not only associated between the partners (Manne et al., 2004; Thornton & Perez, 2006; Weiss, 2004; Zwahlen et al., 2010), but growth reported by the female cancer patient is among the predictors of the husband's growth (Weiss, 2004). It is interesting to report that mixed results have been presented about levels of personal growth. While Kunzler, Nussbeck, Moser, Bodenmann, & Kayser (2014) indicate higher scores for women (either as patients and partners), in a cross-sectional study by Cormio et al. (2014), caregivers showed significantly higher levels of improvements. This result was explained by the researchers with the positive effect of providing care to the patient. This is consistent with other studies where investigators have found that assuming the role of caregiver produced numerous benefits like increased positive self-view, higher empathy and appreciation, changes in priorities and values (Cassidy, McLaughlin & Giles, 2014; Kim, Schultz & Carver, 2007; Lin, Fee, & Wu, 2012). Researchers were also interested in examining if differences in growth and meaning-making were influenced by gender, role or dyad factors. Findings indicate that intra-couple characteristics influence the positive identification of benefits and that partners may experience comparable growth (Zwahlen et al., 2010), with variability between couples being larger than the variability associated to gender or role.

It is then possible to state that couples share not only the burden of the illness, but also the possibility to grow as individuals and to enhance their relationship (Fergus &

Gray, 2009; Traa et al., 2015b; Regan et al., 2015a). A significant association between coping styles, partners' well-being and marital satisfaction has been extensively confirmed in the literature across populations and disciplines (Traa et al., 2015b; Regan et al., 2015a; Iafrate & Donato, 2012). Positive adjustment to a variety of stressors is associated with active engagement and problem-focused coping strategies, while protective buffering, denial and wishful thinking lead to adverse psychosocial outcomes, like reduced relationship satisfaction and worse mental well-being (Berg et al., 2008; Kraemer et al., 2011; Langer et al., 2009; Merz et al., 2011; Romero et al., 2008).

The process of adaptation to the illness is complex and affects both members of the couple (Fekete et al., 2007; Kayser & Sormanti, 2002; Kayser, Sormanti, & Strainchamps, 1999; Langer et al., 2009; Regan et al., 2015a; Skerret, 1998; Traa et al., 2015b). From several contributions, it clearly emerges that the ability of the couple to share this experience leads to enhanced couple functioning (Kayser et al., 2007; Skerret, 1998). It is now well-established in the literature that cancer patients report better psychological adjustment to illness, physical well-being and emotional adjustment if they experience their partners as being emotionally supportive. The spouse or the significant other is often the primary supportive figure during the cancer experience and, despite the availability of other sources of support, none of these relationships can compensate for his/her absence (Cutrona, 1996a; 1996b; Northouse & McCorkle, 2010; Varner, 2015). Coping strategies used by each partner significantly influence the overall adaptation of the dyad over time. Better adjustment is related to the display of problem-focused coping strategies, collaborative coping and active engagement (Llewellyn, Horney, Gurk, Weinman, Herold, Altman & Smith, 2013; Regan et al., 2015a; Romero et al., 2008; Traa

et al., 2015b). On the contrary, higher level of distress, illness intrusiveness and lower psychosocial adjustment are registered when patients experienced partners as overprotective or dismissive of their needs (Donato, 2012; Feldman & Broussard, 2005; 2006; Kuijer, 2000). It is therefore possible to conclude that strong evidence from the literature supports that assuming a relational perspective is necessary when exploring the impact of cancer on patients and partners.

### **Summary**

*The present chapter offered a review of the literature related to the impact of breast cancer on the quality of life of younger women and partners. Additionally, the chapter provides an empirical justification for assuming a relational perspective when working with couples coping with cancer by examining the literature about quality of life, distress, communication, sexuality and benefit finding.*

## CHAPTER II: LITERATURE REVIEW

*This chapter explores the foundational literature of dyadic coping and introduces the theoretical framework of the proposed research study. In the first part, current models of dyadic coping are reviewed and the conceptual framework that forms the basis for the proposed research is presented. In the second section of the chapter the relevance, strengths, and limitations of Systems Theory, Stress and Coping Theory, Relational-Cultural Theory and Life Course Developmental Framework to study dyadic coping and the experience of younger couples are discussed.*

### **Dyadic Coping and its Relevance for the Marital Relationship in a Time of Crisis**

In the last twenty years a new attention towards interpersonal aspects of coping has emerged (Donato, 2012; Iafate & Donato, 2012; Kayser & Scott, 2008; Saita, 2009; Regan et al., 2015a; Revenson, Kayser & Bodenmann, 2005; Traa et al., 2015b). This new interest has created the condition for the theoretical frameworks of close relationships and stress and coping to converge with the goal to examine how coping develops within the context of significant relationships (Iafate & Donato, 2012; Revenson et al., 2005). As a consequence, couples' coping has started to be conceptualized no longer at the individual level -referring to the separate perspectives of

the two partners- but as a dyadic process involving the partners' mutual influence (Bodenmann, 1997).

The literature supports the idea that dyadic coping should be conceptualized as a process shaped by the context of close relationships (Bodenmann, 2005; Peterson & Bush, 2013; Revenson et al., 2005). It is described as “the interplay between the stress signals of one partner and the coping reactions of the other, a genuine act of shared coping” (Revenson et al., 2005; p. 4). Through a series of interactions, dyadic coping contributes to a sense of we-ness and promotes the conjoint creation of strategies to respond to the stressful event (Bodenmann, 1997; Kayser et al., 2007; Revenson, 1994; Scott, Halford, & Ward, 2004). As a circular and bi-directional process, it is based on the assumption that both partners are equally involved in the coping process: they are providing and receiving support from each other while engaging in joint problem-solving activities and shared emotion regulation (Bodenmann, 1995a; Revenson & DeLongis, 2011; Bodenmann, 2005; Revenson & Lepore, 2012).

The association between dyadic coping and marital functioning, better psychological and physical well-being, and lower stress has been established across different populations and couples coping with a variety of stressors (chronic illnesses, depression, anxiety, anger and verbal aggression) (Badr, Carmack, Kashy, Cristofanilli, & Revenson, 2010; Bodenmann, Atkins, Schar, & Poffet, 2010; Bodenmann, Charvoz, Widmer, & Bradbury, 2004; Hinnen et al., 2008; Randall & Bodenmann, 2009; Sullivan, Pasch, Johnson, & Bradbury, 2010; Vilchinsky & al., 2010). Ambivalent or hostile coping styles are more frequent among distressed couples or in the context of mental disorders and chronic illness (Bodenmann, 1995; 2000; Bodenmann et al., 2004). On the

contrary, positive dyadic coping can reduce the negative impact of stress on a relationship (Martin, Peter-Wight, Braun, Hornung, & Scholz, 2009). The role of dyadic coping as protective factor for couples' functioning over time has been confirmed by longitudinal studies, with higher relational satisfaction and reduced odds of being divorced for couples reporting common positive coping (Bodenmann & Cina; 2005; 2006; Bodenmann, Pihet, & Kayser, 2006). More recently, the most comprehensive meta-analysis to date provided stronger evidence for the fact that dyadic coping significantly predicts relationship satisfaction and that aggregated positive forms of dyadic coping were stronger predictors of this outcome than negative forms (Falconier, Jackson, Hilpert, & Bodenmann, 2015).

As anticipated in the previous chapter, when considering the stress of a cancer diagnosis the ability of the couple to face the illness as a unit contributes to higher relationship quality and cohesion (Badr et al., 2010; Fergus & Gray, 2009; Picard, Dumont, Gagnon, & Lessard, 2005; Traa et al., 2015b). Similarly, relationship maintenance behaviors, social support exchanges, mutual constructive communication and joint dyadic coping have been associated to better relationship functioning and quality of life (Badr & Taylor, 2009; Hagedoorn et al., 2011; Langer et al., 2009; Lavery & Clarke, 2009; Manne et al., 2015; Norton & Manne, 2007; Pasipanodya et al., 2012).

However, it would be inaccurate to address dyadic coping as a unitary phenomenon, since over the years several models have been developed in the literature (Bodenmann, Meuwly, & Kayser, 2011; Donato 2012; Folkman, 2011; Kayser, Acquati, Saita & Costa, 2011; Hubbard et al., 2013; Iafrate & Donato, 2012; Levesque et al, 2014b; Regan et al., 2015a; Revenson & Lepore, 2012; Traa et al., 2015b). Although they all share the same view of dyadic coping as a process through which partners cope with the stress they

encounter in their life as a couple, each offers unique insight on what dyadic coping is and how it is associated with relational and individual well-being (Donato 2012; Iafrate & Donato, 2012; Kayser et al., 2011; Scott & Kayser, 2009b; Regan et al., 2015a; Traa et al., 2015b). The most recent literature has tried to explore and compare these theoretical frameworks and to clarify the relationship between dyadic coping and couple relationship in the context of cancer (Hubbard et al., 2013; Regan et al., 2015a; Traa et al., 2015; Zimmerman, 2015). However, the contemporary lack of consensus in the conceptualization and assessment of dyadic coping confirms the complexity of the study of human relations during a time of crisis, such as the experience of a serious and debilitating illness (Table 1). Despite this complexity, the current debate about what dyadic coping is, its relationship with relational outcomes, daily stressors and social support as well as the theories that have shaped its conceptualization is extremely needed and promising for psychosocial oncology. Furthermore, an ongoing critical reflection on dyadic coping is crucial to completely understand the relationship between stress and health (Revenson, 2003; Revenson & DeLongis, 2011; Revenson & Lepore, 2012).

**Table 1.** Overview of Dyadic Coping Models

<b>Models</b>	<b>Authors</b>	<b>Definition of Dyadic Coping</b>	<b>Theoretical Framework</b>
<b>Relationship-Focused Coping</b>	Coyne & DeLongis	Relational-focused or relational coping refers to cognitive and behavioral efforts to maintain and protect social relationships. Coyne: active engagement and protective buffering. DeLongis: empathic and interpersonal-withdrawal coping	Stress & Coping Theory Systems Theories Social Learning Theory
<b>Congruence Model</b>	Barbarin, Hughes, & Chesler Revenson	Focus is on congruency of problem-focused and emotion-focused individual coping strategies among partners. Importance of ecological/contextual perspective. Congruence can involve similar or complementary coping styles.	Person-Environment Fit Theory Family Systems Theories Earlier work on Relational Coping
<b>Systemic-Transactional Model</b>	Bodenmann	Dyadic coping is viewed as a circular process activated in response of a dyadic stress. Both positive (supportive, common, and delegated) and negative (hostile, ambivalent, superficial) forms of dyadic coping exist.	Stress & Coping Theory Systems Theory
<b>Relational-Cultural Model</b>	Kayser, Watson & Andrade	Dyadic coping is a process that occurs multiple times during the cancer experience. Relational characteristics (relationship awareness, authenticity, and mutuality) determine the pattern of coping the couple develops. Two patterns of relational coping: mutual responsiveness or disengaged avoidance.	Relational-Cultural Theory Systems Theory Systemic-Transactional Model of Dyadic Coping
<b>Developmental-Contextual Model</b>	Berg & Upchurch	Dyadic coping changes through the life-span as a consequence of developmental, temporal and contextual factors (culture and gender; quality of the marital relationship and the demands of the chronic illness). Collaborative coping, uninvolved strategies, supportive strategies and control strategies. Functions of collaborative coping are resource and relationship enhancement	Social Development Theory

### ***Relationship-focused coping***

The first step in the development of a dyadic conceptualization of coping is due to the work of James Coyne and Anita DeLongis (1986). While emotion-focused and problem-focused coping were initially introduced by Lazarus and Folkman in 1984, Coyne and DeLongis identified a third coping function: relational-focused or relational coping. With this term the authors emphasize the cognitive and behavioral efforts to maintain and protect social relationships while coping with stressful events (O'Brien & DeLongis, 1997; Revenson & DeLongis, 2011).

Two major frameworks have inspired the work of Coyne, Stress and Coping Theory (Lazarus & Folkman, 1984) and Bandura's Social Learning Theory (Bandura, 1986). While the Transactional Model of Stress and Coping has been the theory of reference for the study of coping strategies for more than thirty years, Coyne recognized that this approach was not able to capture processes that occur in couples coping with health problems (Coyne & Friske, 1992). As a consequence, from his perspective Social Learning Theory appeared to be the approach better able to highlight the centrality of people's beliefs about their capacity to execute behaviors (self-efficacy) and their perseverance in the face of significant challenges (Bandura, 1986). Coyne and colleagues identified two broad categories of relationship-focused coping: active engagement and protective buffering (Coyne, Ellard & Smith; 1990; Coyne & Friske, 1992; Coyne & Smith, 1991; Coyne, Wortman, & Lehman, 1988). Active engagement refers to the active involvement of one partner in discussion, constructive problem-solving and attention to feelings (Coyne & Smith, 1994). Protective buffering, on the contrary, describes the behavior of a partner that hides concerns, denies worries and tries to avoid disagreement

with the other (Coyne & Smith, 1991). Evidence from research studies applying this framework to couples coping with diverse stressors indicate that active engagement is positively associated to reduced psychological distress, higher self-efficacy, and higher relationship functioning (Hagedoorn et al., 2011; Kuijer et al., 2000). On the contrary protective buffering has been linked to negative relational and psychosocial outcomes (Coyne & Smith; 1991; Hagedoorn et al., 2011; Kuijer et al., 2000; Manne et al., 2007).

Similarly, DeLongis and O'Brien (1990) identified dyadic coping as an interpersonal and regulatory process characterized by two opposite strategies, empathic and interpersonal-withdrawal coping (DeLongis & O'Brien, 1990; Revenson & DeLongis, 2011). Based on the assumption that maintaining relations is a fundamental human need that influences cognitions and emotions (Baumeister & Leary, 1995; Bolger, DeLongis, Kessler, & Schilling, 1989), empathic coping is described as the attempts of one partner to explore the emotional experience of the other and to behaviorally respond in a supportive and caring manner. Interpersonal-withdrawal coping, on the contrary, refers to behaviors and strategies enacted to prevent the partner from dealing with problems or experiencing the feelings of the other member of the dyad (DeLongis & O'Brien, 1990; O'Brien & DeLongis, 1996; O'Brien & DeLongis, 1997; O'Brien, DeLongis, Pomaki, Puterman, & Zwicker, 2009).

These authors have contributed to raise awareness of the fact that coping processes among partners involve the couple relationship and affect the quality of this relationship. Despite its popularity<sup>3</sup>, a little relationship-focused coping explains about the

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<sup>3</sup> For a review if it possible to refer to these publications: Coyne, Wortman, & Lehman, 1988; Coyne, Ellard & Smith; 1990; Coyne & Friske, 1992; Coyne & Smith, 1991; Coyne & Smith, 1994 DeLongis & O'Brien, 1990; O'Brien & DeLongis, 1996; O'Brien & DeLongis, 1997; O'Brien, DeLongis, Pomaki, Puterman, & Zwicker, 2009; Hagedoorn et al., 2011; Kuijer et al., 2000; Manne et al., 2007

interdependence of the partners' coping processes. The model focuses on individual strategies, rather than on relationship characteristics and processes that promote partners' adjustment and well-being.

### ***Congruence Model***

The Congruence Model of dyadic coping is represented by the work of Barbarin, Hughes, and Chesler (1985) and Revenson (1994) who explored the congruency of problem-focused and emotion-focused individual coping strategies among partners (Peterson & Bush, 2013). The theoretical reference for the work of these authors are Person-Environment Fit Theory (French, Rodgers, & Cobb, 1974), Family Systems Theories (Patterson & Garwick, 1994) and the earlier work on relationship-focused coping (Coyne & Friske, 1992; Coyne & Smith, 1991; DeLongis & O'Brien, 1990). The model emphasizes that the couple constitutes a system in relation with outside forces and the importance of studying couples coping with an ecological and contextual perspective. Revenson (2003) highlights that her perspective describes psychosocial adaptation as a "function of the ecological *niche* the couple occupies" (Revenson, 2003; p. 535). Hence, the focus of attention should be broadened to include socio-cultural, interpersonal, situational and temporal contexts, with the ultimate goal to expose all the factors that influence couple's coping. By assuming an ecological approach, the model is then perceived as capable of addressing the reciprocal behavioral and psychological interdependence that characterizes the marital relationship (Revenson, 2005; 2003).

According to this view, congruency and discrepancy of individual coping strategies are connected to marital satisfaction and personal well-being (Revenson & DeLongis, 2011). Revenson and colleagues affirm that couples coping has the objective to

“maximize the congruence or fit between partners’ coping styles in order to cope most effectively as a couple” (Revenson, Abraido-Lanza, Majerovitz, & Jordan, 2005; p.141). Congruence can involve similar or complementary coping styles: both partners can use emotional or problem-solving coping, while partners may use emotional coping style in response to the problem-solving approach of the other spouse (Revenson 1994; 2003). When partners’ strategies are similar, their coping efforts are coordinated and mutually reinforcing. However, this does not mean that complementary approaches are not congruent: the author highlights that complementarity can be effective as it provides a broader “coping repertoire” to the couple (Revenson, 2003; p. 540). Non-congruent strategies, on the contrary, occur when the partners’ strategies are mutually opposite, aimed at “cancelling each other out” (Iafrate & Donato, 2012; p. 8), and are associated with worse psychosocial outcomes.

Empirical evidence for the model has been provided by several studies conducted on healthy couples (Iafrate, Bertoni, Margola, Cigoli, & Acitelli, 2011; Iafrate & Donato, 2012) and couples coping with chronic illnesses<sup>4</sup>. The application of this conceptualization of dyadic coping to chronic illnesses like rheumatic disease (Revenson et al., 2005), multiple sclerosis (Pakenham, 1998; Upchurch et al., 2003), and COPD (Snippe, Maters, Wempe, Hagedoorn, & Sanderman, 2012) has produced evidence for higher distress and lower levels of marital satisfaction for dyads presenting incongruent coping styles. More specifically, Revenson et al. (2005) identified four clusters of couples’ coping (effortful partnership, problem solvers with emotion coping, minimalist

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<sup>4</sup> For a review it is possible to refer to these publications: Ben-Zur et al., 2001; Kaptein & al., 2007; Kienle, Luszczynska, Pfüller, & Knoll, 2009; Revenson, 2003; Revenson et al., 2005; Sterba & al., 2008; Verhofstad, Ickes, & Buysse, 2010; Watts et al., 2011; Yoshimoto et al., 2006

copers and couples where the patient copes alone). Although individuals from the first cluster reported higher level of distress, they also rated higher in personal growth.

Similarly, Snippe, Maters, Wempe, Hagedoorn, and Sanderman (2012) identified the emotional distress was independently associated with self-reported perceptions of COPD patients' use of protective buffering and discrepancies in the partners' overprotection.

Six studies of couples coping with cancer were inspired by the congruence model (Regan et al., 2015a). Overall, results indicate that congruent coping styles are associated with greater patient and partner adjustment to illness and marital satisfaction, while increased distress and reduced quality of life were reported otherwise (Banthia et al., 2003; Barnoy, Bar-Tal, & Zisser, 2006; Ben-Zur, Gilbar & Lev, 2004; Fagundes, Berg & Wiebe, 2012; Norton & Manne, 2007; Taylor et al., 2008). A more recent study examined couples' coping strategies as predictors of adjustment to breast cancer at 10 and 20 months post diagnosis. Within the 139 couples who participated in the study, women's use of approach-oriented coping strategies predicted improvement in their vitality and depressive symptoms, while men's avoidant coping predicted declining marital satisfaction for wives. As anticipated, the implementation of approach-oriented strategies among male partners was predictive of increased perception of cancer-related benefits in breast cancer patients. Among these couples, coping strategies also interacted to predict adjustment, with better adaptation originated by congruent coping as opposed to dissimilar styles (Kraemer et al., 2011).

Although researchers assuming this perspective believe that each partners' coping style is related to the other, the model still considers coping an individual phenomenon (Pakenham, 1998; Revenson, 1994; 2003; Revenson et al., 2005; Revenson & DeLongis,

2011). Hence, it is measured separately among the members of the dyad and the analyses tend to compare individual scores or to utilize the sum of the scores from the two partners (Pakenham, 1998; Revenson, 1994), without accounting for intrinsic interdependence of scores from individuals involved in a close relationship. Furthermore, despite the evidence presented in this paragraph and the model's heuristic value, inconclusive data have been collected about "whether congruent coping is better and what congruent coping is" (Revenson & DeLongis, 2011; p.110; Regan et al., 2015a).

### ***Systemic-Transactional Model***

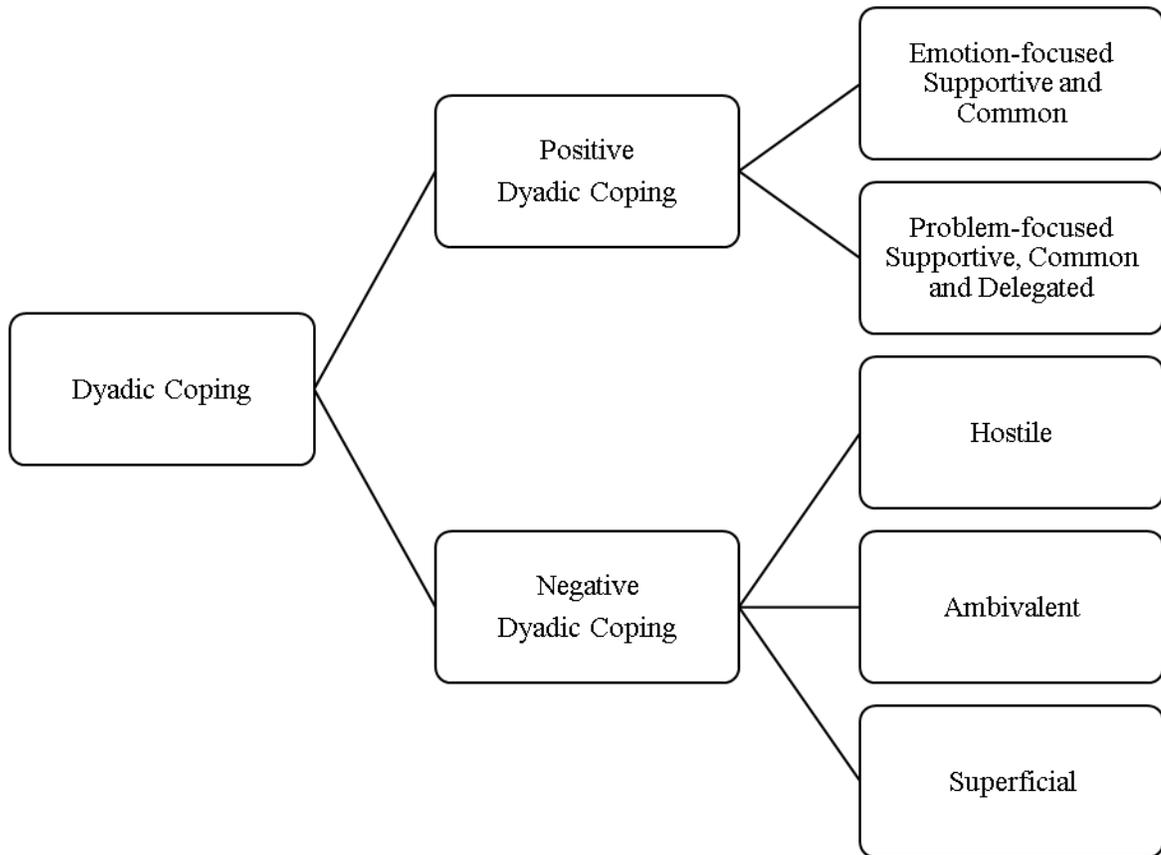
The Systemic-Transactional Model introduced by Guy Bodenmann in the late '90s distinguishes individual coping efforts, where the stress is managed independently, from dyadic coping processes in which both partners are involved (Bodenmann, 1995; 1997; 2000; 2005). In his approach, dyadic stress entails "any form of emotional or problem-centered stress directly concerning the couple as a unit" (Bodenmann, 1997, p. 138), which elicits their conjoint coping efforts (Bodenmann, 2005). Areas affected by dyadic forms of stress are partners' common concerns, their emotional intimacy and the continuity of their relationship (Bodenmann, 1994; 1997). Dyadic stressors can be classified along three dimensions: the way partners are affected by the event (directly or indirectly), the origin of stress (internal vs. external), and the time sequence (Bodenmann, 1995; 1997; 2005).

Dyadic coping is regarded as a circular process: through a stress communication exchange, the individual appraisal is communicated to the partner, whom then interprets and decodes the partner's stress signals and responds with a form of dyadic coping (Bodenmann, 1994; 1997). The function of dyadic coping is twofold: stress reduction and

enhancement of the couple relationship (Bodenmann, 2005; Donato, 2012; Traa et al., 2015b). As the well-being of each member of the couple depends on the well-being of the other and the interaction with the larger social environment, dyadic coping becomes a strategy to manage the stress of both partners. Second, the ability of the partners to use positive forms of dyadic coping promotes a sense of we-ness, defined as “mutual trust, reliability, commitment and the perception that the relationship is a supportive resource” (Bodenmann, 2005, p. 41), which increases marital quality and stability (Bodenmann, 2005; Cutrona, 1996a; Cutrona, 1996b; Traa et al., 2015b, Regan et al., 2015a).

The author distinguishes between negative and positive forms of dyadic coping (Figure 1), resulting from event characteristics, individual and dyadic appraisal, and partners’ competences (Bodenmann, 1995; 1997; 2005; Iafrate & Donato, 2012). Common, supportive and delegated dyadic coping represent positive and adaptive dyadic coping styles, while negative dyadic coping is classified in hostile, ambivalent and superficial (Bodenmann, 1995; 1997; 2005). An overview is presented in Figure 1 and Table 2.

**Figure 1.** Overview of Positive and Negative Forms of Dyadic Coping.



**Table 2.** Description of Positive and Negative Dyadic Coping Styles

Forms of Dyadic Coping	Description of Dyadic Coping Styles
<b>Positive Forms of Dyadic Coping</b>	<p><b>Supportive Dyadic Coping:</b> one partner assists the other with the secondary goal to reduce his/her own distress. Examples of supportive coping include practical activities, empathic understanding and expressing solidarity.</p> <p><b>Common Dyadic Coping:</b> both members of the couple experience the stressful event and they participate in the coping process in a symmetric or complementary way. They use strategies like joint problem solving, information seeking, and mutual commitment.</p> <p><b>Delegated Dyadic Coping:</b> one partner is explicitly asked to give support or to take over responsibilities in order to reduce the stress of the other member of the couple.</p>

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<b>Negative Forms of Dyadic Coping</b>	<b>Hostile Dyadic Coping:</b> involves the provision of support which is accompanied by disinterest or minimizing the seriousness of the partner's stress.
	<b>Ambivalent Dyadic Coping:</b> one partner supports the other but unwillingly or with the belief that his or her involvement is unnecessary.
	<b>Superficial Dyadic Coping</b> refers to support which is insincere, distant or cold.

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Four assumptions underlie the Systemic-Transactional Model. First, dyadic stress and coping are conceptualized from a systemic perspective, as one partner's stress appraisal influences and it is influenced by the other partner's and the relationship. Second, dyadic coping represents only one form of coping reported by the partners, as each of them still displays individual coping and supportive interactions with the larger social network. Third, from Bodenmann's perspective dyadic coping is a resource used by couples after individual coping styles have failed. Finally, the author differentiates dyadic coping from social support. The support provided by a partner is significantly different from and has different meanings from the support provided by other people. Dyadic coping is a conjoint commitment of both partners, while social support is only one form of dyadic coping among the multiple possible (Bodenmann, 2005).

This model has greatly contributed to the advancement of our understanding of dyadic coping and its role in marital functioning (Falconier et al., 2015; Revenson & DeLongis, 2011; Traa et al., 2015b). Extensive literature through the years has supported the relationship between dyadic coping and greater marital satisfaction, better psychological and physical well-being, and reduced stress<sup>5</sup> -with dyadic coping

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<sup>5</sup> For an overview it is possible to refer to the the following contributions Baas & Schmitt, 2004; Badr et al., 2010; Bodenmann, 2000; 2005; Bodenmann, Pihet & Kayser., 2006; Hochfilzer, 2010; Koch, Hauschild, & Schmidt-Denter, 2001; Kunzler, Zindel, Bargetzi, & Znoj, 2005; Schneewind & Kruse, 2002; Schwarzer &

representing a stronger predictor of relationship functioning than individual coping strategies and communication- (Bodenmann, Bradbury & Pihet, 2008; Papp & Witt, 2010). These results have been confirmed also in longitudinal studies (Bodenmann & Cina, 2006; Ruffieux, Nussbeck, & Bodenmann, 2014).

Furthermore, dyadic coping attenuates the association between stress, anger and verbal aggression (Bodenmann, Meuwly, Bradbury, Gmelch & Ledermann, 2010), and individuals tend to recover faster from an experimentally induced stress the more positive dyadic coping receive from the partner (Meuwly, Bodenmann, Germann, Bradbury, Ditzen & Heinrichs, 2012). Support comes also from studies conducted on chronic illness (Acitelli & Badr, 2005; Hagedoorn et al., 2008, Manne et al., 2007; Naumann, 2004; Rohrbaugh et al., 2002; Meier et al., 2012), immigration stress (Falconier, Nussbeck & Bodenmann, 2013; Austin & Falconier, 2013), sexual behavior (Bodenmann et al., 2010), and in cross-cultural samples (Bertoni et al., 2007; Ledermann et al., 2010) .

More recently, the mechanism through which dyadic coping protects the couple relationship has become the focus of attention. Among the alternatives presented in the literature, investigators have identified that we-ness partially mediates the relationship between coping and relationship satisfaction especially for women (Vedes, Nussbeck, Bodenmann, Lind, & Randall, 2013), as well as the presence of a significant correlation between commitment and higher levels of common dyadic coping (Landis et al., 2014).

Although the relationship between stress, dyadic coping and well-being has been

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Bush, 2005; Wunderer & Schneewind, 2008; Bodenmann, Meuwly & Kayser, 2011; Meier, Bodenmann, Morgeli, & Jenewein, 2011; Kramer, Ceschi, Van der Linden & Bodenmann, 2005; Dehle, Larsen, & Landers, 2001; and Walen & Lachman, 2000.

confirmed in studies inclusive of couples at different moments of their life-span<sup>6</sup>, questions remain about challenges experienced by different cohorts of couples (Vedes, Nussbeck & Bodenmann, 2015; Landis, Peter-Wight, Martin & Bodenmann, 2013).

Although this model has been extensively used by the close relationships literature, in both the reviews conducted by Traa et al. (2015b) and Regan et al. (2015a) only a few studies were identified to have applied the STM to cancer. Badr, Carmack, Kashy, Cristofanilli and Revenson (2010) conducted a longitudinal study of metastatic breast cancer patients and partners. Their findings indicated, as expected, that common positive dyadic coping was associated to more positive adjustment for both members of the dyad, while negative dyadic coping was associated to higher distress and reduced levels of adjustment. The association between negative dyadic coping and distress was higher for patients than for partners. Another study conducted on the same sample confirmed that dyadic adjustment was associated to better psychological well-being, as indicated by fewer depressive symptoms (Badr & Shen, 2014). Similar findings were reported by Rottman et al. (2015). Their longitudinal examination of the relationship between dyadic coping, depression and relationship quality revealed in a large sample of days coping with breast cancer that negative dyadic coping affects patients and partners' individual and relational outcomes equally. Self-reported perceptions of engaging in common dyadic coping were related to higher relational quality and reduced number of depressive symptoms for both. However, differences occurred based on the type of coping style provided: while partners reported fewer depressive symptoms the more delegated coping they provided to the patient, the opposite trend was registered for

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<sup>6</sup> Studies investigating dyadic coping have been conducted on late adolescent couples, middle-age and older-age couples.

patients. Furthermore, if the patient provided partner with supportive coping, partners experienced higher levels of depression (Rottman et al., 2015).

Investigators have also applied the Systemic Transactional Model to prostate cancer. In a cross-sectional study of 42 pairs of patients and caregivers, Regan et al. (2014) found that the utilization of positive and negative dyadic coping was significantly associated to higher relationship satisfaction. On the contrary, anxiety and depression were associated to partners' self-reported perceptions of negative dyadic coping. In the same year, Lafaye, Petit, Richaud, Houede, Baguet, and Cousson-Gelie (2014) investigated the effects of coping strategies on emotional well-being and quality of life of prostate cancer patients and partners. Problem-focused coping strategies or social-support strategies were associated to reduced depression and anxiety for both partners, while the opposite was reported for emotion-focused coping (Lafaye et al., 2014). Finally, the dyadic adjustment of couples undergoing bone-marrow transplantation for cancer was examined by Fife, Weaver, Cook, and Stump (2013). Again, authors identified that dyadic coping styles aimed at promoting the relationship had the highest positive impact on adjustment over a 12-month period.

Since dyadic coping is considered a competence that can be increased, several programs have been developed to teach relational skills with the long-term goal to enhance couples' ability to learn and apply these behaviors (Schaer, Bodenmann, & Klink, 2008; Bodenmann, Bradbury & Pihet, 2008; Ledermann, Bodenmann, & Cina, 2007; Bodenmann & Randall, 2012). Significant improvements on communication and psychological well-being have been reported across diverse samples and cultures

(Bodenmann & Bertoni, 2004; Bodenmann, Bradbury & Pihet, 2009; Bodenmann, Hilpert, Bradbury & Nussbeck, 2014).

An aspect of limitation is represented by the fact that this approach still considers dyadic coping as a resource the couple utilizes when individual's coping mechanisms have failed. Also, it seems that the model focuses on the individual coping efforts, since it does not clarify whether and how the communication of the cognitive appraisal of the individual initiates a conjoint or shared reaction. Since this conceptualization has been developed within the close relationships literature, little attention has been given to forms of stress that change over time (i.e. stress that changes in intensity and requires the couple to develop new forms of management/adjustment), with major attention given to daily stressors. However, the contribution this perspective has brought to the study and measurement of dyadic coping is so relevant that the instrument developed from the Bodenmann's model will be utilized in the present study.

### ***Relational-Cultural Model***

A few years later, the Relational-Cultural Model of dyadic coping was introduced (Kayser et al., 2007). Inspired by the previous work of Kayser and colleagues in the context of breast cancer (Kayser & Sormanti, 2002; Kayser, Sormanti, & Strainchamps, 1999), this conceptualization focuses on the multiple stressors encountered at each stage of the cancer experience (diagnosis, treatment, and end of treatment/survivorship). For this reason the authors represent the coping process in the form of a wheel (Figure 2), to underline the constant adjustment required to the dyad (Kayser & Scott, 2008).

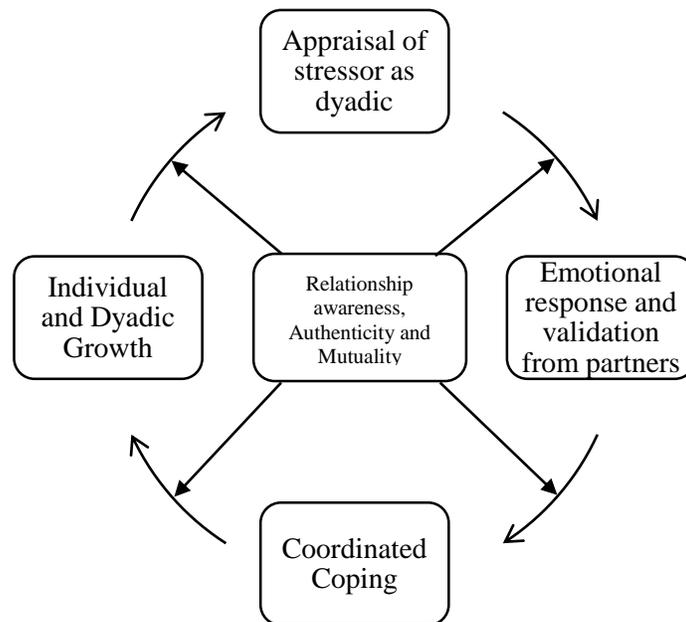
The first step of the coping process is the stress appraisal, as the cancer diagnosis can be considered as a source of stress that affects both the patient and the dyad. When this

occurs, partners tend to engage in a stress communication which has the potential to offer a form of validation to the members of the couple. After appraisal and response, the third step of the model refers to the coping behaviors of the partners. When partners are able to coordinate problem and emotion-focused coping behaviors, then the outcome is relational and individual growth (Kayser & Scott, 2008).

Within this framework, different appraisals and responses to cancer are shaped by relational characteristics. Relationship awareness, authenticity and mutuality are identified by the authors as the relationship qualities that will determine the pattern of coping couples will develop, and for this reason they are symbolically placed in the center of the hub. Relationship awareness refers to the partners' awareness that the stressor, namely the illness, is affecting both partners in their relationship (Kayser et al., 2007; Kayser & Scott, 2008). Authenticity describes partners' ability to disclose genuine feelings to each other in a sensitive and appropriate way (Kayser et al., 2007; Kayser & Scott, 2008; Kayser & Scott, 2009b). Finally, mutuality is defined as the ability to be empathic with the partner and to participate in a shared experience (Feldman & Broussard, 2005; Feldman & Broussard, 2006; Jordan, 1997; Kayser et al., 2007; Kayser & Scott, 2008). In a close relationship, mutuality is conceptualized as the "bidirectional movement of feelings, thoughts, and activity between persons in relationship" (Genero, Baker-Miller, & Surrey, 1990, p.1). While it is often confused with social exchange, by assuming a relational perspective, mutuality becomes a set of actions that encompasses "diverse modes of social interaction that facilitate participation in and growth through relationships" (Genero et al., 1992, p. 36).

Depending on the presence of these characteristics, two different patterns of relational coping are enacted: mutual responsiveness and disengaged avoidance (Kayser et al., 2007, Kayser & Scott, 2008). Couples characterized by mutual responsiveness appraise the stress of cancer as affecting both members of the couple and they initiate a stress communication process that leads to mutually coordinated coping behaviors (Kayser et al., 2007; Kayser et al., 2011). It is important to clarify that these couples do not necessarily report the same issues or complaints. On the contrary, they are able to tolerate differences in their experience with cancer. As partners are able to listen and validate the stress of each other, their coping behaviors become coordinated (Kayser & Scott, 2008). Mutually responsive couples are in fact able to implement either problem-focused or emotion-focused strategies, which promote a sense of growth as individuals and as a couple. On the contrary, a disengaged avoidant pattern of coping is characterized by the persistent appraisal of cancer as an individual stressor, and partners' communication lacks expression of emotions and feelings. Other couples are not able to identify that a change has, indeed, happened or, on the contrary, to recover from the sense of loss experienced. Hence, at least one partner copes by avoiding or denying the effect of cancer or the coping strategies are limited to problem-solving, with a cascade effect on other significant relationships. The outcome is that partners cannot find any benefit from the experience (Kayser et al. 2007; Kayser & Scott, 2008; Kayser et al., 2011).

**Figure 2.** Relational-Cultural Coping Process  
(Edited from Kayser & Scott, 2008)



Influenced by the Systemic-Transactional Model of dyadic coping (Bodenmann 1995; 2005), and by the Stress and Coping Theory (Lazarus & Folkman, 1984), a unique aspect of this conceptualization is the reliance on the Relational-Cultural Theory, a perspective that explains the individual sense of self as being in relation (Jordan, Kaplan, Miller, Stiver, & Surrey, 1991; Miller, 1984). According to this framework, the goal of human development is the acquisition of relational competence, which can be achieved by engaging in growth-fostering relationships. The theory has been used in previous works (Kayser, et al., 1999; Bekteshi & Kayser, 2013) investigating breast cancer patients' adaptation to illness and the impact of cancer on the relationship between mothers and daughters. Results from these studies highlight that coping abilities are deeply influenced by the quality of ongoing close relationships (Kayser et al., 1999). When the researchers have investigated dyads of mothers and daughters, qualitative

analyses have shown that relational growth in the cancer aftermath was associated with interpersonal skills like anticipatory support, authenticity, mutual empathy and empowerment (Bekteshi & Kayser, 2013). Therefore, it follows that the model places the ability to cope with cancer-related stress within the relational competencies of the dyad, and not just as the result of individual coping strategies.

However, this conceptualization presents some limitations. First, as its use in the literature is limited, these initial results have not been confirmed in quantitative studies and a revision of the Stress and Coping Theory that includes couple relational qualities is in process but not yet completed (Kayser & Scott, 2009b; Saita, 2011). Second, the model does not address the importance of developmental and contextual aspects; which have been investigated in more recent works (Berg & Upchurch, 2007).

### ***Developmental-Contextual Model***

The most recent contribution to the theoretical reflection about dyadic coping is the Developmental-Contextual Model (Berg & Upchurch, 2007). Starting from a critique of previous conceptualizations, Berg and Upchurch introduced the idea that dyadic coping changes across the adult life-span, historical times, daily interactions with dyadic stressors and it is influenced by the context (Berg & Upchurch, 2007). Authors emphasize that appraisal and adjustment can be influenced by normative modifications in self-development of the two partners, their emotion regulation abilities, and marital processes. All of these may vary as a result of sociological and historical events. In addition, appraisal and coping efforts take place over time as the couple moves along the different stages of the chronic illness (Berg & Upchurch, 2007; Revenson & DeLongis, 2011).

Developmental differences are anticipated between younger and older couples based on the literature that indicates the presence of higher satisfaction and intimacy in long-term marriages (Carstensen, Graff, Levenson & Gottman, 1996; Lauer, Lauer, & Kerr, 1990). Better competence in the ability to regulate emotions and appraisal of stress are also reported in older individuals, which tend to show greater mutuality and less maladaptive coping (Aldwin, 1994; Diehl, Coyle, & Labouvie-Vief, 1996; Folkman, Lazarus, Pimley & Novacek, 1987; Labouvie-Vief, 2003). The second developmental aspect is the temporal process of dyadic coping. In their reflection the authors cite results from studies that have highlighted the changing nature of dyadic coping over time, especially in the case of an illness (Fang, Manne, & Pape, 2001; Helgeson, Snyder & Seltman, 2004; Martire, Stephens, Druley, & Wojno, 2002; Schulz & Schwarzer, 2004). Again, age-related differences have been identified because younger individuals report greater distress and reduced ability to perform collaborative coping (Helgeson et al., 2004; Revenson & Pranikoff, 2005). In contrast, older adults become better able to cope effectively (Revenson, 2003). Finally, among the contextual variables that affect interdependent appraisal and dyadic coping it is possible to list cultural and gender differences, the quality of the marital relationship, and the type of chronic illness (Berg & Upchurch, 2007).

Consistent with the social contextual perspective (Rogoff, 1998; Vygotsky, 1987), coping strategies are viewed in relation to those enacted by the other partner, and vice versa. In their approach to dyadic coping Berg and Upchurch (2007) examine illness representations, illness ownership and stressor appraisal of both members of the dyad. Four configurations of dyadic coping are identified, ranging from un-involvement to

over-involvement (Berg, Meegan, & Deviney, 1998; Meegan & Berg, 2002). The construct of collaborative coping is defined as “the active engagement of spouses in pooling resources and in joint problem-solving and coping” (Berg et al., 2008, p. 506)<sup>7</sup>. Collaborative strategies are characterized by partner’s equal involvement and shared decision-making (Meegan & Berg, 2002); in contrast to uninvolved<sup>8</sup>, supportive<sup>9</sup>, and control strategies<sup>10</sup>. Collaborative coping serves two major functions: resource and relationship enhancement (Iafrate & Donato, 2012).

In recent years the model has started to be applied to the study of couples’ experience with cancer. Collaborative coping was associated with positive mood not only for patients coping with prostate cancer, but also for their partners. This relationship was mediated by patients’ and partners’ effectiveness of coping; a result that suggests that the perceptions to engage in behaviors that promote the couple relationship may be as relevant as the actual behaviors (Berg et al., 2008; Regan et al., 2015a). Changes in physical health of the patient and depressive symptoms in couples coping with lung cancer were examined by Lyons et al. (2014). The interdependence of the participants’ well-being over time was confirmed: pain severity was significantly associated with depression in both partners, while physical function of patients was negatively associated with depressive symptoms (Lyons et al., 2014). More recently, a cross-sectional study by Magsamen-Conrad, Checton, Venetis and Greene (2015) examined communication efficacy and couple’s cancer management. In this group patients’ confidence in the

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<sup>7</sup> This definition of collaborative dyadic coping presents similarities with the concept of common dyadic coping introduced by Bodenmann (2005), yet the authors haven’t addressed how collaborative coping diverges from previous conceptualization of dyadic coping and from similar coping styles presented in the literature.

<sup>8</sup> Individual coping strategies in which partners act on their own.

<sup>9</sup> Instrumental or emotional supportive responses.

<sup>10</sup> Coping behaviors characterized by over-involvement and behavior control.

ability to communicate about cancer predicted their ability to manage their needs, while for partners their confidence predicted their own and their patients' ability to cope with the illness.

Although these results provide initial support for the model, it is necessary to comment on the fact that none of the publications currently available in the literature have compared the experience of couples across the life trajectory, nor cohort or historical/contextual variables have been included in the analysis<sup>11</sup>. Also, the authors appear to have created the model “ad hoc” integrating findings from the literature and other conceptualizations, while a practical application of the model appears to be difficult. Further research is needed to understand how couples' appraisal, coping and adjustment are shaped by developmental, temporal and contextual factors.

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<sup>11</sup> Referring to the articles identified by Regan et al. (2015a) as well as to a independent search, it is possible to identify that four articles currently have applied the Developmental- Contextual Model: Checton, Magsamen-Conrad, Venetis, and Greene (2015); Berg et al., (2008); Lyons et al., (2014), and Magsament-Conrad, Checton, Venetis, & Greene (2015). Checton et al. (2015) measured support as proxy for dyadic coping; Berg et al. (2008) utilized a non-standardized 12-item questionnaire developed by the first author; Lyons et al (2014) did not includ coping in their design; while Magsamen-Conrad et al. (2015) included communication efficacy as a proxy for patient and partner coping. No indication is provided about the inclusion of age in the statistical analysis.

## **Toward a Conceptualization of Dyadic Coping to study Couples' Adjustment to Cancer**

In the process to identify an appropriate conceptualization of dyadic coping to study couple's adjustment to cancer, a researcher is then confronted with the number of models currently available in the literature. Although each of them emphasizes different features, they share some conceptual similarities. First, they all converge on the fact that dyadic coping involves the reciprocal engagement in strategies to support the coping effort of the partners. Hence, both members of the couple are involved in conjoint coping processes as the result of a shared appraisal. Second, these behaviours - which can range from active engagement to disclosure of emotions- contribute to increased communication, higher satisfaction, and reduced distress. Finally, another similarity is that negative style of dyadic coping, avoidance and protective buffering have a detrimental effect on the individual's well-being and the couple relationship (Regan et al., 2015a; Traa et al., 2015b).

However, some of the models fail to address the relevance of the relationship and its characteristics in determining the type of appraisal, coping strategies and outcomes associated with experiencing the stressful event. Recent data support the use of a systemic model of dyadic coping versus a congruent/discrepant approach (Bodenmann et al., 2011; Regan et al., 2015a). Bodenmann, Meuwly and Kayser (2011) compared the congruence model proposed by Barbarin et al. (1985) and Revenson (1994; 2003), with a systemic model of dyadic coping (Systemic-Transactional Model). Results indicate that the latter is a stronger predictor of relationship quality and health outcomes (Bodenmann et al., 2011). More recently, Regan et al. (2015a), have tried to identify the main

theoretical frameworks in the context of dyadic coping and cancer. Based on their results, the authors affirm that models able to “incorporate the interdependence of emotional responses and coping behaviors” (ibidem, p.1) present better support. Despite the scarcity of this type of studies, it is possible to affirm that the different models represent also an evolution in the understanding of dyadic coping, and that over time conceptualizations that are truly relational and dyadic are emerging in the literature.

The model proposed by Kayser et al. (2007) appears to be appropriate to address couple’s coping with cancer for three reasons. First, it integrates significant contributions of previous models while maintaining its unique relational perspective. For example, clear are the influences from the Lazarus and Folkman (1984) model of stress and coping and Bodenmann’s theory of dyadic coping as systemic-transactional (Bodenmann, 1995; 1997). Similarly, this conceptualization validates emotional and problem-solving strategies. Moreover, the model appears to be able to capture the relevance of the relationship in shaping coping efforts. In this sense, the model places the ability to cope with cancer as a product of the relational characteristics of the couple, not the individual. It is critical that the couple is able to coordinate their resources, not that both members have those specific resources. On the contrary, other models and conceptualizations have been focusing on the individual coping strategy, without acknowledging that those strategies are placed within a story and a context. Furthermore, the authors place dyadic coping within the cultural context, highlighting that relational qualities and coping approaches are “embedded in culture” (Jordan, 2009). In this sense the model is able to include the recommendation of Revenson (Revenson et al., 2005; Revenson & DeLongis, 2011) and Berg and Upchurch (2007) about the relevance of the environment and

addresses the power of socioeconomic status, gender and race in influencing couples' experience. Finally, the model is also the only one developed from a sample of couples coping with cancer and to identify different and unique challenges associated with the course of the illness. The other models have been developed with the goal to examine dyads coping with chronic illnesses and everyday stressors. Couples coping with cancer experience a unique set of stressors (medical, instrumental, social, emotional and existential) that are significantly different from the ones of everyday life (Kayser, 2005). Hence, a model that focuses on the specific demands and needs the illness originates in the couple appears to be promising. The Relational-Cultural Model represents an encouraging direction for future work as it is able to integrate temporal and contextual dimension, next to the focus on the role of relationships in determining individual's well-being and growth. In the following paragraph the conceptual framework of the study is presented, and the theoretical framework that supports this model is reviewed in the second part of the chapter.

### ***Conceptual Framework***

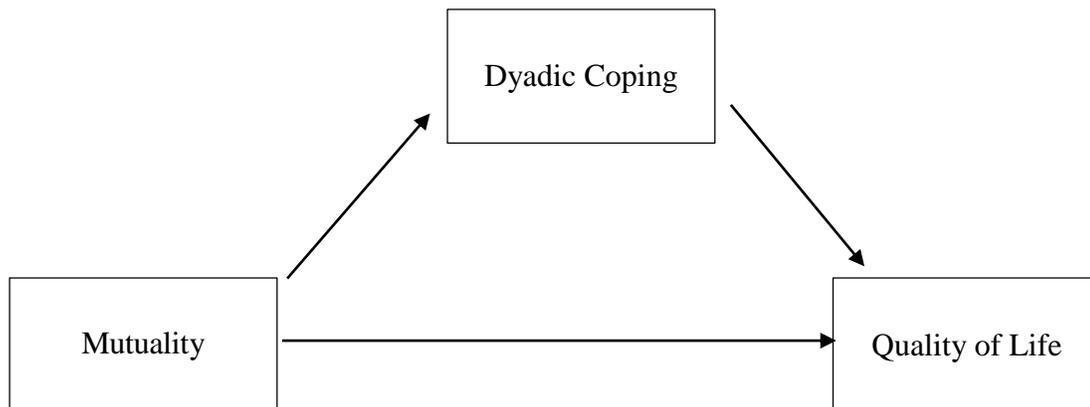
A strong body of evidence has been collected about the role dyadic coping has in promoting quality of life of both members of the dyad. However, despite the extensive knowledge about couples coping with illness developed in the last twenty years, several gaps can be identified in the literature. First of all, a clear understanding of the mechanism through which dyadic coping originates and contributes to both relational and individual outcomes is still elusive. Second, the attention to the developmental trajectory of dyadic coping over the life-span is a significant gap in the current literature and a paucity of studies have specifically investigated these areas. The present research study

therefore is aimed at examining how younger couples cope with breast cancer, by comparing the experience of couples at different developmental moments. By doing that, the study tests the Relational-Cultural Model of dyadic coping (Kayser et al., 2007). According to this conceptualization, appraisals and responses to cancer originates from relational characteristics of the partners. In particular, mutuality is defined as the ability to be empathic with the partner and to participate in a shared experience (Jordan, 1997; Kayser et al., 2007; Kayser & Scott, 2008). The presence of this relational ability is associated in this conceptual framework to coordinated forms of dyadic coping, which ultimately lead to individual's quality of life (Figure 3). Hence, it is hypothesized that dyadic coping mediates the relationship between mutuality and quality of life of each member of the dyad, with positive forms of dyadic coping contributing to higher quality of life, while maladaptive coping strategies are expected to affect the beneficial impact of mutuality on well-being<sup>12</sup>. Initially, it was planned to control for socio-demographic variables, in particular age and length of relationship. However, given the small sample size and the requirements of the statistical analyses implemented, it was not possible to adhere to the original plan and for this reason this indication is not shown in the figure.

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<sup>12</sup> Since this was the first empirical testing for the model it was preferred to formulate non-directional hypotheses to explore the relationship among these constructs.

**Figure 3.** Conceptual Framework of the study



## **Systems Theory**

### ***Review of Systems Theory***

Contemporary theories about family functioning and models of family resilience derive from General System Theory (GST) (Von Bertalanffy, 1969). It is organized around the concept of system, whose definition as a “set[s] of elements standing in interrelation among themselves and with the environment” (Von Bertalanffy, 1975; p. 159) already summarizes some key features. First, the theory states that all elements of a system are interconnected (*interdependence*) and that the behavior of each component is characterized by mutual influence (White & Klein, 2008). Another core assumption is that of holism: a system can only be understood as a whole and cannot be comprehended by analyzing its composing parts in isolation from each other (*wholeness or nonsummativity*) (Whitchurch & Constantine, 1993; White & Klein, 2008). Human systems are self-reflexive. *Self-reflexivity* allows human beings to examine themselves, their behavior and establish goals. Communication is what allows self-reflexivity to occur because it facilitates the creation of meaning and the simultaneous exchange of symbolic

content (Whitchurch & Constantine, 1993). Despite a natural tendency to reach and to maintain a balance (*homeostasis*), a system constantly exchanges and interacts with its environment and restructures its internal functioning to more effectively answer to the changes in the environment (*morphogenesis*) (Whitchurch & Constantine, 1993; Gurman & Kniskern; 2003). As the concept of boundary defines who is included and who is not, systems are usually classified as open or closed. However, boundaries may have different permeability which limits the amount of information in and out of the system (Whitchurch & Constantine, 1993). Finally, systems are characterized by internal rules of transformation and variety. Rules of transformation describe the relationship existing between two elements of the system while variety indicates the resources available to the system to adapt to changes or to meet the demands of the environment (White & Klein, 2008). Systems with more variety are more able to adapt to a constantly changing environment, while for systems with limited variety adaptation to changes appear to be more rigid (White & Klein, 2008).

### ***Relevance of Systems Theory for the study of Dyadic Coping***

Systems Theory contributes to our understanding of dyadic coping by highlighting the fact that both partners are affected by the cancer experience, and their reactions are actually interdependent. As reviewed in the first part of the chapter, several studies have confirmed that the well-being of patients and partners is associated with the reaction of the other member of the dyad. It is then possible to affirm that partners act as an emotional system. As a consequence, by conceptualizing the couple as a unit that influences the functioning of each person (Bowen, 1978), Systems Theory also indicates that the couple system can only be understood as a whole. This has far-reaching

consequences for researchers interested in studying dyadic coping, since it implies that couple assessment and measure of dyadic coping have to be conducted on the dyad rather than on individuals. Third, Systems Theory indicates that a system's behavior affects the environment and vice versa. This is critical for dyadic coping, because the theory already highlights that the couple is influenced by the larger social environment. Dyadic coping is then understood as a product not only of partner's characteristics and their relationship, but also of the influence of outside forces. Similarly, the concept of boundary is helpful to explain the relation between the couple and the environment. Because there are not completely closed or open systems, every dyad has different "degree of permeability" (White & Klein, 2002; 2008) to the influences of the outside.

### ***Limitations***

Despite the strengths highlighted earlier, Systems Theory has some limitations. The theory has been criticized for being an abstraction because concepts can be difficult to operationalize for research purposes. It is then considered more a philosophical perspective, as it provides universal explanations and a general understanding of family and couple interactions (Bowen, 1978), but not the details that are necessary for empirical testing (White & Klein, 2002; 2008; Whitchurch & Constantine, 1993).

## **Transactional Theory of Stress and Coping**

### ***Review of the Transactional Theory of Stress and Coping***

The Transactional Theory of Stress and Coping, originally developed by Lazarus and Folkman (1984), has been extensively used to investigate the individual adaptation to stressful events for more than thirty years (Folkman & Moskowitz, 2004; Folkman, 2011;

Stanton, Revenson, & Tennen, 2007). The theory integrates Behaviorism (Dember, 1974; Lazarus, 1966) and Cognitive Theory (Beck, Rush, Shaw, & Emery 1979; Ellis, 1957) to examine personal, environmental and situational factors as antecedents of psychological outcomes.

Different from other authors, Lazarus's view of stress was not associated with a single event, but rather it was the result of a transaction (process) between the individual and the environment. While Cannon's "fight or flight" responses to stress (Cannon, 1932), and the General Adaptation Syndrome research by Selye (1956) focused on the individual's automatic reaction to the environment, the theory developed by Lazarus and Folkman moved the attention to psychological factors and the concept of appraisal. Therefore, the most emphasized assumption is that stress results from the individual's response to the event (Lazarus, 1990; 1993; Lazarus & Folkman, 1984). Hence, the impact of an external stressor is mediated by people's appraisal, which then influences the emotional arousal (Folkman & Lazarus, 1988). In this sense, it is possible to affirm that appraisal represents "the primary mediator of the person-environment transactions" (Lyon, 2012; p. 9). The authors identify three types of appraisals: primary, secondary and reappraisal. When confronted with a stressor, individuals evaluate the threat, loss or challenge posed by the situation (primary appraisal) as well as the resources available to cope with it (secondary appraisal). The event is then considered stressful based on the individual perception of availability of resources. Appraisal is a complex evaluative process, as the introduction of the concept of reappraisal indicates. People continually evaluate, change or re-label primary and secondary appraisals while the situation evolves over time (Lazarus & Folkman, 1984).

Within the cognitive-transactional model, coping is defined as the “constantly changing cognitive and behavioral efforts used to manage specific external and/or internal demands that exceed the resources of the individual” (Lazarus & Folkman, 1984; p.141). Two forms of coping have been identified by the authors and in the subsequent literature: problem-focused coping and emotion-focused coping<sup>13</sup>. While in its original formulation coping was considered a personality trait, more recent contributions define coping as a process that changes over time and is influenced by situational factors. It is now considered a multidimensional construct, where personal, contextual and social factors are critical (Alberisio e Viterbori, 2002; Solano, 2001; Zani e Cicognani, 2002).

### ***Relevance of the Stress and Coping Theory for the study of Dyadic Coping***

The Stress and Coping Theory has provided a strong conceptual base to evaluate and understand the individual’s adaptation to stressful events, becoming the theory of reference for researchers interested in coping. It is therefore necessary to reflect on its contribution to our understanding of dyadic coping.

First, the model places strong emphasis on the importance of appraisal. According to Stress and Coping Theory, individuals’ emotional and behavioral responses to health threats are influenced by subjective interpretations, which are cognitive and emotional. In this sense, when focusing on dyadic coping couples evaluate the stress they have to face and that they can perceive it as impacting both members of the couples or only the individual. If the members of the couple perceive the stress as affecting the both of them,

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<sup>13</sup> Emotion-focused coping strategies are aimed at reducing the emotional responses caused by the event and include wishful thinking, minimization, avoidance, or denial. On the contrary, problem-focused coping is mainly used to alter the stressor by action, using problem-solving skills (information seeking, evaluating the pros and cons, taking control). Problem-focused coping strategies are most adaptive for stressors that are changeable, whereas emotion-focused strategies are appropriate when the stressor is appraised as uncontrollable or when problem-focused attempts have been exhausted (Folkman & Greer, 2000; Lazarus & Folkman, 1984; Wenzel, Glanz, & Lerman, 2002).

then they will engage in a process of conjoint coping. As our understanding of the process that leads to dyadic coping is still limited, this process is unclear. However, the core element from the Lazarus and Folkman model (1984) is the idea of coping as a transaction between the two partners, and between the couple and the environment. Hence, dyadic coping takes place within the couple relationship and within the multiple social systems the partners are part of.

Another critical aspect is the fact that dyadic coping must be studied as a process, as it changes over time. Research has shown that couples often face different challenges at different phases of the illness (i.e., before diagnosis, during and after treatment, and approaching survivorship), which forces them to master different coping skills (Gray et al., 2000). Thus, the Stress and Coping Model provides a theoretical basis for studying the dynamic coping process over time. Finally, it supports our understanding of the coping strategies used by couples, as the distinction between problem-focused and emotion-focused coping strategies has been applied also to dyadic forms of coping.

### ***Limitations***

Despite its relevance, the Stress and Coping Theory has some limitations that impact its use in studying the experience of couples coping with cancer. First, the model has been developed to explain individual's reaction to general stress. It therefore fails to address the specific aspects of a stressor that affects the dyad. Second, despite the theory highlights the relationship between the individual and the environment, little attention has been given to the context. Third, the most relevant limitation is its highly individualistic perspective which focuses on the relationship between stress, appraisal and coping and minimizes the influence that others may have on adjustment process. Individuals are

perceived as functioning independently, without addressing the role of significant relationships for human development and well-being. The model states that individuals independently choose coping strategies and devote coping efforts to manage the stressor (Lazarus & Folkman, 1984; Wenzel, et al., 2002). Such an individualistic perspective has concealed individuals' need for relationship and for interdependence, and thus, has given insufficient attention to the importance of other social, situational and environmental factors (Lyons, Mickelson, Sullivan, & Coyne, 1998; Iafrate & Donato, 2012). This limitation is particularly relevant when focusing on couple's adjustment to illness, since it has been demonstrated that cancer patients and their partners are interdependent with one another, and function as system (Hagedoorn et al., 2008).

However, this theoretical perspective is so central to the understanding of dyadic coping that researchers have tried to modify it rather than developing a new one. For example, Northouse, Kershaw, Mood, and Shaughenacker (2005) modified the Transactional Model of Stress and Coping to study coping efforts and outcomes of both cancer patients and family caregivers. Two major changes were introduced. First, Systems Theory was integrated to reflect the interdependence in coping responses. Second, illness-related factors that may influence how patients and their family members appraise and cope with an illness were included. Similarly, Scott & Kayser highlighted (2009b) that the Transactional Theory of Stress and Coping should be reviewed to examine the role of meaning-based coping. They proposed a revision of the model able to capture the relational qualities of the couple and the connection between dyadic coping, individual coping and relational satisfaction. While these efforts are still ongoing, the theory maintains a central role in our understanding of couples coping.

## **Relational-Cultural Theory**

### ***Review of Relational-Cultural Theory***

Relational-Cultural Theory views connections as the primary organizer and source of motivation for the individual (Jordan, 2009). A reaction to developmental and clinical theories organized around the importance of the separate self -which praises autonomy, self-boundaries, and individuation (Jordan, Kaplan, Miller, Stiver, & Surrey, 1991)- the theory states that human development is based on the ability to develop connections and being interdependent (Jordan, 2009). Core concepts are that human beings grow through and toward relationships across the whole life-span and that mature functioning is characterized by mutuality (Comstock, Hammer, Strentzsch, Cannon, Parsons, & Salazar, 2008; Freedberg, 2015; Jordan, 2000; 2009; Jordan & Hartling, 2002). This movement toward mutuality is essential for successful coping and healthy development, because in relationships characterized by mutuality individuals are genuinely interested in the other as a whole, complex person and are aware of the other's subjective experience (Jordan, 1991).

Theorists assuming this perspective believe that the goal of development is the creation of increased relational competence, which can be achieved by engaging in growth-fostering relationships characterized by empathy and authenticity (Comstock et al., 2008; Freedberg, 2015; Jordan & Hartling, 2002). Empathy is defined as a cognitive and affective capacity for “resonance and responsiveness to others” (Jordan, 2009, p. 4) and mutual empathy is the process that allows for growth in relationships, as individuals feel better able to participate in the shared experience (Jordan, 1997). Authenticity is defined as the ability to disclose feelings (Spencer, 2005). According to Jean Baker

Miller (Miller, 1976; 1989; Miller & Stiver, 1997) growth-fostering relationships have five outcomes: a sense of energy, better understanding of the self, increased capacity for action, increased sense of worth and desire for connection (Jordan & Hartling, 2002; Miller, 1976). Problematic on the contrary are disconnections that cannot be addressed and reworked which lead to rigid relational images. These are internal constructions and expectations originated earlier in life (Miller & Stiver, 1997). When they are fixed and cannot be changed, the individual experiences a condition of isolation (Miller, 1989). However, healing can occur in the context of growth-fostering relationships (Comstock et al., 2008).

A second specific characteristic is its being “cultural”. Relational-Cultural Theory recognizes that marginalization, privilege and cultural forces are central for the psychological development (Comstock et al., 2008). In this sense, culture is an active element that shapes relational processes, as relationships take place in contexts influenced by factors like race, gender, class, physical ability and religion (Walker, 2005). This attention to increasingly complex cultural, social and relational environments mirrors the evolution of the theory. Relational-Cultural Theory was initially developed within a feminist framework, which criticizes the way traditional theories have misrepresented women’s experiences. Inspired by the seminal work of Carol Gilligan (1982), who highlighted that women make decisions based on sense of responsibility and care, Miller developed the first version of the theory. In her ground-breaking book (1976) she argued that role, function and social structuring of gender are connected with understanding women’s identity development. As a consequence, the “self-in-relation” theory emphasized the fact that for women “the core sense of self is organized, developed and

maintained in the context of important relationships through life” (Surrey, 1991 cited in Freedberg, 2009, pg. 24). In the early 1990s the theory was renamed the Relational-Cultural model to emphasize relational processes among individual and contemporary factors that impact relationships (gender, class, ethnicity and sexual preference) and contribute to a politics of dominance (Miller & Stiver, 1997).

### ***Relevance of the Relational-Cultural Theory for the study of Dyadic Coping***

While previous theories contribute to the definition of dyadic coping, Relational-Cultural Theory (Jordan, 2009) is essential to understand the function of dyadic coping. Through these theoretical lenses, dyadic coping is aimed at protecting patients and partners’ ability to be in a relationship with a significant one. At the same time, the theory highlights the importance of mutuality, authenticity and empathy. In this sense dyadic coping enhances the development of the individual by engaging in growth-promoting relationships. It is particularly interesting to think that dyadic coping represents not only a reaction to the stressful event, but that through the protection of the relationship with the other it contributes to define, preserve, and promote the individual’s sense of Self.

The theory contributes to understand adaptive or maladaptive coping strategies, as they are influenced by the nature of the relationship. Relational-Cultural Theory states that when “one person misunderstands, invalidates, excludes, or humiliates” the other (Jordan, 2009, p. 25), then partners will learn to suppress their needs or will engage in a series of attempts to try to fit in (Comstock et al., 2008; Freedberg, 2015; Jordan, 2009). This then creates a condition of inauthenticity, isolation and disempowerment. Maladaptive coping strategies characterize couples where a partner is perceived unavailable to accept and support the needs of the other. Furthermore, the theory attempts

to identify culture as an active agent in relational processes (Freedberg, 2015; Walker, 2005). Hence, dyadic coping takes place within the larger social context and under the influence of factors like race, class, and gender.

Finally, Relational-Cultural Theory includes aspects of the work of Melanie Klein and Karen Horney, next to interpersonal psychoanalysis (Sullivan, 1940), object relations (Bowlby, 1988; Fairbain, 1952, Winnicott, 1960), and self-psychology (Kohut, 1978). These approaches, which have found more fertile ground in the European literature, emphasize the importance of the individual's sense of Self and the interactions between the individual and the object, highlighting that nature and quality of the interaction with others ultimately determine the individual's well-being (Freedberg, 2009). More recently, support for the relevance of human connection for the individual's well-being has been found in interpersonal neurobiology and Social Brain Theory, since for both Siegel and Cozolino human connections shape the structure and function of the brain (Cozolino, 2006; Siegel, 2012).

### *Limitations*

One possible critique to the use of this theory as theoretical foundation for the study of dyadic coping is that the Relational-Cultural Theory was initially developed from a feminist perspective. However, it has undergone several revisions in the last thirty years and it now represents a psychological theory applicable to both men and women. The recognition of differences among the developmental experiences of the two genders is actually helpful, as we have seen that men and women report different coping mechanisms in response to the cancer experience, as well as diverse reactions to the partner's coping behavior. In this sense, different coping strategies will be seen as the

result of different developmental processes: through attachment and affiliation for women and through autonomy and separation for men (Gilligan, 1982; Miller, 1976). A second limitation of the present theory is its utilization in Social Work, while it was originally developed in Psychology. However, it appears fully compatible with the principles and values of the discipline. Not only it provides a contextual relational view of the Self consistent with the person-in-environment view of the field, but it is also in line with the ethical principles of importance of relationship, dignity and worth of person, and social justice (Freeman, 2000).

## **Life Course Developmental Framework**

### ***Review of the Life Course Developmental Framework***

The Life Course Developmental Framework originates from the integration of three complementary theoretical approaches: Individual Life Span Theory, Family Development Theory, and Life Course Theory (White & Klein, 2008; White, Klein & Martin, 2015). Although each theory's contribution is unique, they have been combined in a single framework because of existing similarities. First, they focus on family factors that can affect the ontogenetic development of the individual. Second, all three theories consider the effect of time on individual and group change. Finally, individual and family change is considered to be part of the larger framework of birth cohort, historical period, and individual age factors (White & Klein, 2008; White et al., 2015).

Individual Life Span Theory is organized around the study of the ontogenetic development of the individual and of the factors that affect it (White & Klein, 2008; White et al., 2015), attempting to extend models developed for children development to

adults. Introduced in the early '60s, Family Development Theory focus on the concept of stage (Duvall, 1957; Duvall & Hill, 1948; Smith & Hamon, 2012; White, 1991). Stages are periods of “relative equilibrium in which consensus about the allocation of roles and rules of procedure is high” (Hill, 1986, p. 21). Qualitatively different from each other, the passage from a stage to another is associated to normative events like marriage, childbirth, developmental and educational milestones. Families undergo change and development through time, both in terms of roles of the members and stages, which occur through transitions<sup>14</sup> (Hagestad, 1988). Once considered similar and predictable over the life course, transitions from one stage to another have now more variation among family systems (Laszloffy, 2002). Tasks are associated with each stage of development, and the inability to move across stages may limit the family’s optimal level of functioning. Family’s behavior is regulated by institutional norms that control “which events are permitted, required, and forbidden; the order in which families should sequence stages; and the duration of those stages” (White, 1991, p.57).

For the purpose of the present work, the last theory included in the framework assumes a significant relevance. In its original version, Life Course Theory integrates psychological developmental theories and sociology to identify agents of change across the life of the individuals (Elder, Johnson & Crosnoe, 2006). It proposes that in order to understand peoples’ growth and adaptation to major life events, the focus of analysis

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<sup>14</sup> The original eight-stage model includes married couple, childbearing, preschool and school age, teenage years, middle aged parents and aging family members (Duvall & Miller, 1985). More recently, Laszloffy (2002) proposed a new model that integrates Family Systems Theory, Family Stress Theory and a multigenerational perspective to support that the developmental pattern of each family is unique. From her perspective each family can be described as a cake, where each layer represents a generation experiencing a different stage of development. As a consequence, the investigator has to study the relations between the layers and the challenges associated with each new stressor the family encounters to account for between and within variations (Smith & Hamon, 2012).

should be the lived experiences of individuals in contexts (Elder, 1998; 2000; 2002). According to this theoretical perspective, events are combined in trajectories that are compared across persons or groups, focusing on differences in timing, duration and rates of change within a given social milieu (Elder, 1998:2000; 2002; Elder & Shanahan, 2006). Social norms or shared expectations about the timing of events and role transitions will dictate the classification as either “off-time” (unexpected) or “on-time” (expected) events (Hutchison, 2008). Life Course Theory includes five paradigmatic principles: 1) human development and aging are lifelong processes; 2) individuals build their own life course through choices and actions that are influenced by historical and social circumstances; 3) the life course is embedded by historical context and place; 4) the meaning of life transitions, events and behavioral patterns can change based on their timing in the life experience of the individual; and 5) socio-historical influences can manifest themselves through the impact on interdependent relationships. These principles promote awareness of the larger social context and history and about the different timing of events and role change associated with a specific cohort (Elder, Johnson & Crosnoe, 2006; Elder & Shanahan, 2006). Furthermore, the life course perspective has been successfully applied to the study of families (Smith & Hamon, 2012; White et al., 2015).

***Relevance of Life Course Developmental Framework for the study of Younger Couples Coping with Cancer***

A limited number of studies have explicitly examined age differences in coping during adulthood and trajectories of dyadic coping over the life course (Folkman, 2011; Revenson & Lepore, 2012). However, a developmental approach offers multiple elements of reflection for the study of couples coping in cancer.

First, if we consider the development of coping abilities through the life-span, evidence from the literature presents mixed results. While some studies show no differences, others suggest that an individual's coping competences increase with age (Aldwin, 2010; Aldwin, Skinner, Taylor, & Zimmer-Gembeck, 2011; Blanchard-Fields, Sulsky, & Robison -Whelen, 1991; Felton & Revenson, 1987; Irion & Blanchard-Fields, 1987; Verhaeghen & Hertzog, 2014). In one of the first cohort studies, younger individuals reported more confrontative coping and social support than the older cohort. The younger cohort also experienced higher levels of daily stressors in the domains of finance, work, personal life and family relations (Folkman, Lazarus, Pimley, & Novacek 1987). Over time older adults use fewer hostile and avoidant strategies (Aldwin, 1991; 2010; 2011; Aldwin, Sutton, & Lachman, 1996; McCrae, 1989), less rumination, emotional numbing, and wishful thinking (Wadsworth et al., 2004). Both cross-sectional and longitudinal studies suggest that the use of mature defense mechanisms increases with age (Bond et al., 1983; Diehl et al., 1996; Vaillant, 1977; 1993). It then appears likely that coping changes with age during adulthood and that, with experience, individuals develop better emotion regulation and more effective collaborative coping skills (Aldwin et al., 1996; Aldwin, 2010; Rothermund & Brandstadter, 2003).

Second, coping may be more difficult for younger couples because of the stage in their family development and for the specific sources of stress experienced by Millennials (18-35 y.o.) and generation Xers (36-49 y.o.). As described by the American Psychological Association (2015), younger generations of Americans report higher levels of stress, often associated to financial insecurity and un-healthy life-styles (APA, 2015) when compared to earlier generations. However, not only cohort effects are to be

considered, as both developmental and contextual interpretations have been supported (Folkman et al., 1987). Hence, the developmental framework contributes to our understanding of how younger and mature couples differ by examining not only the individual mastery of coping skills through the life-span, but also focusing on couple relations through time. While there is little disagreement that marital satisfaction decreases with time (Bradbury & Karney, 2014), the literature about close relationships has provided over the last decades evidence for more numerous relational and psychological difficulties for newlyweds and younger families (Amato & Hohmann-Marriott, 2007; Bradbury & Karney, 2014; Carra' Mittini, 1999; Carstensen et al, 2011; Carstensen, Fung, & Charles, 2003; Chalmers & Milan, 2005; Luong, Charles & Fingermann, 2011; Scabini & Cigoli, 2000; Scabini & Iafrate, 2003; Scabini & Rossi, 2012; van Steenbergen, Kluwer, & Karney, 2011; Woszidlio & Segrin, 2013).

Researchers have recently discovered the existence of different trajectories within the first years of marriage which are associated to marital dissolution. The most significant reduction in marital satisfaction is reported in couples who had low satisfaction at baseline (Lavner, Bradbury, & Karney, 2012) or greatest expectations about the quality of their relationships (Lavner, Karney & Bradbury, 2013). Increased rates of divorce after 4 and 10 years of marriage were associated to personality traits, stress, aggression and poor communicative behaviors (Lavner & Bradbury, 2010). Investigations of the effects of personality traits and stressful events on marital satisfaction in recently married couples confirmed that partners' occupation, work interference, and family stress were negatively associated with marital satisfaction in younger couples (van Steenbergen, Kluwer, & Karney, 2011; Woszidlio & Segrin, 2013). Furthermore, economic hardship

has been associated with higher rate of conflict (Halliday Hardie & Lucas, 2010), lower life satisfaction, higher pessimism (Haid & Seiffge-Krenke, 2013) and negative communication (Williamson, Karney, & Bradbury, 2013) for this group. In contrast, a study by Neff and Broady (2011) highlighted that adaptation to moderately stressful events early in the marriage is associated to reduced stress spillover effect, greater self-efficacy and marital adjustment; suggesting that practicing stress adaptation strategies in the early years of marriage can lead to increased ability to cope with stress at a later stage of the couple's life. It is then possible to affirm that the early years of marriage represent a crucial time for the long-term fate of the relationship and the likelihood for marital dissolution.

When dyadic coping has been investigated among different age groups and cohorts, very interesting results emerged. Initial studies showed that older couples perform consistently better than younger ones (Berg and Upchurch, 2007; Blanchard-Fields & Coats, 2008; Hoppman, Coats & Blanchard-Fields, 2008; Revenson 2003; Revenson & Pranikoff, 2005). More recent data highlighted unique aspects of dyadic coping across younger and older dyads. Iafrate et al. (2012) examined perceived similarity and understanding (i.e., the other partner's dyadic coping responses vs. self-report perception) in young and mature couples. Stereotypical similarity was higher in younger couples, while understanding was higher in mature couple relationships. The authors conclude that for younger partners unique understanding was negatively associated with relationship quality, probably because they experience a higher need of idealization of the relationship. Furthermore, dyadic coping in younger couples seems to be influenced by the example of parental figures and the perception of positive family heritage (Donato et

al., 2012; Donato, Iafrate, & Barni, 2013; Iafrate, Donato, & Bertoni, 2013). However, in a study by Bertoni et al. (2007) younger couples (3 -10 years) engaged in dyadic coping more frequently than couples who have been together for more than 20 years, showing also better performances in stress communication and marital satisfaction; a result clearly in contrast with the literature.

A recent study analyzed the moderating role of dyadic coping on the association between stress and partners' well-being in three age cohorts (Cohort 1: 20-35y.o.; Cohort 2: 40-55y.o.; Cohort 3 65-80 y.o.). Researchers revealed that couple in middle adulthood present the higher values of stress, followed by the younger group. Surprisingly, among older couples both partners reported higher negative support (Vedes, Nussbeck & Bodenmann, 2015). For younger women their well-being was affected by stress and dyadic coping-especially by negative supportive behaviors- while males' quality of life was mostly influenced by individual coping and contextual factors. Among middle-age couples the well-being of both partners was influenced by stress and dyadic coping. While for women investigators found an actor effect, the well-being of male partners appeared to be more dependent on the dyadic coping of the wife. These differences disappeared in the late-adulthood group. It is therefore possible to conclude that the relationship among stress, dyadic coping and well-being changes across the life course experience especially for men: while in the younger cohort their well-being was influenced by other variables, in middle-age the relationship between the dyadic coping style of the partner and the individual's well-being become more relevant. The authors suggest that probably men between 40-55 years of age experience difficulties managing

their roles and integrating traditional and equalitarian gender roles in the couple relationship.

For the purpose of our investigation it becomes clear that we are moving away from considerations associated only to the presentation of positive or negative dyadic coping styles in the dyad in favor of theoretical reflections that address the complexity associated with each stage of the couple experience. In conclusion, the relationship between age, stress and coping processes is highly complex, reflecting a combination of age, cohort and contextual effects that future studies need to acknowledge and account for.

### ***Limitations***

Although recent evidence suggests that this framework is widely used among family researchers (i.e. Hill, Erickson, Fellows, Martinengo & Allen, 2012; Kamp Dush & Taylor, 2012; Sassler, 2010; Thomson, Winkler-Dworak & Kennedy, 2013), two types of limitations interfere with the application of the Life Course Developmental Framework to the study of dyadic coping with cancer. The first one is more theoretical and involves the fact that Family Development Theory did not take into account divorce, death of a spouse, stepfamilies, childless couples, cohabitating or gay and lesbian couples. The theory normalizes just one type of family, disregarding the variety in family constellations and the influence of culture on the couple relationship and its associated coping behavior. On the contrary it is well known that nowadays couples are getting married later in their life, with the consequence that some stages are postponed (Qualls, 1997), while other typologies of couples will never undergo the same developmental process. Similarly, a large percentage of marriages in the USA end in divorce, with the literature estimating a range between 40% and 50% (Birditt, Brown, Orbuch, &

McIlvane, 2010; Bramlett & Mosher, 2002; Rogers, 2004). It is possible to theorize that younger couples are already dealing with more difficulties in their relationships even before the diagnosis. Another key issue is the definition of the process of development. Mattessich and Hill's (1987) view of family development was influenced by child development and relied on ontogenetic developmental perspectives. Furthermore, the model used behaviors to infer norms (White, 1991; White et al., 2015). Changes in Family Development Theory are seen as discrete jumps, while more realistically they should be conceptualized as gradual, continuous changes.

The second order of limitations is more applicative. The framework has been criticized for being only descriptive and not heuristic, affected by little predictive power. Early studies failed to include family characteristics like race, socio-economic status, ethnicity, and family structure (Karney, Kreitz, & Sweeney, 2004). On the contrary, researchers who have examined differences in coping and marital satisfaction among diverse racial groups highlight how Black americans, compare to Whites, begin their marriages with more numerous risk factors and stressors which may spill over to their marital satisfaction (LaVeist, 2005; Orbuch, Veroff, & Hunter, 1999; Veroff, 1999). For example, black couples reported lower income, were more likely to have children before marriage, and to have cohabited (Orbuch, Veroff, Hassan, & Horrocks, 2002). These stressors, coupled with the quality of interpersonal relationships, may influence couples' coping mechanism and the long term risk of divorce (Orbuch et al., 2002).

Finally, another consideration pertains the use of the theory in the study of couples coping with cancer. From the review of the literature presented earlier, it clearly emerges that age and length of relationships are the two variables used to identify younger and

older couples. However they are often confounded with each other and the literature hasn't been able to identify all the factors that contribute to the identification of a "younger couple". As beautifully described by Folkman et al. (1987) "the question is whether these findings are the result of differences in what the two age groups were coping with (the contextual interpretation), developmental stages over the life course, or cohort effects"(ibidem, p.182). Future investigations are needed to clarify which interpretation or which combination of factors contributes to explain the experience of dyadic coping with cancer across the life trajectory.

### **Summary**

*This chapter has provided a review of the foundational theoretical literature of dyadic coping. This review revealed that dyadic coping is essential to understand the experience of couples coping with a diagnosis of cancer, as it promotes adjustment, marital satisfaction, and well-being for both patients and partners. Among the models emerging through the years, systemic perspectives have received more empirical support. Among them, the Relational-Cultural model has been identified as the guiding framework for the present study because of its ability to see the dyadic coping efforts as the result of existing relational competencies, and because of its application in the context of close relationships and cancer. Hence, the resulting conceptual model of the study examining the relationship among mutuality, dyadic coping and quality of life has been presented. In the second part of the chapter theories of reference (Systems Theory, Transactional Theory of Stress and Coping and Relational Cultural Theory) have been reviewed and critiqued for their ability to contribute to the study of dyadic coping. As the study focuses*

*on a comparison of younger and older couples, the Life Course Developmental Framework has been introduced and discussed to highlight the relevance of individual and couple development in coping.*

## CHAPTER III: METHODOLOGY

*The third chapter presents the current study and its methodology. In particular, research goals and hypotheses, research design, data source, sampling, operationalization of variables and data analysis plan are outlined.*

### **Research Goal and Hypotheses**

The purpose of the study was to investigate younger couples' adaptation and coping with the diagnosis of breast cancer, by comparing them to a group of older dyads. More specifically, given the increasing interest in the psychosocial literature about the function dyadic coping has for marital quality and individual's well-being in the context of a chronic illness, the relationship among mutuality, dyadic coping and quality of life of patients and partners has been examined between these two groups to test for empirical evidence a conceptual framework inspired by the Relational-Cultural Model of dyadic coping (Kayser et al., 2007).

The following overarching research questions guided the study:

1. Does a diagnosis of breast cancer affect younger patients and their partners' quality of life, dyadic coping, communication and mutuality more negatively than older couples?

2. How does dyadic coping affect the quality of life of younger patients and their partners?
3. How does mutuality affect dyadic coping styles of breast cancer patients and their partners?
4. Does dyadic coping mediate the relationship between mutuality and quality of life of patients and their partners?

Based on the questions stated above, the following specific aims and hypotheses were formulated:

**Specific Aim 1:** To describe differences between younger and older couples on quality of life, dyadic coping, communication and mutuality

***Hypothesis 1.1:*** Younger patients with breast cancer will report lower quality of life, mutuality, communication, and higher negative dyadic coping styles compared to older breast cancer patients

***Hypothesis 1.2:*** Younger partners will report lower quality of life, mutuality, communication, and higher negative dyadic coping styles compared to older partners of breast cancer patients

***Hypothesis 1.3:*** The association of quality of life scores between patients and partners in older couples will be higher than the association of quality of life scores of patients and partners in younger couples

***Hypothesis 1.4:*** The association of dyadic coping scores between patients and partners in older couples will be higher than the association of dyadic coping scores of patients and partners in younger couples

**Specific Aim 2:** To examine the relationship between dyadic coping and quality of life for younger breast cancer patients and partners

***Hypothesis 2.1:*** Positive forms of dyadic coping (Stress Communication, Common Dyadic Coping, Positive Dyadic Coping), will be associated to higher levels of quality of life for younger breast cancer patients

***Hypothesis 2.2:*** Positive forms of dyadic coping (Stress Communication, Common Dyadic Coping, Positive Dyadic Coping), will be associated to higher levels of quality of life for partners of younger breast cancer patients

***Hypothesis 2.3:*** The relationship between dyadic coping styles and quality of life for patients and partners will be influenced by socio-demographic, clinical, relational and mental health variables

**Specific Aim 3:** To assess the actor and partner effects of mutuality on dyadic coping among breast cancer patients and partners and to identify differences by age group

***Hypothesis 3.1:*** Patients' perceived mutuality will influence their own dyadic coping style and their partners' dyadic coping style

***Hypothesis 3.2:*** Partners' perceived mutuality will influence their own dyadic coping style and the patients' dyadic coping style

***Hypothesis 3.3:*** Differences in actor and partner effects of mutuality on dyadic coping exist by age group, between younger and older dyads

**Specific Aim 4:** To test the mediating role of dyadic coping on the relationship between mutuality and quality of life of patients and partners and to identify differences by age group

***Hypothesis 4.1:*** Self-reported dyadic coping score of patients will mediate the relationship between mutuality and quality of life of breast cancer patients

***Hypothesis 4.2:*** Self-reported dyadic coping score of partners will mediate the relationship between mutuality and quality of life of partners of breast cancer patients

***Hypothesis 4.3:*** Differences exist by age group, between younger and older dyads

## **Research Design**

The study is a secondary data analysis of the baseline data of a more extensive randomized clinical trial (RCT) aimed at evaluating the effectiveness of a couple-based psychosocial intervention for breast cancer patients and their partners. The design is a cross-sectional survey of socio-demographic, clinical and psychosocial measures.

## **Data Source and Sampling**

Participants have been recruited among adult patients newly diagnosed with early-stage non metastatic breast cancer in the hematology/oncology clinics of two medical centers in the northeast of the United States. Inclusion criteria were:

- (1) having received a diagnosis of primary non metastatic breast cancer within the last 3 months;
- (2) being currently involved in a close relationship with a partner;
- (3) being older than 18 years of age;
- (4) receiving routine clinical care at the hematology/oncology clinics of the participating sites;
- (5) being able to understand English.

Individuals whose diagnosis was rated as Stage 0 were excluded from the study because the participating institutions had different clinical definitions about this condition. Similarly, women with Stage 4 diagnosis of breast cancer were excluded because of the advanced stage of the disease. The study was inclusive of heterosexual and same-sex relationships, however only one same-sex couple was enrolled. Two research coordinators employed at the two participating institutions identified and referred potential participants, according to the IRB-approved protocol. Recruiters met with potential participants at the clinic to present the study or letters were sent to them at their home address, including a study brochure, a decline card, and pre-stamped return envelopes. If interested, participants completed informed consent forms and received a survey questionnaire. Patients and partners completed their questionnaires and returned them in two separate pre-stamped envelopes. Ninety-four patients and ninety partners

returned their baseline questionnaires to the research team, with data available for 86 dyads.

An agreed definition of who is a “younger woman” with cancer is still elusive and multiple approaches have been identified in the literature, with authors classifying as “younger” women below 40 years of age<sup>15</sup>, 45<sup>16</sup>, 50<sup>17</sup> or even 60 years of age<sup>18</sup>. The literature about breast cancer usually refers to “younger women” as those in their reproductive years (Hulvat & Jeruss, 2009). According to the National Institute on Aging (2015) the mean age of menopause is at 51 for American women with a peri-menopause stage between 47 and 51. Hence, in the present study younger couples were identified as those where the patient was  $\leq 45$  y.o. at time of diagnosis. The decision to use this age as cut-off to identify the two groups in the present study is also supported by the fact that, when survivorship has been investigated in younger women with breast cancer, researchers have usually enrolled women from the age of 50, suggesting that 45 years of age would have been the time of diagnosis (Champion et al., 2014). A total of 35 dyads met this indication, and they were compared with the remaining 51 couples considered as “older couples”.

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<sup>15</sup> See: Anderson et al., 2011; Kruger et al., 2009; Pinto, 2013; Rosenberg et al., 2013; Salsman et al., 2014; Sanford et al., 2014; Thewes et al., 2005; Wenzel et al., 1999.

<sup>16</sup> See: Antoine et al., 2012; Bifulco et al., 2012; Champion et al., 2014; Christophe et al., 2015b; Stava, Lopez & Vassilopoulou-Sellin, 2006; Vanlemmens et al., 2012a; Vanlemmens et al., 2012b.

<sup>17</sup> See: Bantema-Joppe et al., 2015; Bloom, Stewart, Oakley-Girvan, Banks & Shema, 2012; Burwell et al., 2006; Herbenick et al., 2008; Manuel et al., 2007; Ventura et al., 2013.

<sup>18</sup> See: Phillips et al., 2008; So et al., 2011.

## **Operationalization of Variables**

*Socio-Demographic Variables* were measured with individual items of age, race, number of children, education, income, occupation, and religious affiliation.

*Relationship Characteristics* were measured by items assessing length of relationship, marital status, and cohabitation.

*Quality of Life – Patients.* Quality of Life has been defined as the “individuals’ perception of their position in life in the context of culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. It is a broad-ranging concept affected in a complex way by the person’s physical health, psychological state, level of independence, social relationships personal beliefs and their relationship to salient features of their environment”(WHO, 1993). When working within the context of health, quality of life is often referred to as health-related quality of life (HRQOL), which indicates the impact a medical condition or its treatment has on the expected physical, emotional, and social well-being (Salsman, Pearman & Cella, 2013; Cella, 1994; Cella, 1995).

The quality of life of women diagnosed with breast cancer was measured by the Functional Assessment of Cancer Therapy-Breast (FACT-B) Scale (Brady et al., 1997; Cella et al., 1993). The FACT-B (Version 4) is a 37-item measure that contains four general subscales assessing the physical, social/family, emotional, and functional well-being of the individual, along with the breast cancer-specific subscale that assesses concerns of particular relevance to breast cancer patients (e.g., body image, arm swelling and tenderness). Patients were invited to indicate how true each statement has been for

them in the previous seven days, and items are rated on a 5 point Likert scale ranging from “Not at All” (0) to “Very Much” (4).

The FACT-B consists of five subscale scores: physical well-being (PWB), social/family well-being (SWB), emotional well-being (EWB), functional well-being (FWB) and additional concerns (BCS), with higher scores indicating higher quality of life. From these subscale scores, two assessment total scores were calculated: the FACT-B total score, and the FACT-G score. The FACT-B total score is calculated by summing all five un-weighted subscale scores, with total scores in the range of 0-136. The FACT-G score is calculated by summing PWB, SWB, EWB, and FWB scores (i.e., excluding the Breast Cancer Specific subscale), with scores in the range of 0-108. Administration and scoring guidelines are available on the website <http://www.facit.org/FACITOrg>, and subscales and total scores were calculated using the SPSS syntax provided by the authors of the instrument. Recently, general population and cancer patients’ normative data for the FACT-G were released (Brucker, Yost, Cashy, Webster, & Cella, 2005).

The FACT-B has been extensively used in psychosocial oncology research and has demonstrated to have high validity and internal consistency (Brady et al., 1997; Cella et al., 1993; Overcash, Extermann, Parr, Perry, & Balducci, 2001; Webster, Cella & Yost, 2003; Webster, Odom, Peterman, Lent, & Cella, 1999; Winstead-Fry & Schultz, 1997). In its validation study, Cronbach’s alpha for the total score was .90, with subscale alpha coefficients ranging from .63 to .86 (Brady et al., 1997). Evidence supported test-retest reliability, as well as convergent and divergent validity (Brady et al., 1997; Cella et al., 1993; Overcash et al., 2001; Webster et al., 2003; Webster et al., 1999; Winstead-Fry & Schultz, 1997). For the purpose of the present investigation, the five subscales and the

FACT-G and FACT-B total scores were used. Similarly to the data available in the literature, very high internal consistency has been registered in this sample (FACT-G  $\alpha=.90$ , FACT-B total score  $\alpha=.90$ , PWB  $\alpha=.88$ , SWB=.81, EWB  $\alpha=.83$ , FWB  $\alpha=.85$ , BCS  $\alpha=.81$ ).

***Quality of Life – Partners.*** The quality of life of partners was measured with two instruments: the Emotional Functioning subscale from the Quality of Life Questionnaire for Spouses (QL-SP) (Ebbesen, Guyatt, McCartney, & Oldridge, 1990) and the Illness Intrusiveness Ratings Scale (IIRS) (Binik, Chowanec, & Devins, 1990).

The Quality of Life Questionnaire for Spouses (QL-SP) consists of a total of 26 items measuring the emotional, physical and social function of spouses of a patient with chronic illness. In particular, the Emotional Function Dimension (14 items) examines the well-being of the individual in the previous two weeks by rating on a 7 point Likert scale anxiety, depression, concerns, frustration and helplessness (Ebbesen et al., 1990). Total scores on the scale range from 7 to 98, with higher scores indicating better level of functioning. Construct validity was rated as good and the instrument has correlated highly with anxiety and depression based on other valid scales (Feldman & Broussard, 2006). The scale demonstrated high internal consistency in previous studies (Feldman & Broussard, 2006; Iafrate et al., 2012), and this evidence was supported by a Cronbach's alpha value of .91 in the present sample.

The Illness Intrusiveness Ratings Scale measures the amount of disruption or interference of the partner's illness and treatment on 13 dimensions of the respondent's life (Devins. 1994; Devins et al., 1983). These dimensions include health, work, recreation, financial situation, sex life, and other social relations. Each domain is rated on

a 7 point Likert Scale, from “Not very much” (1) to “Very Much” (7). When respondents consider an item not to be applicable, a score of one is entered, indicating that the illness and/or its treatment do not interfere very much with this life domain. The total score ranges from 13 to 91, with higher scores indicating greater impact of the patient’s illness on the partner. Several studies support the reliability and validity of the instrument (Binik et al., 1990; Devins, 1994; Devins et al., 1990). Previous findings indicate that there is a significant association between perceived intrusiveness and negative mood, self-efficacy, marital adjustment and life satisfaction (Devins, Hunsley, Mandin, Taub, & Paul, 1997; Devins, 1994). Internal consistency of the scale is high: a recent systematic review conducted on the application of the IIRS on 36 chronic disease groups highlighted that Cronbach’s alpha scores ranged from the .80’s to the .90’s (Devins, 2010). In the present sample the Cronbach’s alpha was .88.

***Dyadic Coping.*** Dyadic coping was measured by the Dyadic Coping Scale (Bodenmann, 2000). This self-report questionnaire assesses stress communication and dyadic coping as perceived by each partner about his or her own coping (“what I do when I am stressed” and “what I do when my partner is stressed”), each partner’s perception of the other’s coping (“what my partner does when I am stressed”), and each partner’s view of how they cope as a couple (“what we do when we are stressed as a couple”).

In this version each item (for a total of 61) is measured on a 6-point Likert scale, with responses ranging from “Very rarely” (1) to “Always” (6). The Dyadic Coping Scale contains five subscales: Stress Communication, Common, Positive, Hostile and Avoidance of Dyadic Coping. Plus, a total dyadic coping score can be calculated as the sum of the single items included in the subscales.

1. *Stress Communication* was measured as the mean of 5 items which assess the partners' ability to communicate emotion- and problem-focused stress, with higher scores indicating better communication. Examples are "I ask my partner to do things for me when I have too much to do", "I try to hide my stress from my partner so that he/she does not notice it", and "I tell my partner openly how I feel and that I would appreciate his/her support".
2. *Common Dyadic Coping* was examined by 13 items which measure both partners' ability to participate in the coping process in a coordinated and symmetrical manner. Examples of problem focused Common Dyadic Coping include joint problem solving, equal division of tasks and joint information seeking, while among emotion-focused strategies the questionnaire list activities that promote the perception of unity as a couple, like spiritual activities and engagement in joint relaxation exercises. Examples of items of this subscale are "We are supportive of each other and help one another out", "We help one another to put the problem in perspective and see it in a new light", and "We caress one another and make love".
3. *Positive Dyadic Coping* refers to the use of supportive dyadic coping strategies like the provision of practical help, giving relevant information, advice, understanding and helping to relieve tension. Traditionally, positive coping strategies are used in an attempt to assist the member of the dyad who is perceived "generally or presently less equipped with the coping resources required to achieve the maintenance or restoration of an adaptive state" (Bodenmann, 1997, p. 138). Examples of items included in this subscale are:

“My partner gives me feeling that he/she understands me”; “My partner listens to me and gives me the opportunity to communicate the entire situation”, and “ My partner takes on things that I normally do in order to help me out”.

4. *Hostile Dyadic Coping* occurs when the stress signals of one partner originate a hostile behavior by the other. Responses or behaviors that can be considered hostile include distancing, ridicule, sarcasm, clear disinterest and minimizing the emotional experience of stress of the other. Scale items that are included in this subscale are: “I make fun of my partner’s stress”, “I let my partner know that I do not want to be bothered with his/her problems”, and “Although my partner makes time for me, his/her thoughts are somewhere else”.
5. *Avoidance of Dyadic Coping* describes ambivalent and superficial coping responses, where authentic engagement is absent (Bodenmann, 1997; Bodenmann, 2005). In the present scale three items measure avoidance of dyadic coping, with higher scores indicating that these behaviors are used as a response to the stress perceived by the partner. Examples of such items are “When my partner is stressed, I tend to get out of his/her way”, and “When my partner is stressed I tend to withdraw”.

Satisfactory psychometrics of the questionnaire have been reported. A previous work using the same version of the Dyadic Coping Scale with a sample of male partners reported acceptable alphas for each subscale: stress communication ( $\alpha = .63$ ), common dyadic coping ( $\alpha = .84$ ), positive dyadic coping ( $\alpha = .95$ ), hostile dyadic coping ( $\alpha = .76$ ), and avoidance of dyadic coping ( $\alpha = .73$ ) (Feldman & Broussard, 2006). In this study, reliability scores ranged from .68 to .96 for patients, and from .68 to .95 for partners.

**Mutuality.** Mutuality refers to a “bidirectional movement of feelings, thoughts, and activity between persons in relationship” (Genero, Baker-Miller, Surrey, & Baldwin 1992; p.1). From a relational perspective (Jordan, 1986), mutuality is described as a series of interactions that contribute to the well-being of the relationships (Genero et al., 1992). In the present study it is measured by the Mutual Psychological Development Questionnaire (MPDQ) (Genero et al., 1992). The instrument consists of 22 items assessing six conceptual dimensions of mutuality: empathy, engagement, authenticity, zest, diversity and empowerment on a 6 point scale ranging from “Never”(1) to “All the time” (6). The scale is organized in two subscales: one is about how the respondent perceives his or her own empathic responsiveness and the other subscale is the respondent’s perception of the partner’s empathic responsiveness. Hence, both subscales need to be totaled together in order to compute the level of mutuality reported by the individual about the close relationship investigated.

Results of an initial validation study (Genero et al., 1992) conducted on more than 300 subjects recruited through introductory psychology courses, continuing education programs and community health care centers indicated high inter-item reliability (alpha coefficients ranged from .89 to .94). Construct and concurrent validity were demonstrated with a high correlation between the MPDQ and measures of social support, relationship satisfaction and relationship cohesion. There was a large negative correlation between the MPDQ and depression as measured by the Center for Epidemiological Studies Depression Scale (CES-D). Test-retest reliability of the scale was satisfactory, and high inter-item consistency was replicated (Genero et al., 1992). The scale has been used extensively in the literature about close relationships and its psychometrics confirmed

(i.e.: Coan, Kasle, Jackson, Schaefer, & Davidson, 2013; Kruger, 2005; Liang et al., 2002), with Cronbach's alpha between .89 and .94. In the present sample reliability scores were high for both patients ( $\alpha=.93$ ) and partners ( $\alpha=.91$ ).

***Communication.*** The Couple Communication Scale by Barnes and Olson (1986) was administered to participants to assess their communication. The scale, which is composed by 10 items ranging from "Definitely False" (1) to "Definitely True" (7), examines individual's feelings, beliefs, and attitudes about the communication in the relationship with the partner. Items focus on the level of comfort felt by both partners in being able to share important emotions and beliefs with each other, the perception of a partner's way of giving and receiving information, and the respondent's perception of the quality of the communication between the two members of the dyad. As part of the ENRICH Marital Inventory (Olson, Fournier, & Druckman, 1986), the scale has been extensively utilized in psychosocial research and its psychometrics confirmed in numerous research studies. The total communication score, ranging from 10 to 50, has been used in the study. In the present sample Cronbach's alpha was .79 for patients and .86 for partners, while in the original validation study a reliability score of .68 was registered.

***Clinical Variables.*** Patients were asked to indicate if they were currently taking medications when the questionnaire was administered. In particular, a variable indicates if the patient has received chemotherapy or not as part of her cancer treatment.

***Mental Health History and Treatment for Depression.*** Mental health of patients and partners was assessed through questions about history and treatment for mental health diagnosis in the family and for the individual participant. Breast cancer patients were also asked if they have received treatment before or after the diagnosis.

**Table 3.** Operationalization of Variables for Patients and Partners

<b>Operationalization of Variables</b>	<b>Patient</b>	<b>Partner</b>
<b>Socio-Demographic Variables</b>	Age Race Number of Children Education Income Occupation Religious Affiliation	Age Race Number of Children Education Income Occupation Religious Affiliation
<b>Clinical Variables</b>	Medications (Y/N) Chemotherapy (Y/N)	
<b>Relational Characteristics</b>	Length of relationship Marital status Cohabitation	Length of relationship Marital status Cohabitation
<b>Quality of Life</b>	Functional Assessment of Cancer Therapy-Breast (FACT-B) Scale	Quality of Life Questionnaire for Spouses (QL-SP)  Illness Intrusiveness Ratings Scale (IIRS)
<b>Mutuality</b>	Mutual Psychological Development Questionnaire (MPDQ)	Mutual Psychological Development Questionnaire (MPDQ)
<b>Dyadic Coping</b>	Dyadic Coping Scale	Dyadic Coping Scale
<b>Communication</b>	Couple Communication Scale	Couple Communication Scale
<b>Mental Health History</b>	History of Mental Health Issues in the Family Family Member with Mental Health Diagnosis	History of Mental Health Issues in the Family Family Member with Mental Health Diagnosis
<b>Treatment for Depression</b>	Previous Diagnosis of Depression (Y/N) Timing of Diagnosis (Before/After Diagnosis)	Previous Diagnosis of Depression (Y/N)

**Table 4.** Score calculation and Reliability of Instruments

<b>Instrument</b>	<b>Score calculation</b>	<b>Cronbach's <math>\alpha</math> Patients</b>	<b>Cronbach's <math>\alpha</math> Partners</b>
<b>Quality of Life - Patients</b>			
Physical Well-being (PWB)	Sum items 1-7	.88	–
Social/Family Well-being (SWB),	Sum items 8-14	.81	–
Emotional Well-being (EWB),	Sum items 15-20	.83	–
Functional Well-being (FWB)	Sum items 21-27	.85	–
Additional Concerns (BCS).	Sum items 28-36 (Item 37 not currently scored)	.81	–
FACT-B	Sum of PWB, SWB, EWB, FWB, and BCS	.90	–
FACT-G	Sum of PWB, SWB, EWB, and FWB	.91	–
<b>Quality of Life - Partners</b>			
Quality of Life Questionnaire for Spouses (QL-SP)	Sum items 1-14	–	.91
Illness Intrusiveness Scale (IIRS)	Sum Items 1-13	–	.88
<b>Dyadic Coping</b>			
Stress Communication	Mean Item 1, 2, 3, 4 and 5Reversed	.68	.68
Common Dyadic Coping	Mean Item 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61	.86	.83
Positive Dyadic Coping	Mean Item 6, 7, 9, 10, 12, 13, 15, 17, 18, 21, 22, 26, 27, 29, 30, 32, 34, 36, 39, 43, 44, 49, 50, 52, 53, 54, 55, 56, 57, 59	.96	.95
Hostile Dyadic Coping	Mean Item 8, 11, 14, 16, 28, 31, 35, 37, 42	.80	.70
Avoidance of Dyadic Coping	Mean Item 33, 46, 58	.68	.68
Total Dyadic Coping	Sum Items 1, 2, 3, 4, 5, 6, 7, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 21, 22, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 39, 42, 43, 44, 46, 49, 50, 52, 53, 54, 55, 56, 57, 58, 59	.91	.90
<b>Mutuality</b>			
Mutual Psychological Development Questionnaire (MPDQ)	Mean of Items 1-22, with items 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22 reversed	.93	.91

<b>Communication</b>			
Couple	Sum of Items 1-10, with items 2, 3,	.79	.86
Communication Scale	4,5, 6, 7, 9 reversed		

### **Statistical Analysis**

After obtaining Institutional Review Board approval to review and access these data, IBM SPSS Statistics 22 was used for data management, data screening and preliminary data analyses. Descriptive statistics were obtained for all the variables compiling frequency tables, histograms and bar graphs. Missing data and outliers were examined by conducting a Missing Value Analysis (MVA) and univariate outliers were examined through the SPSS Explore command and the use of Box Plots. Among the numerous imputation procedures currently available, mean substitution was implemented to handle missing data on the key variables. Skewness and Kurtosis were also investigated to test for normality through SPSS Frequencies and Descriptive analysis (Meyers, Gamst & Guarino, 2006). Kolmogorov-Smirnov test was employed to detect departures from normality. When non-normal distribution was detected, variables have been transformed according to Tabachnick and Fidell (2007).

Pearson  $r$  correlations and bivariate scatterplots were used to assess the linear relationship observed between socio-demographic, clinical and psychosocial measures, with specific attention for the variables of interest for the study. Comparisons of demographic characteristics between patients and spousal caregivers were conducted using  $t$ -tests for continuous variables and chi-square for ordinal and categorical variables.

#### ***Specific Aim 1***

Differences between younger and older breast cancer patients on quality of life, dyadic coping, communication, and mutuality have been assessed by calculating  $t$ -tests

for independent samples, with a  $p$ -value smaller of 0.05 considered statistically significant. Similarly,  $t$ -tests for independent samples were calculated to examine differences between younger and older partners on the same measures.  $T$  tests were preferred to ANOVAs because the independent variable (younger vs. older participants) had only two levels (Meyers et al., 2006). To test the hypothesis of higher association of quality of life and dyadic coping existing among older couples, Pearson  $r$  product-moment correlations coefficients were used to examine the existence of a linear relationship between these continuous variables.

### ***Specific Aim 2***

The second aim of the study was to investigate the relationship between dyadic coping and quality of life among younger couples. It was hypothesized that positive forms of dyadic coping (Stress Communication, Common Dyadic Coping and Positive Dyadic Coping) were associated with higher quality of life for both younger patients and partners. Pearson  $r$  correlations were calculated to assess the relationship between quality of life and dyadic coping styles of younger breast cancer patients and partners' scores. To investigate factors affecting the relationship between dyadic coping and quality of life, Pearson's  $r$  product-moment correlations coefficients were calculated between these variables and socio-demographic, clinical, relational and mental health variables of patients and partners. Based on the significant correlations identified with these analyses, separate multiple regressions were calculated to predict quality of life of patients and partners.

### *Specific Aim 3*

After conducting descriptive and independent analyses on patients and partners using the conventional individual data file, further analyses were conducted using a dyadic data analysis approach because of the non-independence existing between patients and partners' scores (Kashy & Snyder, 1995; Kenny, 1996). This association between partners' scores in marital dyads is due to compositional effects (similarities between individuals), partner effects (characteristics of one partner that affect characteristics of the other) and common fate (partners are exposed to similar contextual forces) (Kenny, 1996; Kenny, Kashy & Cook, 2006). Ignoring non-independence in close relationships has conceptual and methodological ramifications (Kashy & Donnellan, 2012): if the assumption of independence is violated, test statistics and degrees of freedom will be inaccurate and statistical significance will be biased (too liberal: type I error; too conservative: type II error) (Kenny, 1996; Kenny & Judd, 1986; Kenny, Kashy & Bolger, 1998; Kenny et al., 2006).

Other two factors to be considered are the nature of the variables under investigation and distinguishability (Kenny et al., 2006). When using dyadic data analysis, variables can be within-dyads, between-dyads or mixed depending on the design of the study and the hypotheses developed by the investigator. Between-dyads variables differ among the single dyads in the sample, but not within the two members of the dyads; therefore they present the same score on the variable. In this case, the age group variable is a between-dyads variable as younger and older dyads were identified based on the age of the patient at the moment of diagnosis. Similarly, length of relationship is a between-dyads variable. Within-dyads variables refer to individual characteristics that

allow the two members of the unit to be distinguished. The scores of the two partners differ on these types of variables, yet the mean is the same. In the present sample, role represents a within-dyad variable as in each couple involved in the study a patient and a caregiver exist. The final type of variable is a mixed variable, where variations are registered within and between the dyads. For this analysis, mutuality and dyadic coping are mixed variables as the two partners' scores on these may differ between partners and also some couples may present higher or lower average scores (Kashy & Donnellan, 2012; Kenny et al., 2006). As mentioned earlier, members of the dyad are considered to be conceptually distinguishable if a meaningful variable can be used to differentiate among them. In the case of the present study, dyads were distinguishable because of the role each partner has in relation to cancer (Kashy & Donnellan, 2012; Kenny et al., 2006).

The file was then restructured into a dyad and pairwise data file, which can be described as a double-entry structure where each record includes the scores of the person and the partner on each variable, with dyad level variables entered only once per dyad. In preparing the dataset for analysis, the data were organized and sorted into individual and dyadic level variables, with dyadic variables comprising of the classification into younger or older couples. Before conducting the analysis, power estimates were obtained using G\*Power 3.1.9.2 (Faul, Erdfelder, Buchner & Lang, 2009; Faul, Erdfelder, Lang, & Buchner, 2007). The Actor-Partner Interdependence Model (APIM) was used to examine whether individual characteristics, like the mutuality score, have interpersonal consequences on the dyadic coping style reported by each member of the dyad (Kenny et al., 2006; Wittenborn et al., 2013). To facilitate a clear understanding of the analysis,

partners will be addressed with the term “caregivers” in the presentation of results. The *actor effect* occurs when the person’s score on a predictor variable affects her/his outcome measure, while a *partner effect* takes place when the partner’s score on the predictor variable influences the person’s outcome (Kenny, 2013). As depicted in Figure 4, when members of the couple are distinguishable, two actor and two partner effects can be identified. The effect of the patient’s and caregiver’s mutuality on their own dyadic coping is the actor effect, while the partner effect for patients refers to the effect of caregiver’s mutuality on the patient’s dyadic coping. Similarly, the partner effect for caregivers refers to the effect of patients’ mutuality on the caregiver’s dyadic coping (Kenny, 1996; Kenny et al., 2006). Two correlations are present in an APIM model. The first one exists as the two predictors may be already correlated for compositional effects of the dyad. The other correlation is the residual non-independence in the outcome scores, which is left unexplained by the model (Kenny et al., 2006). Using APIM regression, the patient and caregiver predictor variables are regressed on the patient and caregiver outcome variables in a single regression model. In order to conduct the analysis, predictor variables are mean centered and the distinguishing variable is effect coded, with patients coded as 1 and caregivers coded as -1 in this sample. All the analyses were conducted using SPSS Statistics 22. An Actor-Partner Interdependence Model Analysis includes six passages when using multilevel modeling:

- First, an Intra Class Correlation Coefficient (ICC) is calculated for the outcome variables of patients and caregivers.

- Then, an Omnibus Test of Distinguishability is conducted by comparing a Full Model and a Simplified Model with Maximum Likelihood estimation to evaluate whether treating the dyad as distinguishable improves the fit of the model.
- The third step is the APIM analysis to test whether there are significant role differences, followed by a simple slopes analysis for patients and caregivers in case of role by actor/partner effect interactions. Hence, an interaction model using REML estimation is tested first, followed by a two intercept approach if significant correlations are detected.
- Finally, pseudo  $R^2$  are calculated and tested, to indicate the approximate proportion of variance for each dyadic coping style explained by actor and partner mutuality for patients and caregivers. The Deviance Test compares the model with actor and partner effects to the null or empty model.

Results are reported in tables, with a first table that presents multilevel regression coefficients estimating actor and partner effects, and a second one where the simple slope regression coefficients estimating separate mutuality actor and partner effects for patients and caregivers on the different dyadic coping styles are included when a significant interaction role by actor or partner effect exists. Finally, the APIM model is traditionally summarized in the form of a figure where the actor and partner effects are visualized by the use of intersecting arrows. For the present analysis, standardized coefficients are presented for both actor and partner effects. If no significant interaction was registered between role and actor or partner effect, but an average significant actor or partner effect was initially detected in the interaction model, this standardized coefficient was reported in the figure to remind the reader of its significance. Two analyses were conducted: first a

standard APIM model was calculated with actor and partner mutuality used as predictors of dyadic coping per patients and caregivers. Second, to test if differences exist by age group, separate APIM models were conducted on younger and older dyads<sup>19</sup>.

#### ***Specific Aim 4***

Finally, the present study tested the mediating role of dyadic coping on the relationship between mutuality and quality of life of younger patients and partners.

Ledermann, Macho, and Kenny (2011) have proposed an extension of the APIM model (Kenny et al., 2006) that can be used to estimate and test mediational processes in dyadic data analysis named APIMeM (Ledermann, Macho, & Kenny, 2011). However, because the outcome measures of quality of life are different for patients and caregivers, it was not possible to apply a dyadic data analysis approach to the last aim. Instead, a simple mediation model was implemented to test the hypotheses for breast cancer patients and partners separately.

Among the several forms of inter-relationship between variables, mediation implies that an independent variable X may influence a dependent variable Y through one or more intervening variables (M) (Hayes, 2013; MacKinnon, 2008; Preacher & Hayes, 2008). The model includes two sets of antecedent (X and M) and consequent variables (M and Y): X causally influences Y and M, and M causally influences Y (Hayes, 2013). The influence of X on Y can occur through a *direct* and an *indirect effect*. The first one describes the influence of X on Y while the second represents how Y is influenced by X through a causal sequence in which X influences M, which then influences Y.

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<sup>19</sup> Before selecting this strategy an APIM model with the age group effect coded variable was conducted, but the absence of role by age\_group interaction prevented from detecting differences in the actor and partner effects for patients and partners in the two samples of dyads.

In the present study, despite data come from a non-experimental design, the logical ordering of the variables of interest was established by the theoretical model of dyadic coping developed by Kayser et al. (2007). According to this model, the effect of a person's mutuality (X) on his or her quality of life (Y), can be the mediated by his/her own dyadic coping style (M). In other words, the effect of the patient's mutuality on her own well-being may be mediated by the self-reported score on dyadic coping. Likewise the effects of the caregiver's mutuality on quality of life may be mediated by his/ her dyadic coping (Figure 5).

Historically, mediation analysis has been conducted using the causal steps approach developed by Baron and Kenny (1986). However, this strategy has received severe critiques in the last few years<sup>20</sup>. Hence, the present mediation analysis has been completed using OLS regression procedures through PROCESS, a computational tool for path analysis-based moderation and mediation developed by Hayes (2013). The tool has been selected also for the possibility to conduct statistical inference of the indirect effect. As the Normal Theory Approach (Sobel Test) has been identified as inaccurate (MacKinnon, Lockwood, & Williams, 2004), the use of bootstrap confidence intervals has emerged as a more solid option (Hayes, 2009; Hayes, 2013; MacKinnon, 2008; Shrout & Bolger, 2002; Zhao, Lynch & Chen, 2010). Initially, the analysis included also age, but the lack of significant results suggested to remove this variable from the model.

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<sup>20</sup> First, in the Baron and Kenny (1986) approach the existence of an indirect effect is inferred logically and therefore it's more sensible to Type I errors. Second, the identification of M as a mediator is contingent to the successful rejection of three null hypothesis which significantly affects power. Third, the procedure begins with testing whether X affects Y by conducting a hypothesis test for the total effect of  $c$ , while there is a growing consensus among methodologists that a total effect of X on Y should not be a prerequisite to examining the indirect effects (Hayes, 2009; MacKinnon, 2008; Shrout & Bolger, 2002; Zhao et al., 2010). Finally, since the causal step approach is not based on quantification of the indirect effect, it encourages researchers to think about mediation in qualitative terms.

The simple mediation model was then tested among patients and partner. Finally, given the overall goal of the study, the analysis was conducted on younger and older patients and partners separately.

**Table 5.** Statistical Analysis Overview

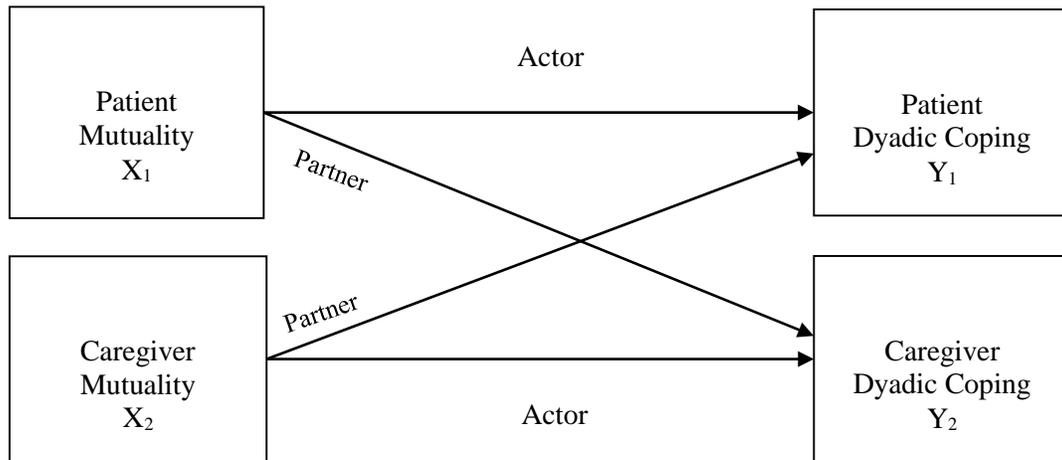
<b>Aim</b>	<b>Hypothesis</b>	<b>Statistical Analysis</b>
<b><i>1. To describe differences between younger and older couples on quality of life, dyadic coping, communication and mutuality</i></b>	<b><i>Hp 1.1</i></b> Younger patients with breast cancer will report lower quality of life, mutuality, communication, and higher negative dyadic coping styles compared to older breast cancer patients	Independent sample <i>t</i> -test
	<b><i>Hp 1.2</i></b> Younger partners will report lower quality of life, mutuality, communication and higher negative dyadic coping compared to older partners of breast cancer patients	Independent sample <i>t</i> -test
	<b><i>Hp 1.3</i></b> The association of quality of life scores between patients and partners in older couples will be higher than the association of quality of life scores of patients and partners in younger couples	Pearson's <i>r</i> correlations
	<b><i>Hp 1.4</i></b> The association of dyadic coping scores between patients and partners in older couples will be higher than the association of dyadic coping scores of patients and partners in younger couples	Pearson's <i>r</i> correlations
<b><i>2. To examine the relationship between dyadic coping and quality of life among younger couples</i></b>	<b><i>Hp 2.1</i></b> Positive forms of dyadic coping (stress communication, common dyadic coping, positive dyadic coping), will be associated to higher levels of quality of life for younger breast cancer patients.	Pearson's <i>r</i> correlations
	<b><i>Hp 2.2</i></b> Positive forms of dyadic coping (stress communication, common dyadic coping,	Pearson's <i>r</i> correlations

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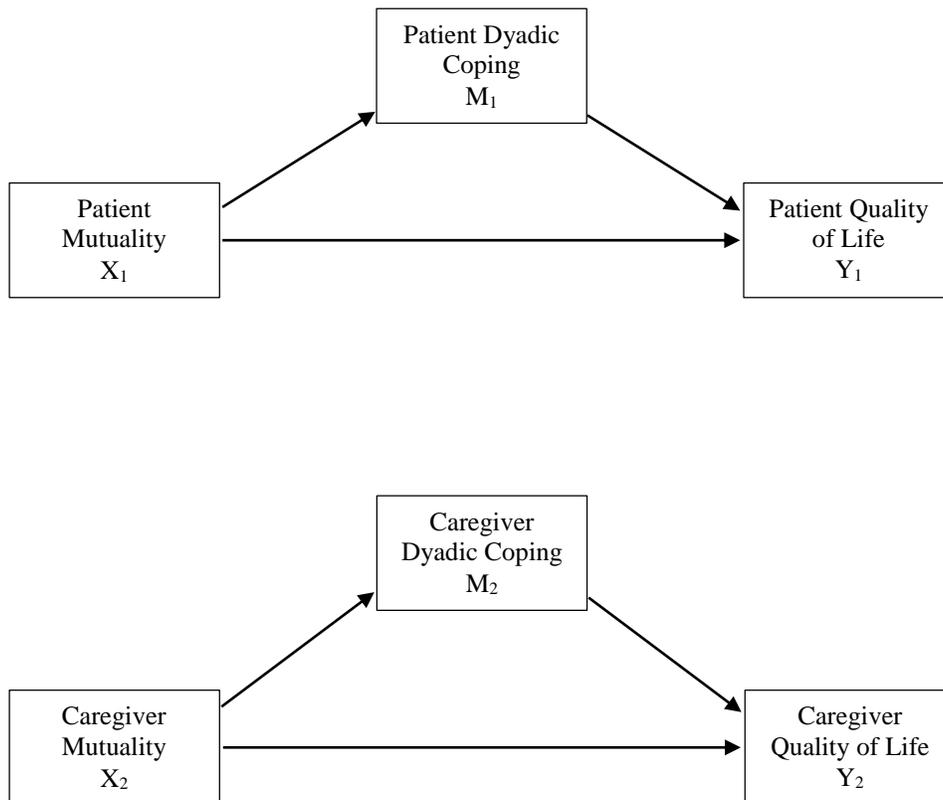
	positive dyadic coping), will be associated to higher levels of quality of life for partners of younger breast cancer patients	
	<b>Hp 2.3</b> The relationship between dyadic coping styles and quality of life for patients and partners is influenced by socio-demographic, clinical, relational and mental health variables	Pearson's <i>r</i> correlations and multiple regression analysis
<b>3. To assess the actor-partner effects of mutuality on dyadic coping among breast cancer patients and partners and to identify differences by age group</b>	<b>Hp 3.1</b> Patients' perceived mutuality will influence their own dyadic coping style and their partners' dyadic coping style	APIM model for distinguishable dyads
	<b>Hp 3.2</b> Partners' perceived mutuality will influence their own dyadic coping style and the patients' dyadic coping style	
	<b>Hp 3.3</b> Differences in actor and partner effects of mutuality on dyadic coping exist by age group, between younger and older dyads	
<b>4. To test the mediating role of dyadic coping on the relationship between mutuality and quality of life of patients and partners and to identify differences by age groups</b>	<b>Hp 4.1</b> Self-reported dyadic coping score of patients and partners will mediate the relationship between mutuality and quality of life of younger breast cancer patients	Simple mediation model
	<b>Hp 4.2</b> Self-reported dyadic coping score will mediate the relationship between mutuality and quality of life of partners of younger breast cancer patients	
	<b>Hp 4.3</b> Differences exist by age group, between younger and older dyads	

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**Figure 4.** Proposed APIM Model of Mutuality and Dyadic Coping



**Figure 5.** Conceptual diagram of the proposed Simple Mediation Model with Dyadic Coping mediating the relationship between Mutuality and Quality of Life of Patients and Partners



## **Summary**

*This chapter described the methodological plan and analytic strategy for the study of younger couples' experience with the diagnosis of breast cancer, the differences that exist when compared to older ones, and the relationship among mutuality, dyadic coping and quality of life for both members of the dyad in the two groups. The next chapter will provide a detailed description of each analysis as well as their results.*

## CHAPTER IV: RESULTS

*This chapter illustrates the results of the present research study. First, data preparation will be reviewed, followed by the description of the sample and correlations among the variables of interest. Then, analyses and results are presented for each research question.*

A diagnosis of breast cancer at a younger age is associated with worse outcomes on several psychosocial issues. Despite the evidence that highlights the more detrimental effect of cancer on the couple relationship and the indication available from research on young couples and stress, the attention to the developmental trajectory of dyadic coping over the life-span is a significant gap in the current literature. Hence, the purpose of this study was to investigate how a diagnosis of breast cancer impacts younger patients and partners' quality of life, dyadic coping skills, communication and the expression of emotional support, by comparing them with a group of older dyads. Of particular interest was the consideration of the mechanism through which dyadic coping develops and affects the well-being of patients and partners, especially between the two groups. More specifically, the study attempted to test a conceptual framework inspired by the Relational-Cultural Model of dyadic coping (Kayser et al., 2007), where the relationship between mutuality and quality of life is mediated by dyadic coping.

Findings related to the following research questions will be described in this chapter:

1. Does a diagnosis of breast cancer affect younger patients and their partners' quality of life, dyadic coping, communication and mutuality more negatively than older couples?
2. How does dyadic coping affect the quality of life of younger patients and partners?
3. How does mutuality affect dyadic coping styles of younger and older breast cancer patients and partners?
4. Does dyadic coping mediate the relationship between mutuality and quality of life of younger and older patients and partners?

This chapter will explain data preparation activities and preliminary analyses, describe the study sample and present the results. The final chapter will discuss the implications of the study, describe its limitations, and outline ideas for future research.

### **Data Preparation and Preliminary Data Analysis**

After obtaining Institutional Review Board approval, IBM SPSS Statistics 22 was used for data management, data preparation and preliminary data analysis. Descriptive statistics were calculated for all the variables compiling frequency tables, histograms and bar graphs. A Missing Value Analysis (MVA) was conducted on all the variables included in the dataset and revealed that missing data ranged from 0.6% to 2.3% of cases on 7 variables (from 1 to a max of 4 cases), suggesting that data were missing at random in the present dataset. Mean substitution was used to handle missing data on the key variables of interest. However, to account for the reduction in the variability of the scores

often associated with this procedure, mean scores were calculated for each subgroup of the study (i.e.: younger patients, younger partners; older patients and older partners) and the imputation was conducted accordingly (Meyers et al., 2006; Tabachnick & Fidell, 2007).

Univariate outliers were examined through the SPSS Explore command and the use of Box Plots. Extreme values and outliers were detected for 7 variables. For hostile dyadic coping and avoidance of dyadic coping each reported cases was checked and the values for the extreme cases were left in the database because they truly represented possible scores of the subscale, while the outlier (case 1) was deleted. The same situation was found for the variables total dyadic coping, social and emotional well-being and the total score of the FACT-B, where extreme cases were retained. For the variable mutuality the case 133 was deleted.

Skewness and Kurtosis were investigated to test for normality through SPSS Frequencies and Descriptive analysis (Meyers et al., 2006). Kolmogorov-Smirnov test was also employed to detect departures from normality. Non-normal distributions were detected for the following categorical variables: marital status, race, income, and the mental health variables (history of mental illness treatment, person treated for mental illness, diagnosis of depression, and time of diagnosis for patients). Because of their categorical nature and the data analysis plan, no transformation occurred during the data screening phase. Among the variables of interest, the removal of outliers and the selected missing data imputation procedure improved the overall distribution and none reported problematic Skewness and Kurtosis (Tabachnick & Fidell, 2007). After inspecting the

dataset for normality, linearity and homoschedasticity were examined by running bivariate scatterplots and Levene's Test for key study variables.

## **Description of Sample**

### ***Socio-Demographics, Relational and Clinical Characteristics***

The final sample included 86 dyads of breast cancer patients and their partners. Most of the couples were married (90.7%) and living together at the time of the study. On average, couples have been together for 20 years ( $M=19.58$ ,  $SD= 12.14$ , range 1- 47), although range and standard deviation suggest the existence of quite a variability in the duration of the relationship among participants. Table 6 presents socio-demographic characteristics of the sample, next to indication about relational and clinical variables. The sample consisted entirely of Non-Hispanic White men and women, with the exception of a Hispanic Latino woman and three partners who identified themselves as Hispanic Latino, Black and Asian. Four caregivers did not disclose their racial background.

Breast cancer patients had a mean age of approximately 48 years ( $M=48.2$ ,  $SD=9.83$ ) and most of them had 2 or 3 children. Overall, women were highly educated, as indicated by the fact that 60% were college graduates, with 30% having completed a Master's degree, and were employed in professional occupations. Women also indicated a family income above \$90,000 per year in 57.1% of the cases, confirming that participants were middle-to-upper middle class and highly educated. Roman Catholicism and Protestantism were the most common religious affiliations reported. Regarding clinical and mental health characteristics, most of women were currently taking medications as part of their treatment and approximately 21% were receiving

chemotherapy at the time of the study. Previous diagnosis of mental disorders were limited in the families of the participants. For those who reported a pre-existing mental health diagnosis, parents and siblings were the relatives who reported the highest percentages. Twenty-five percent of women had received treatment for depression, which usually occurred before being diagnosed with breast cancer.

Partners shared similar socio-demographic characteristics. They were on average in their early 50s and most were Non-Hispanic White. Partners were highly educated, with approximately 60.5% of them being college graduates. They worked in professional settings and approximately 65% reported an income above \$90,000, again indicating that participants were middle-to-upper middle class. Also among partners Roman Catholicism and Protestantism were the two largest religious affiliations. Only 20% reported a previous diagnosis of mental health disorders in the family, which was mostly experienced by siblings and parents. A personal history of depression was disclosed only by 18 of them (19.8%). No significant differences were detected between patients and partners (see Table 6).

**Table 6.** Socio-Demographic, Relational and Clinical Characteristics of the Sample

<b>Variable</b>	<b>Breast Cancer Patients (N=86)</b>	<b>Partners (N=86)</b>	<b><i>p</i> value</b>
<b>Age</b> (mean score)	48.21 (SD=9.83)	50.71(SD=10.83)	n.s.
<b>Length of Relationship</b> (mean score)	19.58 (SD=12.15)	19.58 (SD=12.15)	n.s.
<b>Marital Status</b>			n.s.
Married	78 (90.7%)	78 (90.7%)	
Not Married	8 (9.3%)	8 (9.3%)	
<b>Race</b>			n.s.
White	84 (97.7%)	79 (91.9%)	
Black	–	1 (1.2%)	

Asian	–	1 (1.2%)	
Latino	1 (1.2%)	–	
Native American/Indian	–	1 (1.2%)	
Unknown/Other	1 (1.2%)	4 (4.8%)	
<b>Number of Children</b>			n.s.
0	16 (18.6%)	13 (15.1%)	
1	11 (12.8%)	11 (12.8%)	
2	31 (36.0%)	32 (37.2%)	
3	20 (23.3%)	22 (25.6%)	
4	7 (8.1%)	7 (8.1%)	
5	1 (1.2%)	1 (1.2%)	
<b>Education</b>			n.s.
Less than High School	–	2 (2.3%)	
High School Graduate	5 (5.8%)	4 (4.7%)	
High School with some College	10 (11.6%)	16 (18.6%)	
College Graduate	27 (31.4%)	21 (24.4%)	
College with some Graduate Hours	11 (12.8%)	11 (14.0%)	
Master's Degree	27 (31.4%)	20 (22.1%)	
PhD, MD, JD	6 (7.0%)	11 (12.8%)	
Other	–	1 (1.2%)	
<b>Occupation</b>			n.s.
Unskilled Labor	1 (1.2%)	–	
Managerial	8 (9.3%)	22 (25.6%)	
Homemaker/Parent	12 (14.0%)	–	
Skilled Labor	3 (3.5%)	7 (8.1%)	
Professional	53 (61.6%)	48 (55.8%)	
Other	9 (10.5%)	9 (10.5%)	
<b>Income</b>			n.s.
< \$10,000	1 (1.2%)	–	
\$10,000-29,900	2 (2.3%)	2 (2.3%)	
\$30,000-49,900	9 (10.5%)	6 (7.0%)	
\$50,000-69,900	16 (18.6%)	12 (14.0%)	
\$70,000-89,900	9 (10.5%)	11 (12.8%)	
< \$90,000	49 (57.0%)	55 (64.0%)	
<b>Religious Affiliation</b>			n.s.
Catholic	36 (41.9%)	30 (34.9%)	
Protestant	25 (29.1%)	27 (31.4%)	
Jewish	10 (11.6 %)	13 (15.1%)	
Atheist/Agnostic	4 (4.7%)	9 (10.5%)	
Other	11 (12.8%)	7 (8.1%)	
<b>Current Medications</b>			
Yes	52 (61.2%)		
No	33 (38.8%)		
<b>Chemotherapy</b>			
Yes	18 (20.9%)		
No	66 (78.6)		

<b>Mental Health Treatment in the Family</b>			n.s.
Yes	21 (24.4%)	18 (20.9%)	
No	65 (75.6%)	68 (79.1%)	
<b>Relationship with Person Treated for Mental Health Issues</b>			n.s.
Parent	6 (7.0%)	4 (4.7%)	
Sibling	6 (7.0%)	7 (8.1%)	
Grandparent	1 (1.2%)	2 (2.3%)	
Other	6 (7.0%)	4 (4.7%)	
Multiple Family Members	2 (2.3%)	2 (2.3%)	
Not Applicable	65 (75.6%)	67 (77.9%)	
<b>Treatment for Depression</b>			n.s.
Yes	22 (25.6%)	17 (19.8%)	
No	64 (74.4%)	68 (79.1%)	
<b>Timing of Treatment Depression</b>			
Before Cancer Diagnosis	20 (23.8%)		
After Cancer Diagnosis	2 (2.4%)		
Before & After	1 (1.2%)		
Not Applicable	61 (72.6%)		

### ***Variables of Interest***

Table 7 provides an overview of the variables of interest of the present study. In particular, means and variance indicators of dyadic coping, mutuality, communication and quality of life are presented and compared between breast cancer patients and partners. Overall, participants scored in the middle-to-upper range of dyadic coping, mutuality and communication. Low mean scores on hostile and avoidance of dyadic coping confirmed that overall couples were able to implement adaptive coping strategies and behaviors in response to the stress caused by the cancer diagnosis. However, differences existed between patients and caregivers, with women reporting significantly higher stress communication ( $p < .001$ ), and overall higher scores on total dyadic coping ( $p < .01$ ).

**Table 7.** Sample Characteristics of the Major Study Variables

Variable	Patients					Partners					<i>t</i>	<i>p</i>
	M	SD	Range	Potential Range	Skewness Kurtosis	M	SD	Range	Potential Range	Skewness Kurtosis		
<b>Dyadic Coping</b>												
<b>Stress</b>	<b>4.20</b>	<b>0.72</b>	<b>2.60-5.80</b>	<b>1-6</b>	<b>-.02</b>	<b>3.48</b>	<b>0.74</b>	<b>1.80-5.20</b>	<b>1-6</b>	<b>.05</b>	<b>6.78</b>	<b>&lt;.001***</b>
<b>Communication</b>					<b>-.57</b>					<b>-.08</b>		
Common	3.60	0.74	2.08-5.15	1-6	-.02	3.58	0.63	2.31-5.15	1-6	.26	.19	.84
Dyadic Coping					-.81					-.49		
Positive	4.11	0.81	2.33-5.48	1-6	-.24	3.98	0.67	2.72-5.50	1-6	.24	1.14	.253
Dyadic Coping					-.82					-.59		
Hostile	1.97	0.53	1.11-3.44	1-6	.45	1.94	0.49	1.00-3.67	1-6	.50	.41	.68
Dyadic Coping					-.21					.74		
Avoidance of	2.68	0.87	1.00- 4.67	1-6	.25	2.59	0.71	1.00-4.33	1-6	-.36	.79	.43
Dyadic Coping					-.09					.13		
<b>Total Dyadic Coping</b>	<b>173.6</b>	<b>25.44</b>	<b>98-215</b>	<b>47-282</b>	<b>-.34</b>	<b>165.97</b>	<b>19.98</b>	<b>119-215</b>	<b>47-282</b>	<b>.17</b>	<b>2.15</b>	<b>.03*</b>
<b>Coping</b>					<b>-.26</b>					<b>-.29</b>		
<b>Mutuality</b>	4.42	0.66	2.82-5.77	1-6	-.37	4.47	0.67	3.45-5.59	1-6	-.12	-.38	.65
Dyadic Coping					-.45					-.64		
<b>Communication</b>	37.86	7.08	21-50	10-50	-.39	38.74	7.00	21-50	10-50	-.30	-.82	.41
Dyadic Coping					-.59					-.80		
<b>Quality of Life</b>												
<b>Patients</b>												
Physical Well-being	20.89	5.36	7-28	0-28	-.86					-.13		
Social Well-being	22.67	3.91	12-28	0-28	-.69					-.19		
Emotional Well-being	16.54	3.33	7-23	0-24	-.53					.05		
Functional Well-being	18.61	5.29	9-28	0-28	-.06					-.90		
Breast Cancer Symptoms	24.41	5.10	10-36	0-36	-.19					-.08		
FACT-G	78.72	13.15	48-103	0-108	-.22					-.62		
FACT-B	103.13	16.80	61-137	0-138	-.25							

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	-.36				
<b>Quality of Life</b>					
<b>Partners</b>					
Emotional	64.54	13.51	35-98	14-98	-.01
Well-being					-.49
Illness	36.32	14.81	13-70	13-91	.24
Intrusiveness					-.91

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\*p < .05 \*\*p < .01 \*\*\* p < .001

### *Younger and Older Couples*

For the purpose of the present investigation, the sample was divided in two groups according to the age of the patient at time of diagnosis. Younger dyads were identified as those where the woman was 45 years old or younger ( $n=35$ ), while older couples were composed by a woman who was above 46 years of age when diagnosed with breast cancer ( $n=51$ ) and her partner.

Socio-demographic characteristics and major variables of interest were analyzed for each group, and scores were compared between patients and partners. Table 8 and Table 9 describe the younger sample. Average length of the relationship at time of the survey was of approximately 11 years ( $SD=5.75$ ), with all couples living together and almost all of them were married (91.4%). Overall younger women were in their late thirties ( $M=38.31$ ,  $SD=4.78$ ), highly educated and mostly working as professionals. All patients were Non-Hispanic White and the majority were mothers, with one third of the sample having two children (28.6%). Half of the women indicated an income higher than \$90,000 per year. Similar to the overall sample, Catholic, Protestant and Jewish were most common categories selected to describe the religious affiliation of the participants. Only 10 (28.6%) younger breast cancer patients were currently receiving chemotherapy, while 57.1% were taking medications as part of their treatment. Considering the mental health variables investigated in the survey, almost 80% of the respondents denied a previous history of mental disorders in the family and only 6 were treated for depression, which was diagnosed and treated before the cancer diagnosis. Younger partners were on average 40 years old ( $SD=6.65$ ) and were mostly Non-Hispanic White, with only 3 of them not disclosing their racial background. In a similar way to what was described earlier for women, they were on average highly educated and could be considered to be middle-to-

upper middle class. Again, Catholicism, Protestantism and Judaism were the most common religious affiliations of the participants. Most of them denied a history of mental health issues in the family and 20% were treated for depression.

Table 9 presents an overview of the variables of interest and illustrates the couple's adjustment with cancer within the first three months of diagnosis. Younger couples reported similar scores on common, hostile and avoidance of dyadic coping, with significant differences between the two partners for stress communication ( $p < .001$ ), and total dyadic coping ( $p < .01$ ). Women indicated higher scores on hostile and avoidance of dyadic coping, although this difference did not reach statistical significance. Younger couples presented good resources in terms of mutuality and communication, while quality of life variables clearly highlighted the impact cancer had on the well-being of each individual, with younger women reporting affected quality of life in all the subscales of the FACT-B and partners indicating moderately levels of affected well-being and illness intrusiveness.

When considering the older group (Table 10), these couples had been in a relationship for approximately 26 years ( $SD = 11.6$ ). All of them were living together and the largest majority was married (90.2%). Older breast cancer patients were in their mid-fifties ( $M = 55$ ,  $SD = 5.74$ ), were highly educated and mostly working in professional settings (62.7%). They were all Non-Hispanic White (96.1%), with the exception of one Latina, and had at least two or more children. Approximately 61% indicated an income higher than \$90,000 per year. Catholic, Protestant and Jewish were the most common categories selected to describe the religious affiliation of the participants. Considering the clinical variables investigated, only 8 (16.3%) older patients were currently receiving

chemotherapy, while the majority (64.0%) took medications as part of the cancer treatment. Approximately 75% of the respondents denied a history of mental health issues in the family and one third (31.4%) had received treatment for depression, which was diagnosed and treated before the cancer diagnosis. Overall older partners were on average 57 years old ( $SD=6.97$ ) and were mostly Non-Hispanic White, with only one Black, one Asian and one Native American participant. Partners were highly educated, as evidenced by the fact that 59% were college graduates and almost 70% indicated a yearly income above \$90,000. Protestantism was the most common religious affiliation reported (39.2%). Most of them denied a history of mental health issues in the family (78.4%) and 10 have been or were currently treated for depression. Differences were registered between patients and partners for age and occupation, with partners being significantly older ( $t_{(100)}=-2.09, p<.05$ ) and in more managerial and professional positions.

Older dyads are characterized by higher scores on dyadic coping styles like stress communication, positive and common dyadic coping, indicating that the individuals are utilizing individual and relational resources to cope with the stress of the cancer diagnosis (Table 11). Low scores on hostile and avoidance of dyadic coping were common for both partners, although the women's scores tended to be higher. Patients and partners had positive scores on measurements of mutuality and communication, with no significant differences among the two partners. Regarding quality of life, older participants scored high on the subscales that address physical, social and overall quality of life. However, the areas mostly affected by the cancer diagnosis appear to be their emotional and functional well-being. Similarly, older partners presented high levels of emotional well-being and limited intrusiveness.

**Table 8.** Socio-Demographic, Relational and Clinical Characteristics of Younger Couples

<b>Variable</b>	<b>Younger Breast Cancer Patients (N=35)</b>	<b>Younger Partners (N=35)</b>	<b><i>p</i> value</b>
<b>Age</b> (mean score)	38.31 (SD=4.78)	40.6 (SD=6.65)	n.s.
<b>Length of Relationship</b> (mean score)	10.71 (SD=5.75)	10.71 (SD= 5.75)	n.s.
<b>Marital Status</b>			
Married	32 (91.4%)	32 (91.4%)	
Not Married	3 (8.6%)	3 (8.6%)	
<b>Race</b>			n.s.
Non-Hispanic White	35 (100%)	32 (91.4%)	
Black	–	–	
Asian	–	–	
Latino	–	–	
Native American/Indian	–	–	
Unknown/Other	–	3 (8.65)	
<b>Number of Children</b>			n.s.
0	8 (22.9%)	9 (25.7%)	
1	7 (20.0%)	6 (17.15)	
2	10 (28.6%)	10 (28.6%)	
3	8 (22.9%)	8 (22.9%)	
4	2 (5.7%)	2 (5.7%)	
5	–	–	
<b>Education</b> <sup>21</sup>			n.s.
Less than High School	–	2 (5.7%)	
High School Graduate	1 (2.9%)	2 (5.7%)	
High School with some College	4 (11.4%)	6 (17.1%)	
College Graduate	14 (40.0%)	10 (28.6%)	
College with some Graduate Hours	3 (8.6%)	7 (20%)	
Master’s Degree	9 (25.7%)	5 (14.3%)	
PhD, MD, JD	4 (11.4%)	2 (5.7%)	
Other	–	1 (2.9%)	
<b>Occupation</b> <sup>22</sup>			n.s.
Unskilled Labor	–	–	
Managerial	5 (14.3%)	6 (17.1%)	
Homemaker/Parent	5 (14.3%)	–	
Skilled Labor	2 (5.7%)	5 (14.3%)	
Professional	21 (60.0%)	21 (60.0%)	
Other	2 (5.7%)	3 (8.6%)	

<sup>21</sup> Non-significant differences are detected also when the variable is recoded in 2 categories, 1=High School, and 2=College graduate

<sup>22</sup> Non-significant differences are detected also when the variable is recoded in 2 categories. Unskilled labor, Homemaker, and other were recoded as 1, managerial, skilled labor and professional were recoded as 2. The Fisher’s Exact Test indicates a 2-sided significance of .31.

<b>Income</b>			n.s.
< \$10,000	–	–	
\$10,000-29,900	1 (2.9%)	1 (2.9%)	
\$30,000-49,900	2 (5.7%)	1 (2.9%)	
\$50,000-69,900	6 (17.1%)	6 (17.1%)	
\$70,000-89,900	8 (22.9%)	7 (20.0%)	
< \$90,000	18 (51.4%)	20 (57.1%)	
<b>Religious Affiliation</b>			n.s.
Catholic	17 (48.6%)	15 (42.9%)	
Protestant	8 (22.9%)	7 (20.0%)	
Jewish	3 (8.6%)	3 (8.6%)	
Atheist/Agnostic	1 (2.9%)	5 (14.3%)	
Other	6 (17.1%)	5 (14.3%)	
<b>Current Medications</b>			
Yes	20 (57.1%)		
No	15 (42.9%)		
<b>Chemotherapy</b>			
Yes	10 (28.6%)		
No	25 (71.4%)		
<b>Mental Health Treatment in the Family</b>			
Yes	8 (22.95%)	7 (20.0%)	
No	27 (77.1%)	28 (80.0%)	
<b>Relationship with Person Treated for Mental Health Issues</b>			n.s.
Parent	1 (2.9%)	–	
Sibling	2 (5.7%)	3 (8.6%)	
Grandparent	1 (2.9%)	1 (2.9%)	
Other	3 (8.6%)	4 (11.4%)	
Multiple Family Members	1 (2.9%)	–	
Not Applicable	27 (77.1%)	27 (77.1%)	
<b>Treatment for Depression</b>			n.s.
Yes	6 (17.1%)	7 (20.0%)	
No	29 (82.9%)	28 (80.0%)	
<b>Timing of Treatment Depression</b>			
Before Cancer Diagnosis	6 (17.1%)		
After Cancer Diagnosis	–		
Before & After	–		
Not Applicable	29 (82.9%)		

**Table 9.** Sample Characteristics of the Major Study Variables for Younger Couples

Variables	Patients					Partners					<i>t</i>	<i>p</i>
	M	SD	Range	Potential Range	Skewness Kurtosis	M	SD	Range	Potential Range	Skewness Kurtosis		
<b>Dyadic Coping</b>												
<b>Stress</b>	<b>4.14</b>	<b>0.79</b>	<b>2.60-</b>	<b>1-6</b>	<b>.20</b>	<b>3.37</b>	<b>.70</b>	<b>1.80-4.80</b>	<b>1-6</b>	<b>-.05</b>	<b>4.36</b>	<b>&lt;.001***</b>
<b>Communication</b>			<b>5.80</b>		<b>-.52</b>					<b>.23</b>		
Common Dyadic Coping	3.53	0.67	2.08 - 5.08	1-6	.26 -.29	3.51	.52	2.46-4.46	1-6	.02 -.77	0.15	.88
Positive Dyadic Coping	4.08	0.82	2.59 - 5.48	1-6	.11 -.93	3.88	.56	2.90-5.34	1-6	.66 .65	1.19	.237
Hostile Dyadic Coping	2.07	0.57	1.11- 3.44	1-6	.45 -.21	2.13	.45	1.11-3.00	1-6	-.39 -.08	-0.46	.64
Avoidance of Dyadic Coping	2.79	0.89	1.00- 4.67	1-6	.23 -.49	2.69	.75	1-4	1-6	-.69 .24	0.50	.61
<b>Total Dyadic Coping</b>	<b>175.12</b>	<b>23.74</b>	<b>131-217</b>	<b>47-282</b>	<b>.25</b>	<b>163.68</b>	<b>15.99</b>	<b>136-201</b>	<b>47-282</b>	<b>.52</b>	<b>2.36</b>	<b>.02*</b>
<b>Mutuality</b>					<b>-.94</b>					<b>.26</b>		
<b>Communication</b>	4.38	0.70	2.86- 5.55	1-6	-.44 -.63	4.45	0.48	3.45-5.41	1-6	-.26 -.40	-0.53	.59
	38.34	7.01	25-50	10-50	-.37 -.84	38.40	7.17	21-50	10-50	-.44 -.43	-0.03	.97
<b>Quality of Life</b>												
<b>Patients</b>												
Physical Well-being	18.51	6.15	7-28	0-28	-.18 -.96							
Social Well-being	21.52	4.07	14-28	0-28	-.17 -.98							
Emotional Well-being	15.14	3.65	7-21	0-24	-.39 -.55							
Functional Well-being	17.60	5.65	9-28	0-28	.44 -.87							
Breast Cancer Symptoms	22.58	5.70	10-36	0-36	.26 .02							
FACT-G	72.77	14.50	43-103	0-108	.41 -.62							
FACT-B	95.33	19.35	60-136	0-138	.45							

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						-49
<b>Quality of Life</b>						
<b>Partners</b>						
Emotional	58.83	12.91	35-84	14-98		.09
Well-being						-.95
Illness	43.06	14.12	16-70	13-91		-.27
Intrusiveness						-.74

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\*p < .05 \*\*p < .01 \*\*\* p < .001

**Table 10.** Socio-Demographic, Relational and Clinical Characteristics of Older Couples

<b>Variable</b>	<b>Older Breast Cancer Patients (N=51)</b>	<b>Older Partners (N=51)</b>	<b>p value</b>
<b>Age</b> (mean score)	55.00 (SD= 5.74)	57.65 (SD= 6.97)	<.05
<b>Length of Relationship</b> (mean score)	25.66 (SD=11.64)	25.66 (SD=11.64)	n.s.
<b>Marital Status</b>			n.s.
Married	46 (90.2%)	46 (90.2%)	
Not Married	5 (9.8%)	5 (9.8%)	
<b>Race</b>			n.s.
Non-Hispanic White	49 (96.1%)	47 (92.2%)	
Black	–	1 (2.0%)	
Asian	–	1 (2.0%)	
Latino	1 (2.0%)	–	
Native American/Indian	–	1 (2.0%)	
Unknown/Other	1 (2.0%)	1 (2.0%)	
<b>Number of Children</b>			n.s.
0	8 (15.75)	4 (7.8%)	
1	4 (7.8%)	5 (9.8%)	
2	21 (41.2%)	22 (43.1%)	
3	12 (23.5%)	14 (27.5%)	
4	5 (9.8%)	5 (9.8%)	
5	1 (2.0%)	1 (2.0%)	
<b>Education</b> <sup>23</sup>			n.s.
Less than High School	–	–	
High School Graduate	4 (7.8%)	2 (3.9%)	
High School with some College	6 (11.6%)	10 (19.6%)	
College Graduate	13 (25.5%)	11 (21.6%)	
College with some Graduate Hours	8 (15.7%)	4 (7.8%)	
Master's Degree	18 (35.3%)	15 (29.4%)	
PhD, MD, JD	2 (3.9%)	9 (17.6%)	
Other	–	–	
<b>Occupation</b> <sup>24</sup>			n.s.
Unskilled Labor	1 (2.0%)	–	
Managerial	3 (5.9%)	16 (31.4%)	
Homemaker/Parent	7 (13.7%)	–	
Skilled Labor	1 (2.0%)	2 (3.9%)	
Professional	32 (62.7%)	27 (52.9%)	
Other	7 (13.7%)	6 (11.8%)	

<sup>23</sup> Non-significant differences are detected also when the variable is recoded in 2 categories, 1=High School graduate, and 2=College graduate.

<sup>24</sup> To conduct this chi-square analysis the variable Occupation was recoded in two categories to highlight differences between unskilled and skilled labor. Unskilled labor, homemaker, and other occupations were recoded as 1, managerial, skilled labor and professional were recoded as 2. The Fisher's Exact Test indicates a 2-sided significance of .048.

<b>Income</b>			n.s.
< \$10,000	1 (2.0%)	–	
\$10,000-29,900	1 (2.0%)	1 (2.0%)	
\$30,000-49,900	7 (13.7%)	5 (9.85)	
\$50,000-69,900	10 (19.6%)	6 (11.8%)	
\$70,000-89,900	1 (2.0%)	4 (7.8%)	
< \$90,000	31 (60.8%)	35 (68.6%)	
<b>Religious Affiliation</b>			n.s.
Catholic	19 (37.3%)	15 (29.4%)	
Protestant	17 (33.3%)	20 (39.2%)	
Jewish	7 (13.7%)	10 (19.6%)	
Atheist/Agnostic	3 (5.9%)	4 (7.8%)	
Other	5 (9.8%)	2 (3.9%)	
<b>Current Medications</b>			
Yes	32 (64.0%)		
No	18 (36.0%)		
<b>Chemotherapy</b>			
Yes	8 (16.35)		
No	41 (83.7%)		
<b>Mental Health Treatment in the Family</b>			n.s.
Yes	13 (25.5%)	11 (21.6%)	
No	38 (74.5%)	40 (78.4%)	
<b>Relationship with Person Treated for Mental Health Issues</b>			n.s.
Parent	5 (9.85)	4 (7.8%)	
Sibling	4 (7.85)	4 (7.8%)	
Grandparent	–	1 (2.0%)	
Other	3 (5.9%)	–	
Multiple Family Members	1 (2.0%)	2 (3.9%)	
Not Applicable	38 (74.5%)	40 (78.4%)	
<b>Treatment for Depression</b>			n.s.
Yes	16 (31.4%)	10 (19.6%)	
No	35 (68.6%)	40 (78.4%)	
<b>Timing of Treatment Depression</b>			
Before Cancer Diagnosis	14 (28.6%)		
After Cancer Diagnosis	2 (4.15)		
Before & After	1 (2.05)		
Not Applicable	32 (62.7%)		

**Table 11.** Sample Characteristics of the Major Study Variables for Older Couples

Variables	Patients					Partners					<i>t</i>	<i>p</i>
	M	SD	Range	Potential Range	Skewness Kurtosis	M	SD	Range	Potential Range	Skewness Kurtosis		
<b>Dyadic Coping</b>												
<b>Stress</b>	<b>4.26</b>	<b>.67</b>	<b>2.60-5.40</b>	<b>1-6</b>	<b>-.18</b>	<b>3.49</b>	<b>0.76</b>	<b>1.80-5.20</b>	<b>1-6</b>	<b>.06</b>	<b>5.37</b>	<b>&lt;.001***</b>
<b>Communication</b>					<b>-.54</b>					<b>-.19</b>		
Common Dyadic Coping	3.65	0.79	2.31-5.15	1-6	-.19	3.63	0.69	2.31-5.15	1-6	.22	.133	.895
Positive Dyadic Coping	4.12	0.80	2.33-5.48	1-6	-.41	4.08	0.74	2.72-5.52	1-6	-.02	.234	.815
Hostile Dyadic Coping	1.90	0.49	1.11-3.00	1-6	.34	1.80	0.47	1-3.67	1-6	.24	1.29	.198
Avoidance of Dyadic Coping	2.61	0.85	1-4.67	1-6	.25	2.51	0.68	1-4.33	1-6	-.16	.638	.525
Total Dyadic Coping	172.52	26.72	98-221	47-282	-.60	167.54	23.51	119-215	47-282	-.02	1.003	.318
<b>Mutuality</b>	4.46	0.63	2.82-5.77	1-6	-.29	4.48	0.78	1.00-5.59	1-6	-.47	-.182	.856
<b>Communication</b>	37.52	7.17	21-50	10-50	-.40	38.98	6.95	25-50	10-50	-.20	-1.04	.302
					-.40					-.17		
<b>Quality of Life</b>												
<b>Patients</b>												
Physical Well-being	22.52	4.05	10-28	0-28	.33					.83		
Social Well-being	23.47	3.62	12-28	0-28	.15					.66		
Emotional Well-being	17.51	2.73	12-23	0-24	-.15					-.54		
Functional Well-being	19.30	4.97	9-27	0-28	-.43					-.68		
Breast Cancer Symptoms	25.66	4.26	15-35	0-36	-.25					.07		
FACT-G	82.79	11.63	50-103	0-108	-.33					-.02		
FACT-B	108.46	12.36	70-137	0-138	-.22							

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.33

**Quality of Life  
Partners**

Emotional	68.47	12.58	40-98	14-98	-.02
Well-being					-.16
Illness	31.70	13.56	13-64	13-91	.61
Intrusiveness					.65

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\*p < .05 \*\*p < .01 \*\*\* p < .001

## Correlations

### *Bivariate Analyses: Patients*

As a pre-requisite for later analyses and to investigate multicollinearity, bivariate correlations between the major study variables of patients and partners, as well as the relationships between these variables and socio-demographic, clinical, relational and mental health variables were examined<sup>25</sup>.

#### *Correlations among the Major Study Variables*

Moderate positive correlations were found between self-reported levels of mutuality and stress communication ( $r = .36, p < .01$ ), and common dyadic coping ( $r = .42, p < .001$ ). Additionally, breast cancer patients' mutuality in their relationship with the partner was associated with higher ability to communicate their stress and to engage in a coordinate and symmetrical type of dyadic coping ( $r = .51, p < .001$ ). In contrast, women who presented higher scores on negative coping styles were characterized by reduced levels of perceived mutuality (Hostile Dyadic Coping:  $r = -.44, p < .001$ ; Avoidance of Dyadic Coping  $r = -.37, p < .001$ ). In the same direction were the correlations between dyadic coping and communication, with women higher on adaptive dyadic coping styles reporting higher levels of communication (Stress Communication:  $r = .33, p < .01$ ; Common Dyadic Coping:  $r = .39, p < .001$ ; Positive Dyadic Coping:  $r = .47, p < .001$ ). Similarly, positive associations were revealed between adaptive dyadic coping styles (Stress Communication, Common and Positive Dyadic Coping) and higher social well-being, while a negative correlation was found between total dyadic coping and emotional well-being ( $r = -.21, p < .05$ ). Higher impact of breast cancer symptoms and additional

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<sup>25</sup> To facilitate the review of the chapter, all the tables for these analyses have been placed in Appendix B and the coefficients have been reported in the text.

concerns were experienced by patients who showed high hostile dyadic coping ( $r = -.22$ ,  $p < .05$ ). This maladaptive coping style was also associated to lower quality of life, as evidenced by a negative correlation with the FACT-G and FACT-B total scores ( $r = -.32$ ,  $p < .05$ ,  $r = -.27$ ,  $p < .01$ ). Among women in our sample, higher self-reported levels of mutuality were associated with higher social and functional well-being ( $r = .62$ ,  $p < .001$ ;  $r = .24$ ,  $p < .05$ ), lower impact of breast cancer symptoms ( $r = .12$ ,  $p < .05$ ) and overall higher quality of life (FACT-G:  $r = .30$ ,  $p < .01$ , FACT-B:  $r = .27$ ,  $p < .05$ ).

#### *Correlations between Socio-Demographic Characteristics and Major Study Variables*

Older women tended to have more children ( $r = .30$ ,  $p < .01$ ), and their number was negatively associated to the level of education of the individual ( $r = -.25$ ,  $p < .05$ ). As expected, an association existed between education and occupation, with more educated women working as professionals ( $r = .30$ ,  $p < .01$ ). Age was positively associated with physical ( $r = .27$ ,  $p < .05$ ), emotional well-being ( $r = .32$ ,  $p < .01$ ), and overall higher levels of quality of life (FACT-G:  $r = .28$ ,  $p < .05$ ; FACT-B:  $r = .28$ ,  $p < .05$ ).

#### *Correlations Relational Variables and Major Study Variables*

Cohabitation was excluded from these analyses because it was constant across the sample; all couples were living together at the time of the study. Moderate positive correlations were identified between length of relationship and physical ( $r = .25$ ,  $p < .05$ ), social ( $r = .21$ ,  $p < .05$ ) and emotional well-being ( $r = .28$ ,  $p < .05$ ). These positive associations were confirmed also when the total score on the FACT-B and FACT-G were included in the analysis (FACT-G:  $r = .31$ ,  $p < .01$ ; FACT-B:  $r = .28$ ,  $p < .05$ ). Hence, in the present sample of breast cancer patients, the duration of the relationship was associated

with higher physical, social and emotional well-being as well as to overall higher quality of life.

#### *Correlations Clinical Variables and Major Study Variables*

Bivariate associations between clinical variables and the variables of interest were examined. Taking medications as part of the cancer treatment was associated with lower physical well-being ( $r = -.32, p < .01$ ) and higher scores on hostile dyadic coping ( $r = .26, p < .05$ ). Women who were undergoing chemotherapy reported lower scores on physical well-being ( $r = -.33, p < .01$ ). Similarly, negative moderate correlations were revealed between both these two variables and lower levels of functional well-being, higher impact of breast cancer symptoms and lower overall quality of life scores on the FACT-B ( $r = -.30, p < .01$ ;  $r = -.31, p < .05$ , respectively).

#### *Correlations Mental Health and Major Study Variables*

Finally, the association between mental health variables and dyadic coping, mutuality, communication and quality of life was examined. A moderate positive correlation was found between a family history for mental health treatment, and patients' treatment for depression ( $r = .35, p < .05$ ). Furthermore, present analysis highlighted that for patients who have received treatment for depression, lower scores were found for functional well-being ( $r = -.27, p < .05$ ) and on the FACT-G subscale ( $r = -.22, p < .05$ ).

#### ***Bivariate Analyses: Partners***

##### *Correlations among the Major Study Variables*

Findings from the bivariate analyses on partners revealed numerous significant relationships among the study's variables of interest. Men's perception of mutuality in their relationship was positively correlated with dyadic coping styles like stress

communication ( $r = .30, p < .01$ ), common dyadic coping ( $r = .75, p < .001$ ), and positive dyadic coping ( $r = .76, p < .001$ ), while higher levels of perceived mutuality were inversely associated with negative coping behaviors, namely hostile and avoidance of dyadic coping ( $r = -.57; r = -.58, p < .001$ ). Similarly, communication scores correlated positively with adaptive dyadic coping style (stress communication:  $r = .21, p < .05$ ; common dyadic coping:  $r = .67, p < .001$ ; positive dyadic coping:  $r = .65, p < .001$ ) and negatively with maladaptive coping styles (hostile dyadic coping:  $r = -.54, p < .001$ ; avoidance of dyadic coping:  $r = -.63, p < .001$ ). Significant correlations were also identified between emotional well-being and illness intrusiveness, with hostile dyadic coping negatively associated with emotional well-being ( $r = -.31, p < .01$ ) and greater illness intrusiveness of the woman's cancer ( $r = .37, p < .001$ ). A similar association was identified for avoidance of dyadic coping and reduced emotional well-being ( $r = -.21, p < .05$ ).

#### *Correlations between Socio-Demographic Characteristics and Major Study Variables*

Results of bivariate analyses between partners' socio-demographic characteristics and the variables of interest indicate that higher emotional well-being and lower illness intrusiveness are associated with age. In the present sample age was associated with higher quality of life and reduced impact of the illness demands ( $r = .34, p < .01$  and  $r = -.42, p < .001$ ). Additionally, age was associated inversely with negative coping behaviors, like hostile dyadic coping ( $r = -.24, p < .05$ ). However, no other socio-demographic variables were apparently correlated with dyadic coping. Higher intrusiveness was related to the partner's occupation, with higher demands registered for individuals working as professionals ( $r = .24, p < .05$ ). Individuals reporting greater income and affiliated with a

religion had more numerous families ( $r = .22, p < .05$  and  $r = -.24, p < .05$ ). Higher stress communication behaviors were registered for highly educated partners ( $r = .21, p < .05$ ).

#### *Correlations between Relational Variables and Major Study Variables*

With regard to the relational variables, the duration of the relationship was associated with lower scores of hostile dyadic coping ( $r = -.27, p < .05$ ), higher emotional well-being ( $r = .26, p < .05$ ) and reduced illness intrusiveness ( $r = -.24, p < .05$ ).

#### *Correlations between Mental Health and Major Study Variables*

Bivariate correlations between mental health variables and the main variables of interest indicate that partners diagnosed with depression utilized fewer positive coping strategies such as common dyadic coping ( $r = -.27, p < .05$ ), positive dyadic coping ( $r = -.24, p < .05$ ), while also presenting lower mutuality ( $r = -.28, p < .01$ ) and communication scores ( $r = -.24, p < .05$ ).

*Specific Aim 1: To describe differences between younger and older couples on Quality of Life, Dyadic Coping, Communication and Mutuality*

**Hypothesis 1.1: Younger patients with breast cancer will report lower quality of life, mutuality, communication, and higher negative dyadic coping styles compared to older breast cancer patients**

An independent- samples  $t$  test compared the mean scores of quality of life, mutuality, communication and dyadic coping styles of younger and older breast cancer patients. Results indicate that no differences existed in the present sample for mutuality, communication and dyadic coping styles, suggesting that younger and older patients present similar coping skills (Table 12). However, younger women did report worse quality of life than their older counterpart. Significant mean differences were identified for physical ( $t_{(53)} = -3.38, p < .01$ ), social ( $t_{(84)} = -2.33, p < .05$ ) and emotional well-being ( $t_{(59)} = -3.26, p < .01$ ), next to higher impact of breast cancer symptoms ( $t_{(84)} = -2.86, p < .01$ ). These results were also confirmed when the total scores of the FACT-G ( $t_{(57)} = -3.51, p < .01$ ) and FACT-B ( $t_{(52)} = -3.53, p < .01$ ) were considered.

**Table 12.** Independent Samples t-Test comparing Dyadic Coping, Mutuality, Communication, and Quality of Life among younger and older breast cancer patients

Variable	Age Group	M	SD	t	p	95% CI	
						LL	UL
Stress	Younger Patients	4.14	.78900	-.71	.48	-.43076	.20197
Communication	Older Patients	4.26	.67764			-.44122	.21242
Common	Younger Patients	3.53	.67158	-.77	.44	-.45235	.19947
Dyadic Coping	Older Patients	3.65	.79367			-.44257	.18969
Positive	Younger Patients	4.08	.82055	-.18	.85	-.38577	.32202
Dyadic Coping	Older Patients	4.12	.80406			-.38798	.32423
Hostile	Younger Patients	2.07	.57317	1.45	.15	-.06285	.39823
Dyadic Coping	Older Patients	1.90	.49524			-.07019	.40557
Avoidance of	Younger Patients	2.79	.89302	0.94	.35	-.20135	.56117
Dyadic Coping	Older Patients	2.61	.85990			-.20507	.56488
Total Dyadic	Younger Patients	175.14	23.744	0.46	.64	-8.564	13.752
Coping	Older Patients	172.55	26.728			-8.330	13.518
Mutuality	Younger Patients	4.38	.70105	-0.57	.57	-.37247	.20653
	Older Patients	4.46	.63623			-.37877	.21283
Communication	Younger Patients	38.34	7.01655	0.52	.60	-2.29085	3.91774
	Older Patients	37.53	7.17594			-2.28366	3.91055
Physical	Younger Patients	18.51	6.25044	-3.38	<b>.001**</b>	-6.19362	-1.81667
Well-being	Older Patients	22.52	4.05540			-6.38232	-1.62797
Social	Younger Patients	21.51	4.06780	-2.33	<b>.022*</b>	-3.61431	-.28760
Well-being	Older Patients	23.47	3.62548			-3.65668	-.24522
Emotional	Younger Patients	15.14	3.64726	-3.26	<b>.002**</b>	-3.73119	-.99486
Well-being	Older Patients	17.50	2.73126			-3.81461	-.91144
Functional	Younger Patients	17.60	5.65269	-1.47	.14	-3.99774	.59382
Well-being	Older Patients	19.30	4.97455			-4.06219	.65826
Breast Cancer	Younger Patients	22.59	5.69697	-2.86	<b>.005**</b>	-5.21721	-.94315
Symptoms	Older Patients	25.67	4.26607			-5.34753	-.81284
FACT-G	Younger Patients	72.77	14.50926	-3.51	<b>.001**</b>	-15.37418	-4.66798
	Older Patients	82.79	10.46523			-15.74074	-4.30142
FACT-B	Younger Patients	95.36	19.39514	-3.53	<b>.001**</b>	-19.90846	-6.29407
	Older Patients	108.46	12.36090			-20.53769	-5.66483

**Hypothesis 1.2: Younger partners will report lower quality of life, mutuality, communication and higher negative dyadic coping styles compared to older partners of breast cancer patients**

An independent-samples *t* test was conducted to compare the mean scores of quality of life, mutuality, communication and dyadic coping styles of younger and older partners of breast cancer patients. Results indicate that although partners show similar scores on mutuality and communication, the younger group did report higher scores of maladaptive dyadic coping, lower mean scores of stress communication, common and positive dyadic coping, next to worse quality of life than the older group (Table 13). Significant mean differences between the two groups have been identified for hostile dyadic coping ( $t_{(84)} = 3.16, p < .01$ ), emotional well-being ( $t_{(84)} = -3.45, p < .01$ ) and illness intrusiveness ( $t_{(84)} = 3.75, p < .001$ ).

**Table 13.** Independent Samples t-Test comparing Dyadic Coping, Mutuality, Communication, and Quality of Life among younger and older partners

Variable	Age Group	M	SD	t	p	95% CI	
						LL	UL
Stress	Younger Partners	3.65	.70	-.75	.45	-.44552	.20087
Communication	Older Partners	3.49	.77			-.44050	.19585
Common Dyadic Coping	Younger Partners	3.51	.52	-.93	.33	-.40439	.14677
Positive Dyadic Coping	Older Partners	3.63	.69			-.39016	.13255
Hostile Dyadic Coping	Younger Partners	3.88	.56	-1.41	.18	-.49246	.09644
Avoidance of Dyadic Coping	Older Partners	4.08	.74			-.47787	.08185
Total Dyadic Coping	Younger Partners	2.13	.45	3.16	<b>.002**</b>	.11869	.52308
Mutuality	Older Partners	1.81	.47			.11956	.52221
Communication	Younger Partners	2.69	.75	1.14	.256	-.13194	.48973
Emotional Well-being	Older Partners	2.51	.68			-.13916	.49696
Intrusiveness	Younger Partners	163.68	.48085	-.84	.40	-12.94421	5.21760
	Older Partners	167.54	.78093			-12.33660	4.60999
Quality of Life	Younger Partners	4.45	0.48	-.22	.82	-.33734	.11825
	Older Partners	4.48	0.78			-.33204	.11294
Stress	Younger Partners	38.40	7.17	-.37	.71	-3.65561	2.49482
Communication	Older Partners	38.98	6.95			-3.68141	2.52063
Emotional Well-being	Younger Partners	58.83	12.91	-3.45	<b>.001**</b>	-15.19395	-4.09008
Intrusiveness	Older Partners	68.47	12.58			-15.23441	-4.04963
Quality of Life	Younger Partners	43.06	14.12	3.75	<b>&lt;.001***</b>	5.33111	17.37142
	Older Partners	31.71	13.56			5.26941	17.43311

**Hypothesis 1.3: The association of quality of life scores between patients and partners in older couples will be higher than the association of quality of life scores of patients and partners in younger couples**

After examining differences among mean scores of younger and older patients and partners, the association between quality of life and dyadic coping scores in the two groups was investigated. Pearson  $r$  correlations were calculated to examine the level of association between quality of life scores among the two partners in younger and older couples (Table 14 and Table 15). Results indicate that the physical and social well-being of younger patients is associated to higher emotional well-being of the partner ( $r = .34, p < .05; r = .37, p < .05$ ). Similarly, moderate positive correlations are registered between total scores for quality of life and partner's well-being (FACT-G:  $r = .43, p < .01$ ; FACT-B:  $r = .42, p < .05$ ). When the analysis was conducted on the older group, significant associations were detected for both illness intrusiveness and emotional well-being of partners. In particular, higher scores on social well-being of patients were associated to reduced level of illness intrusiveness ( $r = -.20, p < .05$ ) and higher emotional well-being of the partner ( $r = .32, p < .05$ ). The same direction of association was registered for women's physical well-being and illness intrusiveness ( $r = -.33, p < .05$ ). Finally, as overall quality of life of older cancer patients improved, so the intrusiveness of the illness' demands on the caregiver was reduced ( $r = -.30, p < .05; r = -.31, p < .05$ ) and emotional well-being improved ( $r = .29, p < .05$ ).

Contrary to our expectations, correlations coefficients of younger couples were higher. However, the association between patients and partners' quality of life in older couples exists for both measures of quality of life, while among the younger group significant correlations are limited to emotional well-being.

**Table 14.** Bivariate Correlations of Quality of Life Scores of Younger Patients and Partners

Variable	1	2	3	4	5	6	7	8	9
1. Physical Well-being Patient		.17	.51**	.55**	.50**	.76***	.75***	-.26	.34*
2. Social Well-being Patient			.14	.33*	.45**	.54**	.56**	.05	.37*
3. Emotional Well-being Patient				.58***	.38*	.73***	.68***	-.01	.19
4. Functional Well-being Patient					.43**	.86***	.81***	-.19	.31
5. Breast Cancer Symptoms Patient						.60***	.76***	-.01	.32
6. FACT-G Patient							.97***	-.18	.43**
7. FACT-B Patient								-.13	.42*
8. Illness Intrusiveness Partner									-.44**
9. Emotional Well-being Partner									

Note: Illness Intrusiveness: higher scores indicate higher levels of intrusiveness; Emotional Well-being:: higher scores on this variable indicate better quality of life.

**Table 15.** Bivariate Correlations of Quality of Life Scores of Older Patients and Partners

Variable	1	2	3	4	5	6	7	8	9
1. Physical Well-being Patient		.18	.21	.60***	.62**	.66***	.71***	-.33*	.12
2. Social Well-being Patient			.18	.39**	.16	.58***	.52***	-.20*	.32*
3. Emotional Well-being Patient				.43**	.34*	.57***	.56***	-.17	.08
4. Functional Well-being Patient					.50***	.88***	.86***	-.19	.25
5. Breast Cancer Symptoms Patient						.54***	.72***	-.18	.17
6. FACT-G Patient							.97***	-.30*	.29*
7. FACT-B Patient								-.31*	.24
8. Illness Intrusiveness Partner									-.44**
9. Emotional Well-being Partner									

Note: Illness Intrusiveness: higher scores indicate higher levels of intrusiveness; Emotional Well-being:: higher scores on this variable indicate better quality of life.

**Hypothesis 1.4: The association of dyadic coping scores between patients and partners in older couples will be higher than the association of dyadic coping scores of patients and partners in younger couples**

Pearson  $r$  Product Coefficients were calculated to examine the level of association between dyadic coping scores of patients and partners in younger and older couples (Table 16 and Table 17). Results indicate that younger dyads are characterized by the presence of significant large correlations between common and positive dyadic coping scores of the two partners ( $r = .57, p < .001$  and  $r = .61, p < .001$ ). A large negative correlation was also reported between common dyadic coping of the patient and hostile dyadic coping of the partner, indicating that as the woman's score on common dyadic coping increases, so hostile dyadic coping behaviors of the caregiver decrease ( $r = -.52, p < .01$ ). In the same direction, but at a moderate level, a negative association exists between common dyadic coping and avoidance of dyadic coping: the higher the level of common dyadic coping reported, the lower is the tendency of the partner to refrain from engaging in supportive coping behaviors. A similar situation is registered with positive dyadic coping: moderate positive correlations are identified between positive dyadic coping of the patient and the common and positive dyadic coping score of the caregiver ( $r = .39, p < .05$ ;  $r = .44, p < .01$ ). In the expected direction are the negative correlations recorded for maladaptive coping styles: as the score of the woman increases on positive dyadic coping, so a reduction in hostile and avoidance of dyadic coping scores of the partners occurs ( $r = -.36, p < .05$ ;  $r = -.38, p < .05$ ). It is important to note the absence of correlation between negative dyadic coping scores of the patient and any of the coping styles of the partner, because this represents a difference between younger and older dyads.

If we focus our attention on the older group, we notice that moderate correlations exist between common dyadic coping of patients and common and positive dyadic coping of the partners ( $r = .44, p < .01$ ;  $r = .45, p < .01$ ). In the opposite direction are the associations between common dyadic coping of the patients and the partners' scores on hostile and avoidance of dyadic coping; with reduction of the maladaptive forms of coping as the patients' score increases. Similar scores and the same direction of association are found when positive dyadic coping is analyzed. Very interesting are the results obtained for avoidance of dyadic coping in the patient. Higher scores on this maladaptive coping style of older patients are associated with reduced common and dyadic coping for their spouses ( $r = .30, p < .01$ ;  $r = -.30, p < .05$ ).

Three are the elements that emerge from this analysis. First, in both samples stress communication scores of the partners were not associated with any of the other coping styles. Second, if we compare the correlation coefficients, higher associations were registered especially between the common dyadic coping of younger couples. Third, in the older group patients and partners' association of dyadic coping scores extended also to negative coping styles, while this was not reported in the younger dyads.

**Table 16.** Bivariate Correlations of Dyadic Coping Scores of Younger Patients and Partners

Variable	1	2	3	4	5	6	7	8	9	10
1. Stress Communication Patient		.55**	.66***	-.42*	-.38*	-.22	.20	.21	-.13	-.15
2. Common Dyadic Coping Patient			.89***	-.32	-.42*	.02	.57***	.61***	-.52**	-.46**
3. Positive Dyadic Coping Patient				-.60***	-.58***	-.02	.38*	.44**	-.36*	-.38*
4. Hostile Dyadic Coping Patient					.70**	.16	.01	.04	.01	.12
5. Avoidance of Dyadic Coping Patient						.18	.10	.12	.13	.11
6. Stress Communication Partner							.41*	.34*	-.21	-.29
7. Common Dyadic Coping Partner								.92**	-.49**	-.54**
8. Positive Dyadic Coping Partner									-.58***	-.64***
9. Hostile Dyadic Coping Partner										.65***
10. Avoidance of Dyadic Coping Partner										

**Table 17.** Bivariate Correlations of Dyadic Coping Scores of Older Patients and Partners

Variable	1	2	3	4	5	6	7	8	9	10
1. Stress Communication Patient		.55***	.57***	.14	-.33*	.09	.25	.27	.01	-.08
2. Common Dyadic Coping Patient			.91***	-.20	-.53***	-.04	.45**	.44**	-.47**	-.32*
3. Positive Dyadic Coping Patient				-.23	-.56***	.01	.39**	.39**	-.38**	-.34*
4. Hostile Dyadic Coping Patient					.14	-.05	-.13	-.14	.20	.08
5. Avoidance of Dyadic Coping Patient						-.06	-.33**	-.30*	.27	.27
6. Stress Communication Partner							.45***	.46**	.15	-.07
7. Common Dyadic Coping Partner								.93***	-.36**	-.40**
8. Positive Dyadic Coping Partner									-.36**	-.48***
9. Hostile Dyadic Coping Partner										.36**
10. Avoidance of Dyadic Coping Partner										

*Specific Aim 2: To examine the relationship between dyadic coping and quality of life for younger breast cancer patients and partners*

*Hypothesis 2.1: Positive forms of dyadic coping (Stress Communication, Common Dyadic Coping, Positive Dyadic Coping), will be associated with higher levels of quality of life for younger breast cancer patients*

Since positive forms of dyadic coping have been consistently associated with higher quality of life, we were interested in testing this association among younger patients and partners. Findings from the Pearson  $r$  coefficients (Table 18) revealed that stress communication is significantly associated to physical well-being ( $r = -.38, p < .05$ ), suggesting that as the physical well-being of the patient improves, so the level of stress communication decreases. Positive associations were found between social well-being and stress communication ( $r = .45, p < .01$ ), common dyadic coping ( $r = .56, p < .001$ ), and positive dyadic coping ( $r = .58, p < .001$ ). On the contrary, reduced social well-being was found for individuals reporting hostile dyadic coping ( $r = -.48, p < .01$ ) and avoidance of dyadic coping ( $r = -.53, p < .01$ ). Hostile dyadic coping, in particular, was also associated with worse level of overall quality of life (FACT-G:  $r = -.38, p < .05$ ; FACT-B:  $r = -.41, p < .051$ ) and breast cancer symptoms, as measured by the subscale “additional concerns” ( $r = -.41, p < .05$ ).

It is therefore possible to affirm that, as hypothesized, positive forms of dyadic coping are associated with higher levels of quality of life in younger women with breast cancer and that this association has been found especially for their social well-being.

**Table 18.** Bivariate Correlations for Younger Breast Cancer Patients Scores on Quality of Life and Dyadic Coping

<b>Variables</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>
1. Stress Communication		.48**	.60**	-.24	-.39*	-.37*	.45**	-.30	-.18	-.11	-.23	-.21
2. Common Dyadic Coping			.86***	-.59***	-.63***	.02	.56***	-.18	-.03	.15	.09.	.11
3. Positive Dyadic Coping				-.63***	-.66***	-.19	.58***	-.23	-.06	.04	.02	.02
4. Hostile Dyadic Coping					.62***	-.24	-.48**	-.04	-.28	-.41*	-.38*	-.41*
5. Avoidance of Dyadic Coping						.07	-.53**	.11	-.16	-.08	-.13	-.12
6. Physical Well-being		.	.				.24	.23	.72***	.64***	.79***	.78***
7. Social Well-being			.					-.03	.42*	.48**	.50**	.51**
8. Emotional Well-being		.	.						.47**	.45**	.51**	.51**
9. Functional Well-being										.73***	.92***	.90***
10. Breast Cancer Symptoms											.81***	.89***
11. FACT-G												.98***
12. FACT-B												

***Hypothesis 2.2: Positive forms of dyadic coping (Stress Communication, Common Dyadic Coping, Positive Dyadic Coping), will be associated to higher levels of quality of life for partners of younger breast cancer patients***

Pearson  $r$  Product Coefficients have been calculated to examine the relationship between dyadic coping and quality of life of partners of younger women with breast cancer (Table 19). In contrast to the hypothesis, results from the bivariate analysis revealed the absence of a significant association between all of the categories of dyadic coping and quality of life scores for younger partners.

**Table 19.** Bivariate Correlations for Younger Partners Scores on Quality of Life and Dyadic Coping

<b>Variables</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
1. Stress Communication		.41**	.34**	-.21	-.29	.52**	-.21	.17
2. Common Dyadic Coping			.92***	-.49***	-.54***	.89***	-.07	.19
3. Positive Dyadic Coping				-.58***	-.64***	.93***	.06	.13
4. Hostile Dyadic Coping					.65***	-.334*	-.28	.11
5. Avoidance of Dyadic Coping						-.46**	-.30	-.15
6. Total Dyadic Coping							-.10	.19
7. Emotional Well-being								-.31
8. Illness Intrusiveness								

***Hypothesis 2.3: The relationship between dyadic coping styles and quality of life for patients and partners is influenced by socio-demographic, clinical, relational and mental health variables***

In order to determine if the relationship between dyadic coping and quality of life differed by socio-demographic, clinical, relational and mental health variables, Pearson  $r$  correlation coefficients<sup>26</sup> were calculated. Using these results to select significant predictors of quality of life, a series of multiple regression analysis were run to test the the influence of dyadic coping along with the control variables on women's and partners' quality of life. As the goal of the present study was to understand differences in the developmental trajectory of dyadic coping over the life-span, age was entered in each multiple regression<sup>27</sup> and the whole sample of patients was included in the analysis. This

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<sup>26</sup> Findings from the bivariate analysis revealed several significant relationships. For patients Hostile Dyadic Coping was associated with the current use of medication ( $r = .25, p < .05$ ) while Common Dyadic Coping increased for women who haven't been diagnosed with depression in the past ( $r = -.23, p < .05$ ). Among socio-economic factors, age was correlated with several subscales of the FACT-B. Positive associations were revealed between age and Physical Well-being ( $r = .27, p < .05$ ,  $r = .32, p < .01$ ), Emotional Well-being and the two total scores of the FACT-G ( $r = .29, p < .01$ ) and FACT-B ( $r = .28, p < .05$ ). Additionally, higher levels of quality of life were associated to length of relationship. Moderate positive correlation coefficients were recorded for Physical Well-being ( $r = .25, p < .05$ ), Social Well-being ( $r = .21, p < .05$ ), Emotional Well-being ( $r = .28, p < .05$ ), FACT-G ( $r = .31, p < .01$ ) and the total score on the FACT-B ( $r = .28, p < .01$ ), suggesting that breast cancer patients in more stable and longer relationship reported higher quality of life scores on all of these subscales.

Findings also show that receiving chemotherapy and medications as part of the cancer treatment was negatively associated to numerous aspect of the individual's quality of life, with negative correlations registered for Physical well-being ( $r = -.33, p < .01$ ), Functional Well-being ( $r = .24, p < .05$ ), Breast Cancer Symptoms ( $r = .36, p < .01$ ) and the overall FACT-G ( $r = -.26, p < .05$ ) and FACT-B scores ( $r = -.31, p < .01$ ). Chemotherapy was linked to reduced Physical ( $r = -.33, p < .01$ ), Functional Well-being ( $r = -.22, p < .05$ ), higher impact of cancer symptoms ( $r = -.32, p < .01$ ) and overall worse scores on the total FACT-G ( $r = -.26, p < .05$ ) and FACT-B ( $r = -.30, p < .01$ ). For women with breast cancer having received a previous diagnosis of depression was associated to negative Functional Well-being ( $r = -.27, p < .05$ ) and worse overall functioning on the FACT-G subscale ( $r = -.22, p < .05$ ). With regard to the impact of dyadic coping on the woman's quality of life, numerous associations have been detected. Adaptive dyadic coping styles contributed to higher Social Well-being, as indicated by positive moderate correlations between Social Well-being and Stress Communication ( $r = .32, p < .01$ ), Common Dyadic Coping ( $r = .26, p < .05$ ) and Positive Dyadic Coping ( $r = .30, p < .01$ ). On the contrary, maladaptive coping styles like Hostile and Avoidance of Dyadic Coping were associated to reduced scores on this subscale ( $r = -.35, p < .01$  and  $r = -.27, p < .05$ ). A negative correlation was registered between Total Dyadic Coping and Emotional Well-being ( $r = -.21, p < .05$ ). The negative association of Hostile Dyadic Coping and the quality of life of women with breast cancer was confirmed by negative correlations identified with Breast Cancer Symptoms ( $r = -.32, p < .05$ ), FACT-G ( $r = -.22, p < .05$ ) and the total score on the FACT-B ( $r = -.27, p < .05$ ).

<sup>27</sup> Another option was to conduct the analysis including a dummy variable in the equation. It was however preferred to treat age as continuous.

strategy was selected to meet the sample size indication from Tabachnick and Fidell (2007), as the younger group of patients is limited to only 35 individuals<sup>28</sup>. All regression equations used a backward method of model building: all predictors were entered in the equation and then non-significant variables were removed one at a time<sup>29</sup>. Removal stopped when R squared values decreased and indication of problematic correlation among predictors were identified.

The first equation regressed the outcome variable social well-being on age, length of relationship, stress communication, positive dyadic coping, hostile dyadic coping and avoidance dyadic coping. Because of multicollinearity, common dyadic coping was removed from the analysis<sup>30</sup>. Although it is recommended to not include in the same analysis subscales of an instrument (Meyers et al., 2006), in this case stress communication, positive, hostile and avoidance of dyadic coping were retained because of their correlation coefficients (which were below the problematic correlation of .75 as suggested by Meyers et al., 2006) and because of the absence of multicollinearity issues as evidenced by Tolerance and VIF (Variance Inflation Factor) scores in the multiple regression analysis.

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<sup>28</sup> Required sample size is influenced by desired power, alpha level, number of predictors and expected effect sizes. A general indication provided by Tabachnick and Fidell (2007) is to conduct regression analysis when  $N \geq 50 + 8m$  (where  $m$  is the number of IVs), assuming a medium-size relationship between IVs and the DV, .05 and  $\beta = .20$ . Since only 35 patients and 35 partners were considered young, running the analysis only on them would have been incorrect. It was then decided to use as sample the 86 women and 86 partners included in the study.

<sup>29</sup> This strategy was preferred to the simultaneous and stepwise method because of the limited sample size and the absence of a theoretical justification for the entry order of variables. A first attempt was made with the simultaneous/enter option but led to non-significant findings, which improved with following removal of variables.

<sup>30</sup> A very large positive correlation exists between Positive and Common Dyadic Coping ( $r = .90, p < .001$ ). On the contrary Age and Length of Relationship were kept in the analysis because Collinearity Statistics, and in particular the Variance Inflation Factor, did not indicate the existence of problematic collinearity.

$$\hat{Y}_{swb} = a + b_1 (\text{Age}) + b_2 (\text{Length of Relationship}) + b_3 (\text{Stress Communication}) + b_4 (\text{Positive Dyadic Coping}) + b_5 (\text{Hostile Dyadic Coping}) + b_6 (\text{Avoidance of Dyadic Coping}) + e$$

The second equation regressed the outcome variable of emotional well-being on age, length of relationship and total dyadic coping.

$$\hat{Y}_{ewb} = a + b_1 (\text{Age}) + b_2 (\text{Length of Relationship}) + b_3 (\text{Total Dyadic Coping}) + e$$

The third equation regressed the outcome variable FACT-G on age, length of relationship, chemotherapy, medications and hostile dyadic coping.

$$\hat{Y}_{Fact-G} = a + b_1 (\text{Age}) + b_2 (\text{Length of Relationship}) + b_3 (\text{Chemotherapy}) + b_4 (\text{Medications}) + b_5 (\text{Hostile Dyadic Coping}) + e$$

The fourth equation regressed the outcome breast cancer symptoms on age, medications, chemotherapy and hostile dyadic coping.

$$\hat{Y}_{bcs} = a + b_1 (\text{Age}) + b_2 (\text{Medications}) + b_3 (\text{Chemotherapy}) + b_4 (\text{Hostile Dyadic Coping}) + e$$

The fifth equation regressed the outcome variable FACT-B on age, length of relationship, medications, chemotherapy and hostile dyadic coping.

$$\hat{Y}_{fact-b} = a + b_1 (\text{Age}) + b_2 (\text{Length of Relationship}) + b_3 (\text{Medication}) + b_4 (\text{Chemotherapy}) + b_5 (\text{Hostile Dyadic Coping}) + e$$

Physical and functional well-being were excluded from present analyses due to the absence of significant correlation with any dyadic coping style. Before conducting the

analyses described, Skewness and Kurtosis were examined again for all the variables included. Length of relationship presented moderate kurtosis (-1.17), use of medications was characterized by substantial negative kurtosis (-1.82), chemotherapy was moderately skewed (1.42) as well as treatment for depression (1.14). Numerous transformations have been attempted but none could improve the distribution of these variables, which were then retained in the analysis in their original presentation.

A multiple regression analysis was performed to investigate whether age, length of relationship, stress communication, positive dyadic coping, hostile dyadic coping and avoidance of dyadic coping significantly predicted social well-being scores of breast cancer patients (Table 20). The final model presents a  $R^2$  statistic statistically significant, ( $F_{(4,81)} = 6.54$ ,  $p < .001$ ;  $R^2$  Adjusted=.207), indicating that approximately 21% of variance in social well-being can be explained by the predictors. Length of relationship, stress communication and hostile dyadic coping significantly contributed to the prediction of social functioning performance. As hypothesized, higher well-being was predicted for women who have been involved in a relationship for a longer number of years and were able to communicate their needs to the partner, while the opposite was identified for women with breast cancer who reported higher scores on hostile dyadic coping, controlling for other variables.

**Table 20.** Multiple Regression Analysis Predicting Social Well-being Score for Breast Cancer Patients

Variables	Social Well-being Score				
	B	Std. Error(B)	$\beta$	<i>t</i>	Part Correlation
Constant	20.28	3.39		5.98***	
<b>Length of Relationship Stress Communication</b>	<b>.06</b>	<b>.03</b>	<b>.19</b>	<b>2.02*</b>	<b>.19</b>
<b>Hostile Dyadic Coping</b>	<b>1.42</b>	<b>.56</b>	<b>.26</b>	<b>2.54*</b>	<b>.24</b>
Avoidance of Dyadic Coping	-2.01	.76	-.27	-2.66**	-.26
	-0.33	.49	-.07	-.67	-.06

Overall  $R^2 = .244$ , Adjusted  $R^2 = .207$ ,  $F(4,81) = 6.54$ ,  $p < .001$

\* $p < .05$  \*\* $p < .01$  \*\*\*  $p < .001$

In a second analysis, age, length of relationship and total dyadic coping were entered in a multiple regression analysis to predict patients' emotional well-being (Table 21). Results show that age is a significant predictor of emotional well-being, with higher scores reported as age of patients increases. A one standard deviation increase in age (9.82 points) results in a .29 (Standardized Beta Weight) \* 3.32 (SD of Emotional Wellbeing) = .963 points increase in emotional well-being. The final model presents a significant  $R^2$  statistic ( $F_{(2,83)} = 6.10$ ,  $p < .01$ ,  $R^2$  Adjusted=.107), indicating that approximately 11% of variance in emotional well-being can be explained by the predictors.

**Table 21.** Multiple Regression Analysis Predicting Emotional Well-being Score for Breast Cancer Patients

Variables	Emotional Well-being Score				Part Correlation
	B	Std. Error(B)	$\beta$	<i>t</i>	
Constant	15.70	3.18		4.93***	
Age	<b>.09</b>	<b>.03</b>	<b>.29</b>	<b>2.80**</b>	<b>.29</b>
Total Dyadic Coping	-0.02	.02	-.17	-1.61	-.16

Overall  $R^2 = .128$ , Adjusted  $R^2 = .107$ ,  $F(2,83) = 6.10$ ,  $p < .01$

\* $p < .05$  \*\* $p < .01$  \*\*\*  $p < .001$

Then, a multiple regression analysis was performed to investigate if an increase in patient's age, length of relationship, hostile dyadic coping and current treatment for breast cancer (medications and chemotherapy) contributed to the patients' score on the FACT-G subscale (Table 22). In the final model the  $R^2$  statistic was statistically significant ( $F_{(3,80)} = 5.82$ ,  $p < .001$  Adjusted  $R^2 = .188$ ), indicating that approximately 19% of variance in the quality of life of women with breast cancer can be explained by the present model. Age and currently taking medications were identified as significant predictors of the subscale score. Quality of life increases with age and for those not receiving additional medical treatment. Interestingly, hostile dyadic coping only approached significance ( $p = .08$ ).

**Table 22.** Multiple Regression Analysis Predicting FACT-G Score for Breast Cancer Patients

Variables	FACT-G Score				
	B	Std. Error(B)	$\beta$	<i>t</i>	Part Correlation
Constant	73.10	8.19		8.92***	
<b>Age</b>	<b>.38</b>	<b>.13</b>	<b>.29</b>	<b>2.88**</b>	<b>.28</b>
Chemotherapy	-4.04	3.41	-.13	-1.19	-.12
<b>Medications</b>	<b>-6.02</b>	<b>2.93</b>	<b>-.23</b>	<b>-2.05*</b>	<b>-.20</b>
Hostile Dyadic Coping	-4.43	2.52	-.18	-1.76	-.17

Overall  $R^2 = .228$ , Adjusted  $R^2 = .188$ ,  $F(4,79) = 5.82$ ,  $p < .001$

\* $p < .05$  \*\* $p < .01$  \*\*\*  $p < .001$

To predict the impairment in quality of life caused by the symptoms and limitations of breast cancer, a multiple regression analysis was conducted (Table 23). Results indicate that the final model was statistically significant ( $F_{(4,81)} = 6.54$ ,  $p < .001$ . Adjusted  $R^2 = .227$ ), and that approximately 23% of the variance in breast cancer symptoms was explained. In particular, hostile dyadic coping was a significant predictor of higher impairment<sup>31</sup>, with the current use of medications being another significant predictor.

<sup>31</sup> Higher scores on the subscales and on the two total scores of the FACT-B indicate higher quality of life.

**Table 23.** Multiple Regression Analysis Predicting Breast Cancer Symptoms Score for Breast Cancer Patients

Variables	Breast Cancer Symptoms Score				
	B	Std. Error(B)	$\beta$	<i>t</i>	Part Correlation
Constant	26.95	3.09		8.71***	
Age	.08	.05	.16	1.63	.16
<b>Medications</b>	<b>-2.79</b>	<b>1.11</b>	<b>-.27</b>	<b>-2.52*</b>	<b>-.24</b>
Chemotherapy	-2.12	1.29	-.17	-1.65	-.16
<b>Hostile Dyadic Coping</b>	<b>-2.28</b>	<b>.95</b>	<b>-.24</b>	<b>-2.40*</b>	<b>-.23</b>

Overall  $R^2 = .264$ , Adjusted  $R^2 = .227$ ,  $F(4,81) = 6.54$ ,  $p < .001$

\* $p < .05$  \*\* $p < .01$  \*\*\*  $p < .001$

Finally, a multiple regression analysis examined the relationship between hostile dyadic coping and the overall quality of life scores at the FACT-B, controlling for age, length of relationship, medications, and chemotherapy (Table 24). The final model was statistically significant ( $F_{(4,79)} = 7.47$ ,  $p < .001$ , Adjusted  $R^2 = .238$ ) and explained approximately 24% of the variance in the total quality of life score. In particular, the multiple regression analysis revealed that age, medications and hostile dyadic coping are significant predictors of the FACT-B score, with better outcomes experienced as age of the patient increases, by participants who were not taking medications at the time of the study and by those who reported lower levels of hostile dyadic coping.

**Table 24.** Multiple Regression Analysis Predicting FACT-B Score of Breast Cancer Patients

Variables	FACT-B Score				
	B	Std. Error(B)	$\beta$	<i>t</i>	Part Correlation
Constant	100.54	10.83		9.88***	
<b>Age</b>	<b>.47</b>	<b>.17</b>	<b>.28</b>	<b>2.83**</b>	<b>.27</b>
<b>Medications</b>	<b>-8.08</b>	<b>3.62</b>	<b>-.26</b>	<b>-2.43*</b>	<b>-.23</b>
Chemotherapy	-6.16	4.21	-.15	-1.60	-.14
<b>Hostile Dyadic Coping</b>	<b>-6.71</b>	<b>3.62</b>	<b>-.21</b>	<b>-2.16*</b>	<b>-.21</b>

Overall  $R^2 = .275$ , Adjusted  $R^2 = .238$ ,  $F(4,79) = 7.47$ ,  $p < .001$

\* $p < .05$  \*\* $p < .01$  \*\*\*  $p < .001$

Similarly, correlations were run for dyadic coping styles, quality of life measures and socio-demographic, relational, and mental health variables for partners using Pearson *r* correlation coefficients<sup>32</sup>. A series of multiple regressions were then conducted to test the the influence of dyadic coping along with the control variables on partners' quality of life. Like before for women, age was entered in each multiple regression.

The first equation regressed the outcome variables emotional well-being on age, length of relationship, hostile dyadic coping and avoidance of dyadic coping.

$$\hat{Y}_{ewb} = a + b_1 (\text{Age}) + b_2 (\text{Length of Relationship}) + b_3 (\text{Hostile Dyadic Coping}) + b_4 (\text{Avoidance of Dyadic Coping}) + e$$

<sup>32</sup> Results indicate the presence of a significant positive association between Emotional Well-being and Age ( $r = .34$ ,  $p < .01$ ), suggesting that in the present sample quality of life increases for older caregivers. Similarly, greater Emotional Well-being was recorded for individuals who have been in a relationship for a longer number of years ( $r = .26$ ,  $p < .05$ ). In the present study, lower emotional well-being characterized individuals who reported negative coping style, like Hostile Dyadic Coping ( $r = -.31$ ,  $p < .01$ ) and Avoidance of Dyadic Coping ( $r = -.21$ ,  $p < .05$ ). Higher intrusiveness of cancer was identified for caregivers who were in less stable relationships ( $r = -.24$ ,  $p < .05$ ) and for those who held more demanding occupations in terms of time and responsibilities ( $r = .24$ ,  $p < .05$ ). Finally, higher intrusiveness was registered for partners presenting maladaptive coping style, like Hostile Dyadic Coping ( $r = .37$ ,  $p < .001$ ).

The  $R^2$  statistic was statistically significant ( $F_{(3,82)}=5.99$   $p<.01$ ,  $R^2$  Adjusted=.150), indicating that 15% of variance in emotional well-being of partners is explained by the current analysis (Table 25). In the final model only age significantly contributed to the prediction of emotional well-being for partners, suggesting that well-being improves as age of the partners increases. On the contrary non-significant was the contribution of hostile and avoidance of dyadic coping.

The second equation regressed the outcome variable of illness intrusiveness on age, length of relationship, occupation and hostile dyadic coping.

$$\hat{Y}_{iintr} = a + b_1 (\text{Age}) + b_2 (\text{Length of Relationship}) + b_3 (\text{Occupation}) + b_4 (\text{Hostile Dyadic Coping}) + e$$

The  $R^2$  statistic was statistically significant ( $F_{(4,81)} = 8.29$ ,  $p < .001$ ; Adjusted  $R^2 = .255$ ) and the model accounted for approximately 25.5% of variance in illness intrusiveness (Table 26). Results of the present multiple regression analysis indicate that higher illness intrusiveness was reported by partners as age decreases and by those who had higher self-reported scores of maladaptive dyadic coping (hostile dyadic coping).

**Table 25.** Multiple Regression Analysis Predicting Emotional Well-being of Partners

Variables	Emotional Well-being Score				
	B	Std. Error(B)	Beta	t	Part Correlation
Constant	61.43	9.86		6.23***	
<b>Age</b>	<b>.36</b>	<b>.13</b>	<b>.29</b>	<b>2.79**</b>	<b>.28</b>
Hostile Dyadic Coping	-5.38	3.28	-.19	-1.64	-.16
Avoidance of Dyadic Coping	-1.82	2.18	-.09	-.83	-.08

Overall  $R^2 = .180$ , Adjusted  $R^2 = .150$ ,  $F(3,82) = 5.99$ ,  $p < .01$

\* $p < .05$  \*\* $p < .01$  \*\*\*  $p < .001$

**Table 26.** Multiple Regression Analysis Predicting Illness Intrusiveness of Partners

Variables	Illness Intrusiveness Scores				
	B	Std. Error(B)	Beta	t	Part Correlation
Constant	34.67	11.02		3.15***	
<b>Age</b>	<b>-.49</b>	<b>.16</b>	<b>-.39</b>	<b>-3.07**</b>	<b>-.29</b>
Length of Relationship	.07	.14	.07	.58	.05
Occupation	1.97	1.00	.19	1.97	.18
<b>Hostile Dyadic Coping</b>	<b>8.79</b>	<b>3.02</b>	<b>.29</b>	<b>2.96**</b>	<b>.28</b>

Overall  $R^2 = .291$ , Adjusted  $R^2 = .255$ ,  $F(4,81) = 8.29$ ,  $p < .001$

\* $p < .05$  \*\* $p < .01$  \*\*\*  $p < .001$

***Specific Aim 3: To assess the actor and partner effects of Mutuality on Dyadic Coping among breast cancer patients and partners and to identify differences by age group***

***Hypothesis 3.1: Patients' perceived mutuality will influence their own dyadic coping style and their partners' dyadic coping style***

***Hypothesis 3.2: Partners' perceived mutuality will influence their own dyadic coping style and the patients' dyadic coping style***

***Hypothesis 3.3: Differences in actor and partner effects of mutuality on dyadic coping exist by age group, between younger and older dyads***

The third aim of the study was to assess the actor and partner effects of mutuality on dyadic coping among breast cancer patients and partners. In particular, it was hypothesized that patients' and partners' perceived mutuality will influence their own dyadic coping style, their partners' dyadic coping style, and that differences existed by age group. The Actor-Partner Interdependence Model (APIM) was used to examine whether this individual characteristic has interpersonal consequences on the dyadic coping style reported by each member of the dyad, controlling for the level of mutuality of each partner (Kashy & Donnellan, 2012; Kashy & Snyder, 1995; Kenny et al., 2006; Kenny, 1996).

To facilitate a clear understanding of the analysis and avoid confusion with the partner effect, partners will be addressed with the term "caregivers" in the present paragraph. Results are reported in tables and graphs, with a first table presenting multilevel regression coefficients estimating actor and partner effects. A second table includes the simple slopes regression coefficients estimating separate mutuality actor and partner effects for patients and caregivers on the different dyadic coping styles. Finally, the APIM model is traditionally summarized in the form of a figure where the actor and partner effects are visually displayed by the use of intersecting arrows. For the present

analysis, standardized coefficients are presented for both actor and partner effects. If no significant interaction was found between role and actor or partner effect, then no difference exists between the actor and partner effects of patients and caregivers, and the standardized coefficient of the average effect is reported in the figure to remind the reader of its significance.

Two analyses were conducted: first a standard APIM model for distinguishable dyads was calculated with actor and partner mutuality scores used as predictors of dyadic coping for patients and caregivers. Second, to examine actor and partner effects in the two age groups, two separate APIM models were calculated for younger and older couples. This decision was supported by the significant differences identified between the two groups by the earlier analyses about the experience of coping with breast cancer. In the study of couples' coping and adjustment to stress, length of relationship is an important variable to control for, as it is well established that better relational outcomes are reported for couples who have been together longer. However, in the present analysis, it was decided not to add this variable to the equation for two reasons: length of relationship and age are highly correlated ( $r = .66, p < .001$ ) in the present sample. Second, while a power analysis algorithm hasn't been developed yet for dyadic data analysis, the basis for this technique is regression (Chung et al., 2009; Kenny et al., 2006). With a sample size of 35 dyads, assuming an alpha level of .05, the power of the regression F-test to detect a significant prediction model for dyadic coping is approximately 0.80 in the presence of a medium effect size<sup>33</sup>. Similarly, with a sample size of 51 dyads,

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<sup>33</sup>Before conducting the power analysis to support the decision to run two separate analysis by age group, the effect size of the individual dyadic coping style was calculated from the squared multiple correlation of each partner score using the software G\*Power 3.1.9.2 Results indicate an average effect size of 0.164 for the younger group and 0.118 for the older group.

assuming an alpha level of .05, the power of the regression F-test to detect a significant prediction model for dyadic coping is approximately .82 with an effect size of .118. By adding another variable to the equation, power would have been significantly compromised. Power estimates were obtained using G\*Power 3.1.9.2.

As the total dyadic coping score is obtained from the sum of the items included in all the other subscales and does not have a positive or negative implication in terms of individual's and relational adjustment to cancer, it is not presented in this chapter. It was however included in all the analyses. In the overall sample, mean differences by role were identified, with patients reporting significantly higher total dyadic coping scores than caregivers. An average actor effect was also found, indicating that higher mutuality contributes to higher total dyadic coping scores in the study participants. When analyzed in the two groups, mean differences by role and an average actor effect existed for younger dyads, while an overall actor effect identified in the older sample. Hence, among younger dyads it was predicted that patients report higher scores for total dyadic coping than caregivers, and that the individual's score on mutuality predicted patients and caregivers' own total dyadic coping score. Among older couples, only an average actor effect emerged from the analysis, which indicates that the mutuality score reported by the patient and the caregiver was predictive of her/his own total score.

### ***Stress Communication***

$$AStress\ Communication_{ij} = (b_0 + d_j) + b_1 ARole + b_2 AMutuality_{Cij} + b_3 PMutuality_{Cij} + b_4 (ARole * AMutuality_{Cij}) + b_5 (ARole * PMutuality_{Cij}) + e_{ij}$$

Multi-level modeling was used to examine whether a person's self-reported level of mutuality and his or her partner's mutuality predicts the individual's engagement in stress communication. Prior to analyzing the data, the actor and partner scores were grand-mean centered and the variable role was coded as 1 for patients, and -1 for caregivers. An Intraclass Correlation Coefficient was calculated on the actor and partner stress communication variables to address their non-independence. Results indicate that the variables are negatively correlated (ICC = -.241,  $p < .05$ ) and confirm their interdependence.

It was then tested whether role in the dyad should be treated as a distinguishable factor in the analyses. This distinguishability test resulted in a significant chi-square test, ( $\chi^2_{(4)} = 43.72, p < .001$ ) showing that constraints required for an indistinguishable model significantly worsened the model fit. Thus, dyads were treated as distinguishable, and the chosen residuals structure was heterogeneous compound symmetry<sup>34</sup>.

The results of the APIM analysis are presented in table 27. There is evidence of only an average actor effect of mutuality on stress communication, indicating no significant differences between patients' and caregivers' actor effects. Both patients and caregivers reporting high levels of mutuality were more likely to engage in stress communication behaviors. Specifically, a one unit increase in the mean score of

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<sup>34</sup> Heterogeneous Compound Symmetry is characterized by non-constant variance and constant correlation. Among the covariance structure possible in dyadic data analysis is the one most often used for distinguishable dyads.

mutuality is associated to a 0.37 unit increase in the person’s stress communication mean score. There wasn’t evidence that having a partner who reports higher mutuality increases the person’s use of stress communication strategies. Furthermore, these results indicate that there was a significant mean level difference between stress communication scores reported by patients and caregivers, with patients reporting higher use of this coping strategy. Finally, the approximate proportion of variance in stress communication explained by actor and partner mutuality was estimated. For patients pseudo  $R^2$  was 0.17, indicating that approximately 17% of the variance in stress communication was accounted for mutuality and for partners was 0.057, indicating that approximately 6% of the variance in stress communication of caregivers was accounted by mutuality.

**Table 27.** Multilevel regression coefficients estimating actor and partner effects of Mutuality on Stress Communication<sup>35</sup>

	<i>b</i>	$\beta$	<i>t</i> ( <i>df</i> )
Intercept	3.82		
<b>Role</b>	<b>0.39</b>	<b>0.47</b>	<b>7.20*** (83)</b>
<b>Actor Mutuality</b>	<b>0.37</b>	<b>0.30</b>	<b>4.33*** (150)</b>
Partner Mutuality	-0.07	-0.06	-0.82 (149)
Role*Actor Mutuality	0.09	0.07	1.13 (153)
Role*Partner Mutuality	0.05	0.04	0.64 (152)

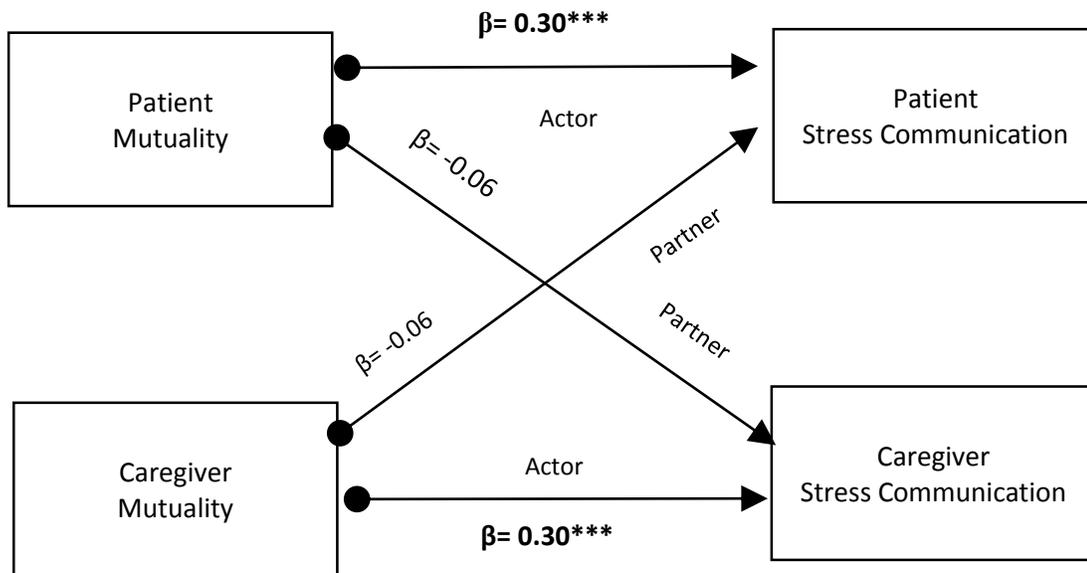
Note. Participant role was coded patient = 1, caregiver = -1.

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

<sup>35</sup> All the calculations for the APIM model are available for review in Appendix B.

**Figure 6.** The actor and partner effects of Mutuality as predictors of Stress Communication. APIM with distinguishable dyads regression model.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$



### *Common Dyadic Coping*

$$A_{Common\ Dyadic\ Coping\ ij} = (b_0 + d_j) + b_1 ARole + b_2 AMutuality\_C_{ij} + b_3 PMutuality\_C_{ij} + b_4 (ARole * AMutuality\_C_{ij}) + b_5 (ARole * PMutuality\_C_{ij}) + e_{ij}$$

This APIM model examined how patients and caregivers' mutuality scores predict the individual's ability to participate in the coping process in a coordinated and symmetrical manner. While the Intraclass Correlation Coefficient was significant ( $ICC = .477, p < .001$ ), the Test of Distinguishability wasn't significant ( $\chi^2_{(4)} = 7.186, p > .05$ ), showing that constraints required for an indistinguishable model wouldn't significantly worsen the model fit. However, despite this result, dyads were treated as distinguishable because of the extensive body of literature that identifies differences in the experience of cancer patients and their partners.

Both an average actor and partner effects of mutuality on common dyadic coping were identified (Table 28). Individuals reporting high levels of mutuality are more engaged in common dyadic coping behaviors as well as individuals whose partners report higher levels of mutuality. Specifically, a one unit increase in the mean score on mutuality is associated with a 0.65 unit increase in common dyadic coping score. Similarly, one unit increase in the mean score on mutuality of the partner contributes to 0.16 unit increase in the individual's score on coping. As a last step in the analysis the approximate proportion of variance in common dyadic coping explained by actor and partner mutuality for patients and caregivers were estimated. Pseudo R<sup>2</sup> was 0.55 for patients and 0.39 for caregivers, indicating that mutuality contributes to a large proportion of variance in common dyadic coping.

**Table 28.** Multilevel regression coefficients estimating actor and partner effects of Mutuality on Common Dyadic Coping

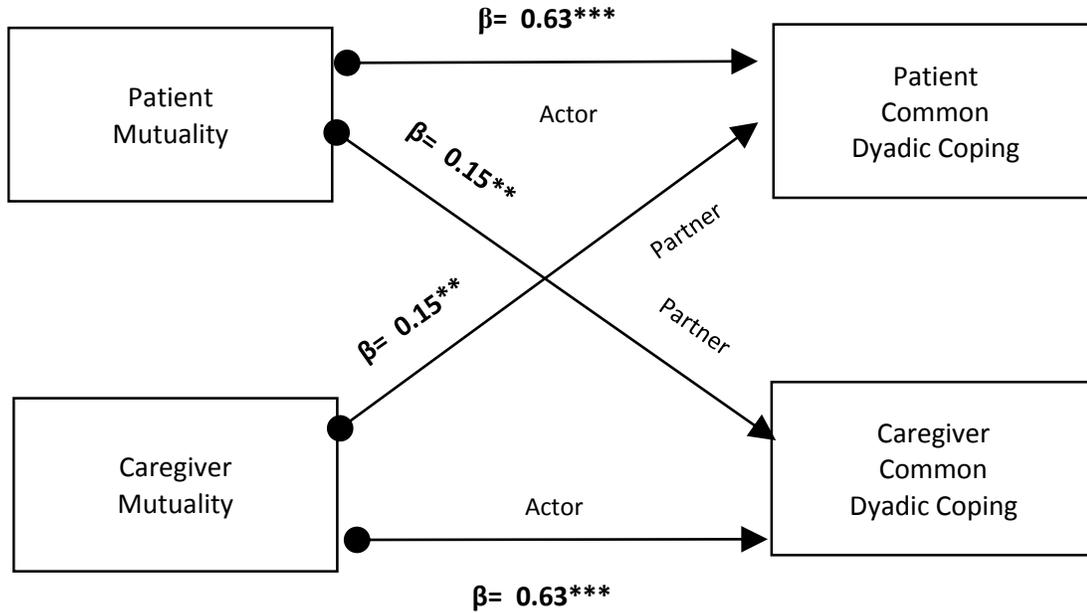
	<i>b</i>	$\beta$	<i>t</i> ( <i>df</i> )
Intercept	3.59		
Role	0.01	0.01	0.34 (83)
<b>Actor Mutuality</b>	<b>0.65</b>	<b>0.63</b>	<b>11.31*** (165)</b>
<b>Partner Mutuality</b>	<b>0.16</b>	<b>0.15</b>	<b>2.80** (165)</b>
Role*Actor Mutuality	0.10	0.10	1.65 (124)
Role*Partner Mutuality	0.04	0.04	0.75 (124)

Note. Participant role was coded patient = 1, caregiver = -1.

\**p* <.05, \*\* *p*<.01, \*\*\* *p*<.001

**Figure 7.** The actor and partner effects of Mutuality as predictors of Common Dyadic Coping. APIM with distinguishable dyads regression model.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$



**Positive Dyadic Coping**

$$APositive\ Dyadic\ Coping_{ij} = (b_0 + d_j) + b_1 ARole + b_2 AMutuality\_C_{ij} + b_3$$

$$PMutuality\_C_{ij} + b_4 (ARole * AMutuality\_C_{ij}) + b_5 (ARole * PMutuality\_C_{ij}) + e_{ij}$$

$$APositive\ Dyadic\ Coping_{ij} = b_1 Patient + b_2 Caregiver + b_3 Patient * AMutuality\_C_{ij} + b_4 Caregiver * AMutuality\_C_{ij} + b_5 Patient * PMutuality\_C_{ij} + b_6 Caregiver * PMutuality\_C_{ij} + e_{1j} + e_{2j}$$

In this analysis it was examined if the self-reported mutuality score of breast cancer patients and caregivers predicts the engagement in positive dyadic coping. Results of the Intraclass Correlation Coefficient confirmed that the two variables were positively correlated ( $ICC = .39, p < .001$ ) and nonindependent, while the Test of Distinguishability confirmed that dyads should be treated as distinguishable ( $\chi^2_{(4)} = 14.08, p < .01$ ).

As summarized in Table 29, an average actor and partner effects of mutuality on positive dyadic coping were found. Individuals reporting high levels of mutuality are more likely to engage in positive dyadic coping behaviors. Similarly, patients and caregivers whose partner reports higher levels of mutuality are predicted to engage in this coping style. Specifically, a one unit increase in the mean score of mutuality is associated to a 0.76 unit increase in the person's mean of positive dyadic coping, and a one unit increase in mutuality of the partner contributes to 0.13 unit increase in the outcome measure. In the present analysis, mean-level differences of positive dyadic coping of patients and caregivers approached significance ( $p = .053$ ).

In addition to these effects, role was a significant moderator of the actor effect, while the interaction between role and the partner effect failed to reach significance. To examine the actor by role interaction, the simple slopes for the actor effect of mutuality were calculated for patients and caregivers by using a two-intercept model approach. Both patients and caregivers' actor effects were statistically significant. However, the effect of mutuality on positive dyadic coping was higher on patients (Table 30).

Finally, the approximate proportion of variance was estimated. For patients pseudo  $R^2 = .64$  and for caregivers the pseudo  $R^2 = .40$ , indicating that a very large proportion of variance in positive dyadic coping is explained by patients and caregivers' mutuality.

In conclusion, results indicate that an individual's positive dyadic coping is predicted by both the individual and his/her partner's mutuality. Furthermore, role moderated the actor effect of mutuality and results suggest that although both patients and caregivers' own mutuality predicts positive dyadic coping while controlling for their

partner's mutuality, the patients' actor effect was significantly stronger than the caregivers' actor effect.

**Table 29.** Multilevel regression coefficients estimating actor and partner effects of Mutuality on Positive Dyadic Coping

	<i>b</i>	$\beta$	<i>t</i> ( <i>df</i> )
Intercept	4.05		
Role	0.06	0.09	1.96 (83)
<b>Actor Mutuality</b>	<b>0.76</b>	<b>0.68</b>	<b>12.98*** (164)</b>
<b>Partner Mutuality</b>	<b>0.13</b>	<b>0.11</b>	<b>2.13* (163)</b>
<b>Role*Actor Mutuality</b>	<b>0.17</b>	<b>0.15</b>	<b>2.66*** (132)</b>
Role*Partner Mutuality	0.01	0.01	0.10 (130)

Note. Participant role was coded patient = 1, caregiver = -1.

\* $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

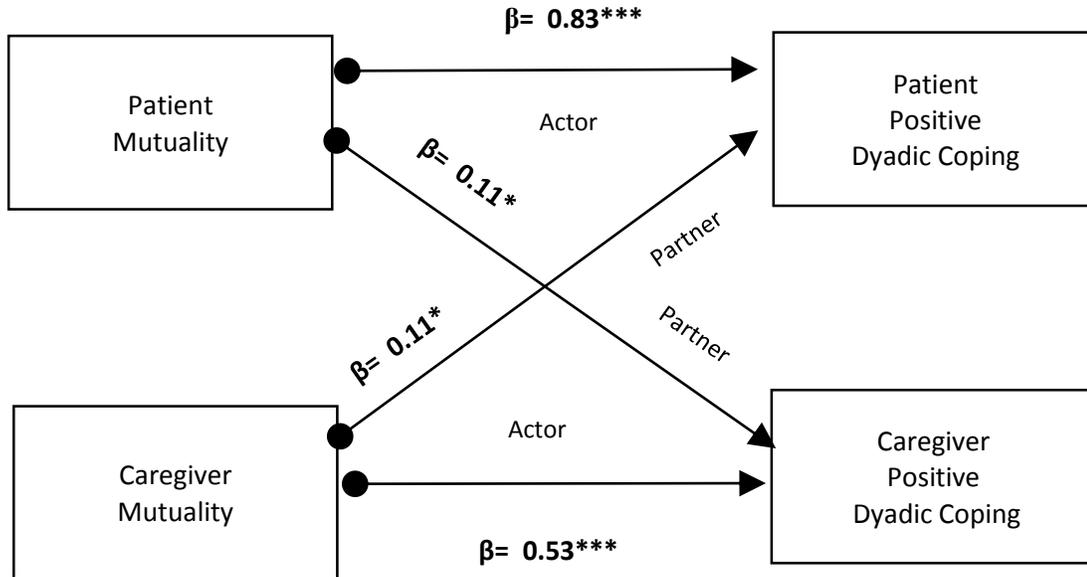
**Table 30.** Simple slope regression coefficients estimating separate Mutuality actor and partner effects for patients and caregivers on Positive Dyadic Coping

	<i>b</i>	$\beta$	<i>t</i> ( <i>df</i> )
Intercepts			
Patients	4.12		
Caregivers	3.98		
<b>Actor's Mutuality</b>			
<b>Patients</b>	<b>0.93</b>	<b>0.83</b>	<b>11.18*** (83)</b>
<b>Caregivers</b>	<b>0.59</b>	<b>0.53</b>	<b>6.66*** (83)</b>
Partner's Mutuality			
Patients	0.13	0.12	1.61 (83)
Caregivers	0.12	0.11	1.31 (83)

Note. \* $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

**Figure 8.** The actor and partner effects of Mutuality as predictors of Positive Dyadic Coping. APIM with distinguishable dyads regression model.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$



**Hostile Dyadic Coping**

$$AHostile\ Dyadic\ Coping_{ij} = (b_0 + d_j) + b_1 ARole + b_2 AMutuality_{Cij} + b_3 PMutuality_{Cij} + b_4 (ARole * AMutuality_{Cij}) + b_5 (ARole * PMutuality_{Cij}) + e_{ij}$$

$$AHostile\ Dyadic\ Coping_{ij} = b_1 Patient + b_2 Caregiver + b_3 Patient * AMutuality_{Cij} + b_4 Caregiver * AMutuality_{Cij} + b_5 Patient * PMutuality_{Cij} + b_6 Caregiver * PMutuality_{Cij} + e_{1j} + e_{2j}$$

The Actor-Partner Interdependence Model was used to examine whether a person’s self-reported level of mutuality and his or her partner’s mutuality predict the individual’s engagement in hostile dyadic coping behaviors. The Intraclass Correlation Coefficient was not significant (ICC=.150,  $p=.16$ ), suggesting a non-significant level of association for actor and partner variables. The Distinguishability Test resulted in a

significant chi-square test ( $\chi^2_{(4)} = 16.94, p < .01$ ) and dyads were then treated as distinguishable.

Results indicate the presence of an average actor effect of mutuality on hostile dyadic coping (Table 31). Both patients and caregivers reporting high levels of mutuality are less likely to engage in hostile dyadic coping behaviors, but this is not replicated when considering their partners' mutuality score. Specifically, a one unit increase in mutuality is associated to a 0.44 unit decrease in the person's hostile dyadic coping mean score. In addition to this effect, role was a significant moderator of the actor and partner effects of mutuality. To examine these interactions, the simple slope regression coefficients for patients and caregivers were calculated. As shown in Table 32, both patients and caregivers' actor effects were statistically significant, but the effect of mutuality on hostile dyadic coping was higher on patients. Among the partner effects, only the one for caregivers was significant.

Finally, the approximate proportion of variance in hostile dyadic coping explained by actor and partner effect of mutuality for patients and caregivers was estimated. For patients pseudo  $R^2 = .33$  and for caregivers the pseudo  $R^2 = .28$ , indicating that actor and partner effects for mutuality accounted for a large proportion of variance in hostile dyadic coping.

In conclusion, results indicate that hostile dyadic coping is predicted by the individual's mutuality score of both patients and caregivers. Furthermore, role moderated the actor and partner effects of mutuality and results suggest that although both patients and caregivers' own mutuality predicts reduced hostile dyadic coping, the patient's actor effect was significantly stronger than the caregiver's. The partner effect of mutuality was

significant only for caregivers, indicating that increases in the mutuality scores of patients were associated to lower levels of hostile dyadic coping in the caregivers. More simply, the patients' perceived mutuality in the relationship is predicted to reduce their own and their partners' hostile dyadic coping score. But the caregiver's perceived mutuality only affected his own score on this coping style.

**Table 31.** Multilevel regression coefficients estimating actor and partner effects of Mutuality on Hostile Dyadic Coping

	<i>b</i>	$\beta$	<i>t</i> ( <i>df</i> )
Intercept	1.95		
Role	0.01	0.02	.41 (83)
<b>Actor Mutuality</b>	<b>-0.44</b>	<b>-0.50</b>	<b>-7.44*** (139)</b>
Partner Mutuality	-0.06	-0.07	-1.09 (140)
<b>Role*Actor Mutuality</b>	<b>-0.16</b>	<b>-0.18</b>	<b>-2.76** (145)</b>
<b>Role*Partner Mutuality</b>	<b>0.13</b>	<b>0.15</b>	<b>2.20* (147)</b>

Note. Participant role was coded patient = 1, caregiver = -1.

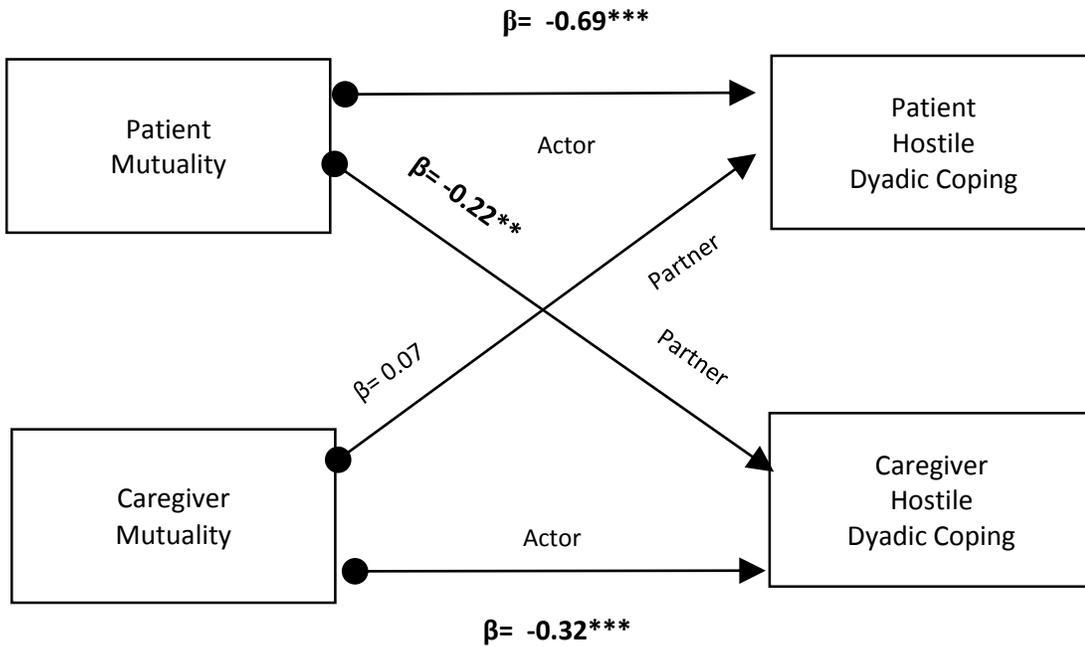
\* $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

**Table 32.** Simple slope regression coefficients estimating separate mutuality actor and partner effects for patients and caregivers on Hostile Dyadic Coping

	<i>b</i>	$\beta$	<i>t</i> ( <i>df</i> )
Intercepts			
Patients	1.97		
Caregivers	1.94		
<b>Actor's Mutuality</b>			
<b>Patients</b>	<b>-0.61</b>	<b>-0.69</b>	<b>-6.36*** (83)</b>
<b>Caregivers</b>	<b>-0.28</b>	<b>-0.32</b>	<b>-4.00*** (83)</b>
<b>Partner's Mutuality</b>			
<b>Patients</b>	<b>0.06</b>	<b>0.07</b>	<b>0.68 (83)</b>
<b>Caregivers</b>	<b>-0.19</b>	<b>-0.22</b>	<b>-2.70** (83)</b>

Note. \* $p < .05$

**Figure 9.** The actor and partner effects of Mutuality as predictors of Hostile Dyadic Coping. APIM with distinguishable dyads regression model.  
 \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .



***Avoidance of Dyadic Coping***

$$AAvoidance\ of\ Dyadic\ Coping_{ij} = (b_0 + d_j) + b_1 ARole + b_2 AMutuality\_C_{ij} + b_3 PMutuality\_C_{ij} + b_4 (ARole * AMutuality\_C_{ij}) + b_5 (ARole * PMutuality\_C_{ij}) + e_{ij}$$

Avoidance of dyadic coping is observed when the coping responses of one partner are ambivalent and superficial, and therefore authentic engagement is absent. The degree to which a person’s self-reported level of mutuality and the partner’s mutuality predict the individual’s avoidance of dyadic coping was investigated using multilevel modeling. The Intraclass Correlation Coefficient only approached significance ( $ICC = .196, p = .06$ ), and a significant chi square analysis ( $\chi^2_{(4)} = 10.52, p < .05$ ) confirmed that dyads could be treated as distinguishable.

There is evidence of both an actor and partner effect of mutuality on avoidance of dyadic coping (Table 33). Individuals reporting high levels of mutuality are less likely to engage in avoidant dyadic coping behaviors, and the same occurs for patients and caregivers whose partners are higher in mutuality. Specifically, a one unit increase in mutuality is associated to a 0.53 unit decrease in the person's avoidant dyadic coping mean score. Further, every one unit increase in the partner's mean mutuality score is associated with a 0.19 reduction in the avoidance of dyadic coping. Role was not a significant moderator of the actor and partner effects, as the interaction between role and these two effects failed to reach significance.

The approximate proportion of variance in avoidance of dyadic coping explained by actor and partner mutuality for patients and caregivers was estimated. For patients pseudo  $R^2 = 0.24$  and for caregivers the pseudo  $R^2 = 0.27$ . Thus the actor and partner effects for mutuality accounted for a large proportion of the variance in avoidance of dyadic coping.

In conclusion, results indicate that an individual's avoidance of dyadic coping is predicted by the self-reported score on mutuality, as well as by the partner's. Furthermore, role did not moderate the actor and partner effects of mutuality, indicating that no significant differences exist in the actor and partner effects of patients and caregivers.

**Table 33.** Multilevel regression coefficients estimating actor and partner effects of Mutuality on Avoidance of Dyadic Coping

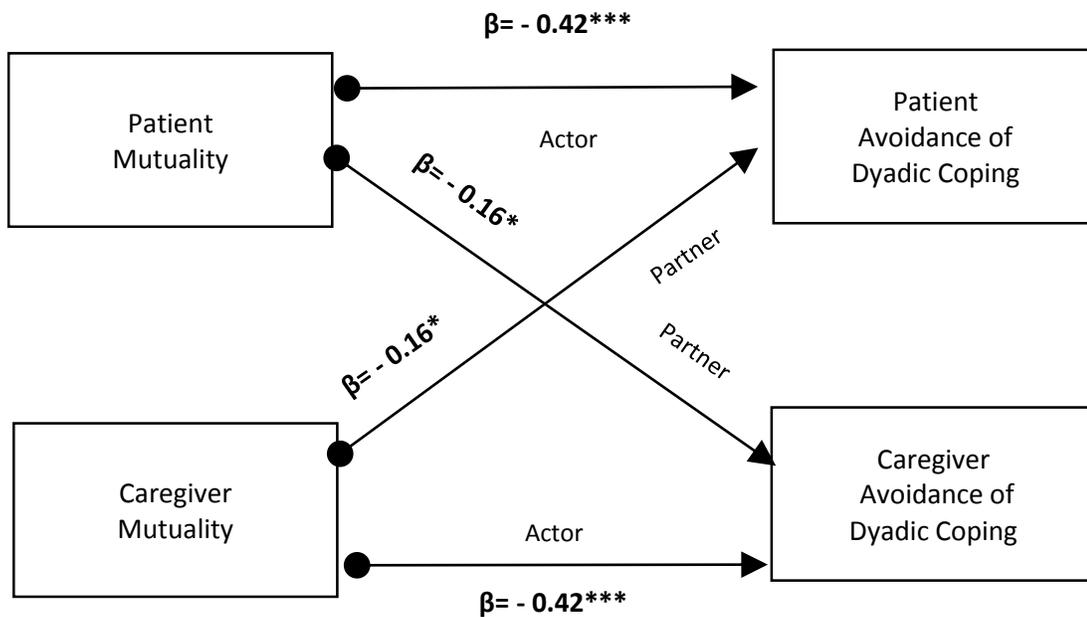
	<i>b</i>	$\beta$	<i>t</i> ( <i>df</i> )
Intercept	2.64		
Role	0.05	0.06	1.02 (83)
<b>Actor Mutuality</b>	<b>-0.53</b>	<b>-0.42</b>	<b>-6.03*** (142)</b>
<b>Partner Mutuality</b>	<b>-0.19</b>	<b>-0.16</b>	<b>-2.21* (144)</b>
Role*Actor Mutuality	-0.12	-0.10	-1.42 (141)
Role*Partner Mutuality	0.09	0.07	1.02 (143)

Note. Participant role was coded patient = 1, caregiver = -1.

\* $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

**Figure 10.** The actor and partner effects of Mutuality as predictors of Avoidance of Dyadic Coping. APIM with distinguishable dyads regression model.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$



### ***Actor Partner Model by Age Group***

After this initial analysis, separate APIM models were conducted on the younger and older dyads to detect differences in the actor and partner effects. Using the effect coded variable Age Group (-1: Younger Dyads, 1: Older Dyads) the sample was divided in two groups and the same dyadic data analysis was conducted on them.

#### ***Stress Communication***

Multi-level modeling was used to examine the degree to which patients and caregivers' mutuality predicts the individual's engagement in stress communication in younger and older dyads. Prior to analyzing the data, an Intraclass Correlation Coefficient and a Test of Distinguishability were conducted. Actor and partner's scores on Stress Communication are negatively correlated ( $ICC = -.385, p < .05$ ) and nonindependent in the younger sample, while for older couples the ICC was not significant ( $ICC = -.145, p > .05$ ). The distinguishability test resulted in a significant chi-square test for both groups, suggesting that dyads could be treated as distinguishable (Appendix B). The residual structure was, again, heterogeneous compound symmetry.

In both groups there is evidence of only an average actor effect of mutuality on stress communication (see Table 34 and Table 35). Individuals reporting high levels of mutuality were more likely to engage in stress communication behaviors. Specifically, a one unit increase in the mean score of mutuality is associated to a 0.66 unit increase in stress communication for younger participants, while for older patients and caregivers this increase was of 0.25. There wasn't evidence that having a partner who reported higher mutuality increased the person's use of this coping strategy. Furthermore, mean level differences exist between stress communication by patients and caregivers, with

younger and older patients reporting higher use of this coping strategy than their respective caregivers.

The approximate proportion of variance in stress communication explained by actor and partner mutuality was estimated. For both younger patients and caregivers pseudo  $R^2$  was 0.25, indicating that a large amount of variance in stress communication was accounted for by mutuality. In the older counterpart, pseudo  $R^2$  for patients was 0.108 and the  $R^2$  for partners was 0.023, indicating that approximately 11% and 2.3% of the variance in stress communication is accounted for by patients and partners' mutuality respectively.

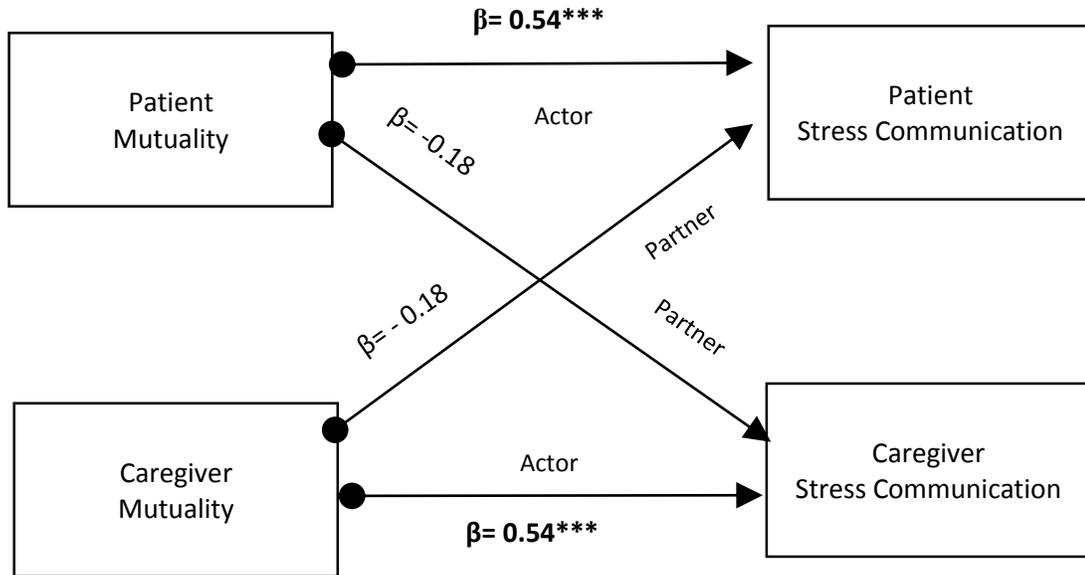
**Table 34.** Multilevel regression coefficients estimating actor and partner effects of Mutuality on Stress Communication of Younger Couples

	<i>b</i>	$\beta$	<i>t</i> ( <i>df</i> )
Intercept	3.75		
<b>Role</b>	<b>0.42</b>	<b>0.51</b>	<b>4.85*** (32)</b>
<b>Actor Mutuality</b>	<b>0.66</b>	<b>0.54</b>	<b>4.29*** (50)</b>
Partner Mutuality	-0.22	-0.18	-1.35 (45)
Role*Actor Mutuality	-0.07	-0.05	-0.46 (58)
Role*Partner Mutuality	0.13	0.11	0.85 (50)

Note. Participant role was coded patient = 1, caregiver = -1.

\* $p < .05$ \*\*  $p < .01$ , \*\*\*  $p < .001$

**Figure 11.** The actor and partner effects of Mutuality as predictors of Stress Communication in Younger Couples. APIM with distinguishable dyads regression model. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .0001$



**Table 35.** Multilevel regression coefficients estimating actor and partner effects of Mutuality on Stress Communication in Older Couples

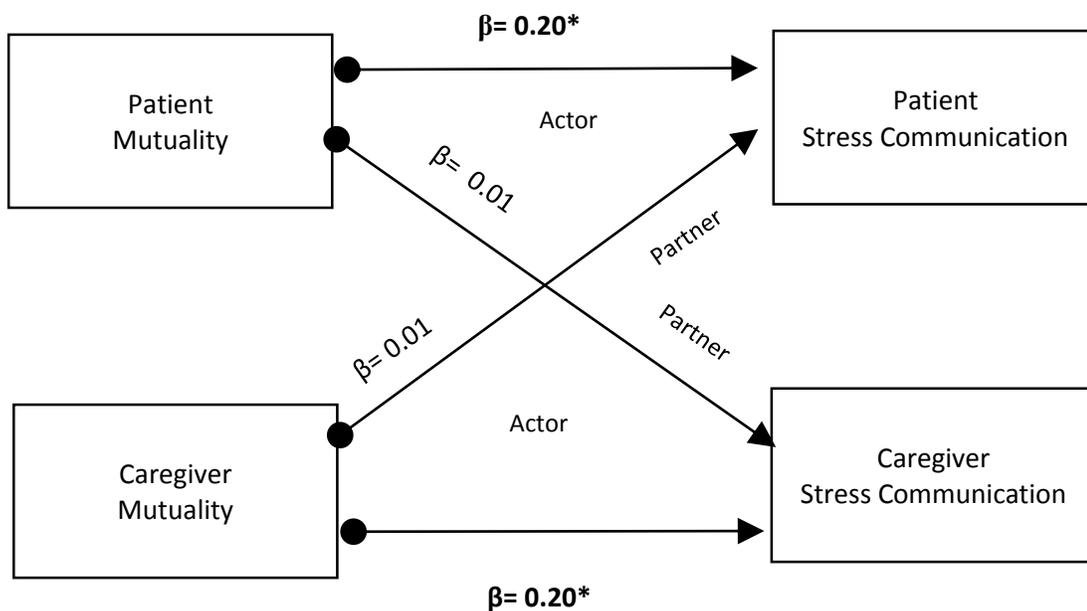
	<i>b</i>	$\beta$	<i>t</i> ( <i>df</i> )
Intercept	3.86		
<b>Role</b>	<b>0.37</b>	<b>0.45</b>	<b>5.50*** (48)</b>
<b>Actor Mutuality</b>	<b>0.25</b>	<b>0.20</b>	<b>2.39* (91)</b>
Partner Mutuality	0.01	0.01	0.06 (82)
Role*Actor Mutuality	0.09	0.08	0.93 (85)
Role*Partner Mutuality	0.01	0.01	0.02 (77)

Note. Participant role was coded patient =1, caregiver = -1

\* $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

**Figure 12.** The actor and partner effects of Mutuality as predictors of Stress Communication in Older Couples. APIM with distinguishable dyads regression model.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .0001$



### *Common Dyadic Coping*

The next analysis examined actor and partner effects of mutuality on common dyadic coping behaviors. The Intraclass Correlation Coefficient indicates that actor and partner's scores on this type of dyadic coping are nonindependent in each group (Younger Dyads: ICC = .52,  $p < .01$ ; Older Dyads: ICC = .44,  $p < .01$ ). The distinguishability test resulted in a significant chi-square test for the younger group, while the results of the distinguishability test failed to reach significance for older participants (Appendix B). Despite this, older dyads were treated as distinguishable on the basis of the literature available about couples coping with cancer-related stress. A heterogeneous compound symmetry structure was used to organize residuals.

The results of the APIM analysis for younger and older dyads are presented in Table 36 and 37. Differences exist when comparing the multilevel regression coefficients. Among younger dyads, the analysis revealed the presence of an average actor and partner effect of mutuality on common dyadic coping. Younger patients and caregivers reporting high levels of mutuality were more likely to engage in common dyadic coping behaviors. Specifically, a one unit increase in the mean score of mutuality is associated to a 0.70 unit increase in common dyadic coping. There was also evidence that having a partner who scores high on mutuality increases the person's use of common coping strategies. A one unit increase in the mean score of mutuality reported by the partner is associated to a 0.25 unit increase. On the contrary, among older dyads only an average actor effect was found, indicating that a one unit increase in mutuality of both patients and caregivers was associated to a .65 unit increase in the common dyadic coping score.

Finally, the approximate proportion of variance in common dyadic coping explained by actor and partner mutuality was estimated. For younger patients and caregivers pseudo  $R^2$  were .55 and .48 respectively, indicating that a very large proportion of variance was explained by mutuality. In the older counterpart, pseudo  $R^2$  for patients was 0.57 and the  $R^2$  for partners was 0.36, indicating that approximately 57% and 36% of the variance in common dyadic coping is accounted for by patients and partners' mutuality.

**Table 36.** Multilevel regression coefficients estimating Actor and Partner effects of Mutuality on Common Dyadic Coping scores of Younger Couples

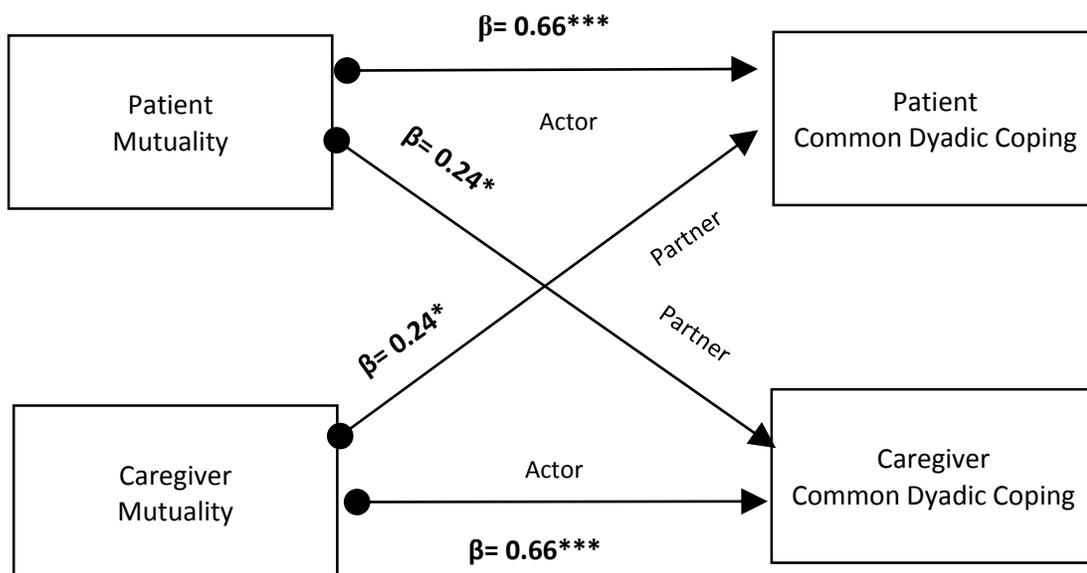
	<i>b</i>	$\beta$	<i>t</i> ( <i>df</i> )
Intercept	3.52		
Role	0.04	0.05	1.10 (32)
<b>Actor Mutuality</b>	<b>0.69</b>	<b>0.66</b>	<b>7.45*** (63)</b>
<b>Partner Mutuality</b>	<b>0.25</b>	<b>0.24</b>	<b>2.35* (45)</b>
Role*Actor Mutuality	-0.04	-0.04	-0.39 (44)
Role*Partner Mutuality	0.21	0.20	1.79 (39)

Note. Participant role was coded patient = 1, caregiver = - 1.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

**Figure 13.** The actor and partner effects of Mutuality as predictors of Common Dyadic Coping in Younger Couples. APIM with distinguishable dyads regression model.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$



**Table 37.** Multilevel regression coefficients estimating actor and partner effects of Mutuality on Common Dyadic Coping in Older Couples

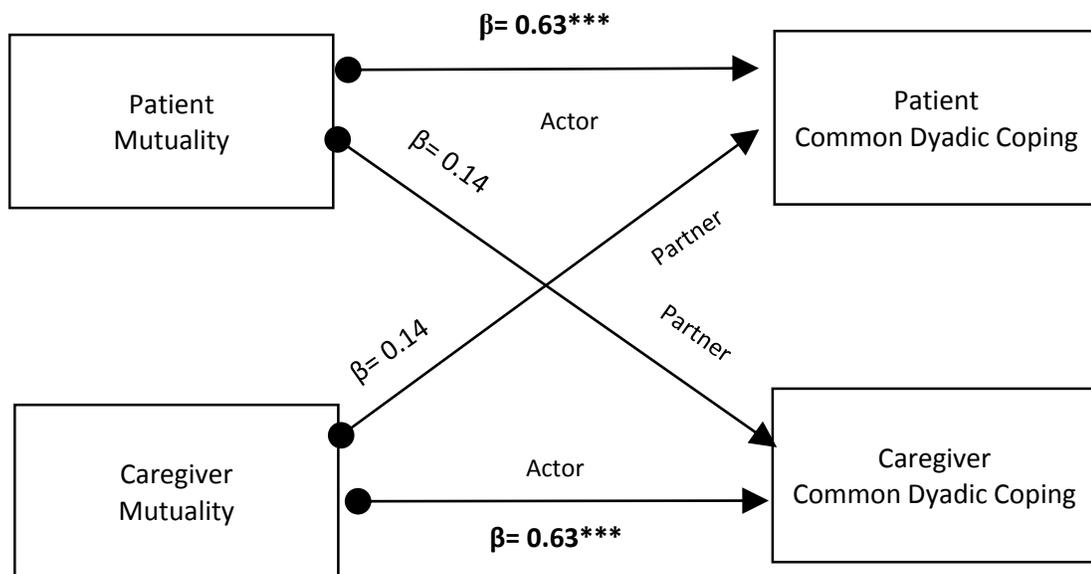
	<i>b</i>	$\beta$	<i>t</i> ( <i>df</i> )
Intercept	3.63		
Role	0.02	0.02	0.28 (48)
<b>Actor Mutuality</b>	<b>0.65</b>	<b>0.63</b>	<b>8.71*** (95)</b>
Partner Mutuality	0.14	0.14	1.88 (86)
Role*Actor Mutuality	0.16	0.15	1.95 (74)
Role*Partner Mutuality	0.01	0.01	0.02 (70)

Note. Participant role was coded patient=1, caregiver =- 1.

\* $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

**Figure 14.** The actor and partner effects of Mutuality as predictors of Common Dyadic Coping in Older Couples. APIM with distinguishable dyads regression model.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$



### *Positive Dyadic Coping*

The next analysis focused on positive dyadic coping. Prior to analyzing the data, an Intraclass Correlation Coefficient and a Test of Distinguishability were calculated.

Results indicate that actor and partner's scores on this type of dyadic coping are nonindependent in each group (Younger Dyads:  $ICC = .38$ ,  $p < .05$ ; Older Dyads:  $ICC = .38$ ,  $p < .05$ ). The distinguishability test was significant only for the younger group ( $\chi^2_{(4)}$

=11.99,  $p < .05$ ). Older dyads were however treated as distinguishable because of the literature that supports differences between patients and partners.

The results of the APIM analysis for younger and older dyads are presented in Tables 38 - 40. Among younger couples, the performed analysis revealed the presence of an average actor effect of mutuality on positive dyadic coping. Younger individuals reporting high levels of mutuality were more likely to engage in positive dyadic coping behaviors. Specifically, a one unit increase in the mean score of mutuality is associated to a 0.89 unit increase in positive dyadic coping. Furthermore, among younger couples significant role differences exist, with patients predicted to report higher scores than their caregivers. In contrast, among older couples there was evidence of an actor effect and of a significance interaction of actor effect by role. Higher self-reported mutuality scores contributed to a 0.73 unit increase in positive dyadic coping. A simple slope model was estimated using a two intercept approach to test whether the actor effect is different by patients and partners (Table 40). Results indicate that among older couples the actor effect was greater for patients.

Finally, the approximate proportion of variance was estimated. For both groups the values were very high, suggesting that mutuality and positive dyadic coping items may be measuring similar constructs. For younger patients and caregivers pseudo  $R^2$  were extremely high: .69 and .54 respectively, indicating that a large proportion of variance is explained by mutuality of younger patients and partners. In the older counterpart, pseudo  $R^2$  for patients was 0.68 and the  $R^2$  for partners was 0.69, indicating that approximately 68% and 69% of the variance in positive dyadic coping is accounted for by patients and

partners' mutuality. This finding can be explained by the large correlation existing between mutuality and positive dyadic coping.

**Table 38.** Multilevel regression coefficients estimating actor and partner effects of Mutuality on Positive Dyadic Coping in Younger Couples

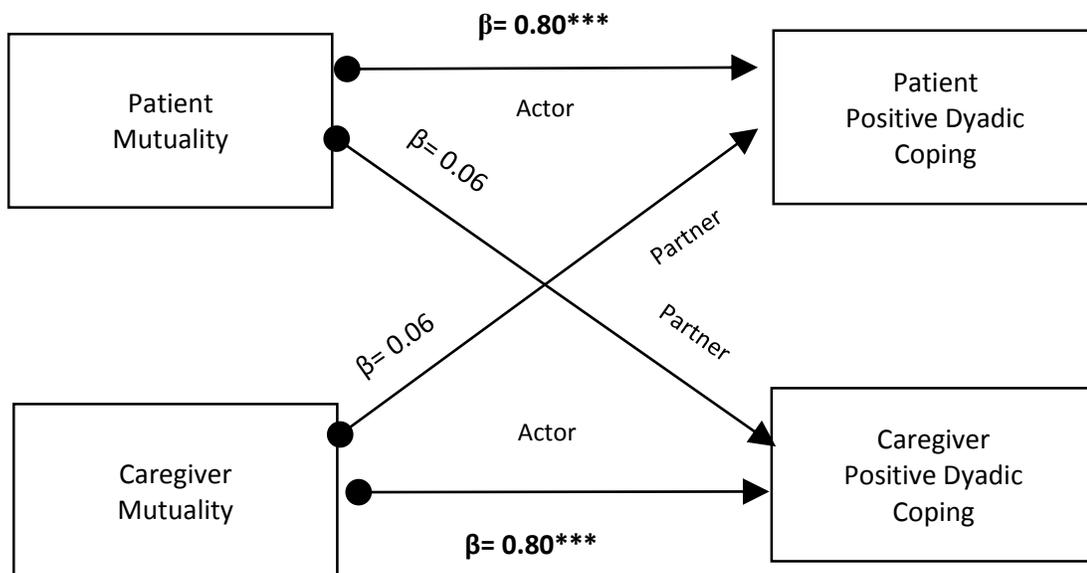
	<i>b</i>	$\beta$	<i>t</i> ( <i>df</i> )
Intercept	4.00		
<b>Role</b>	<b>0.13</b>	<b>0.18</b>	<b>3.29** (32)</b>
<b>Actor Mutuality</b>	<b>0.89</b>	<b>0.80</b>	<b>9.97*** (61)</b>
Partner Mutuality	0.07	0.06	0.73 (49)
Role*Actor Mutuality	0.06	0.05	0.61 (44)
Role*Partner Mutuality	0.02	0.01	0.14 (41)

Note. Participant role was coded patient=1, caregiver/spouse=-1.

\* $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

**Figure 15.** The actor and partner effects of Mutuality as predictors of Positive Dyadic Coping in Younger Couples. APIM with distinguishable dyads regression model.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$



**Table 39.** Multilevel regression coefficients estimating actor and partner effects of Mutuality on Positive Dyadic Coping in Older Couples

	<i>b</i>	$\beta$	<i>t</i> ( <i>df</i> )
Intercept	4.07		
Role	0.02	0.03	0.42 (48)
<b>Actor Mutuality</b>	<b>0.73</b>	<b>0.65</b>	<b>9.21*** (95)</b>
Partner Mutuality	0.14	0.12	1.67 (84)
<b>Role*Actor Mutuality</b>	<b>0.19</b>	<b>0.17</b>	<b>2.28* (78)</b>
Role*Partner Mutuality	0.01	0.01	0.10 (73)

Note. Participant role was coded patient = 1, caregiver = -1

\* $p < .05$ \*\*  $p < .01$ , \*\*\*  $p < .001$

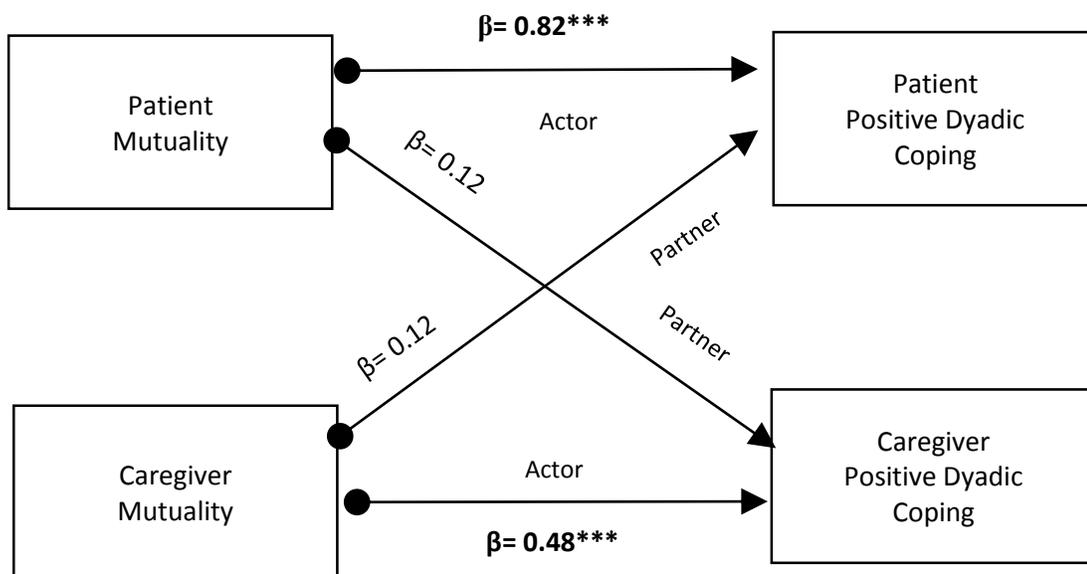
**Table 40.** Simple slope regression coefficients estimating separate mutuality actor and partner effects for patients and caregivers on Positive Dyadic Coping in Older Couples

	<i>b</i>	$\beta$	<i>t</i> ( <i>df</i> )
Intercepts			
Patients	4.11		
Caregivers	4.08		
<b>Actor's Mutuality</b>			
<b>Patients</b>	<b>0.92</b>	<b>0.82</b>	<b>7.81***(48)</b>
<b>Caregivers</b>	<b>0.54</b>	<b>0.48</b>	<b>4.74*** (48)</b>
Partner's Mutuality			
Patients	0.14	0.13	1.49 (48)
Caregivers	0.13	0.12	0.94 (48)

Note. \* $p < .05$ \*\*  $p < .01$ , \*\*\*  $p < .001$

**Figure 16.** The actor and partner effects of Mutuality as predictors of Positive Dyadic Coping in Older Couples. APIM with distinguishable dyads regression model.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$



### *Hostile Dyadic Coping*

To examine actor and partner effects of mutuality on hostile dyadic coping in the two groups, the APIM model was used. The Intraclass Correlation Coefficient indicates that actor and partner's scores on this type of dyadic coping are not interdependent (Younger Couples: ICC = .004,  $p > .05$ ; Older Couples: ICC = .20,  $p > .05$ ). The distinguishability test resulted in a significant chi-square test for the young group (Younger Couples:  $\chi^2_{(4)} = 18.39$ ,  $p < .01$ ; Older Couples:  $\chi^2_{(4)} = 3.20$ ,  $p > .05$ ). However, both were treated as distinguishable in the following analyses.

Results are presented in Tables 41- 43. For younger dyads, the analysis revealed the presence of an actor effect of mutuality on hostile dyadic coping, next to a significant interaction of role and partner effect. Younger individuals reporting high levels of mutuality were less likely to report hostile dyadic coping. Specifically, a one unit increase in the mean score of mutuality is associated to a 0.84 unit reduction in this negative coping style. To test whether the partner effect is different by patients and partner, a simple slope model was estimated using a two intercept approach (Table 42). In the younger group, the partner effect of mutuality on hostile dyadic coping showed two different directions. For caregivers, the partner effect was not significant. In contrast, for patients, when their caregiver presents higher scores on mutuality, a .50 unit increase in hostile dyadic coping occurs. Among younger dyads both the average partner effect of mutuality and the interaction role by actor mutuality approached significance, and this was possibly due the limited sample size ( $p = .058$ ;  $p = .061$ ).

Evidence exists for both an average actor and partner effect among older couples. Patients and caregivers presenting higher levels of mutuality, were more likely to report

lower levels of hostile dyadic coping. Similarly, having a partner reporting high scores on mutuality was associated with reduced hostile coping. Specifically, a one unit increase in mutuality was associated to a 0.23 unit reduction in the hostile dyadic coping score, while a one unit increase in the mutuality score of the partner produces a 0.16 reduction in hostile dyadic coping of the individual. No evidence for differences by role was identified for older dyads (Table 43).

Finally, the approximate proportion of variance in hostile dyadic coping explained by actor and partner mutuality was estimated. For younger patients and caregivers pseudo  $R^2$  were .59 and .52 respectively, indicating that a very large proportion of variance was explained by mutuality. In the older counterpart, pseudo  $R^2$  for patients was 0.18 and the  $R^2$  for caregivers was 0.27, suggesting that mutuality is particularly relevant for hostile dyadic coping among the younger group.

**Table 41.** Multilevel regression coefficients estimating Actor and Partner effects of Mutuality on Hostile Dyadic Coping in Younger Couples

	<i>b</i>	$\beta$	<i>t</i> ( <i>df</i> )
Intercept	2.11		
Role	-0.01	-0.02	-0.23 (32)
<b>Actor Mutuality</b>	<b>-0.84</b>	<b>-0.96</b>	<b>-8.54*** (52)</b>
Partner Mutuality	0.23	0.26	1.95 (39)
Role*Actor Mutuality	-0.18	-0.21	-1.91 (58)
<b>Role*Partner Mutuality</b>	<b>0.27</b>	<b>0.30</b>	<b>2.32* (40)</b>

Note. Participant role was coded patient = 1, caregiver = -1.

\* $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

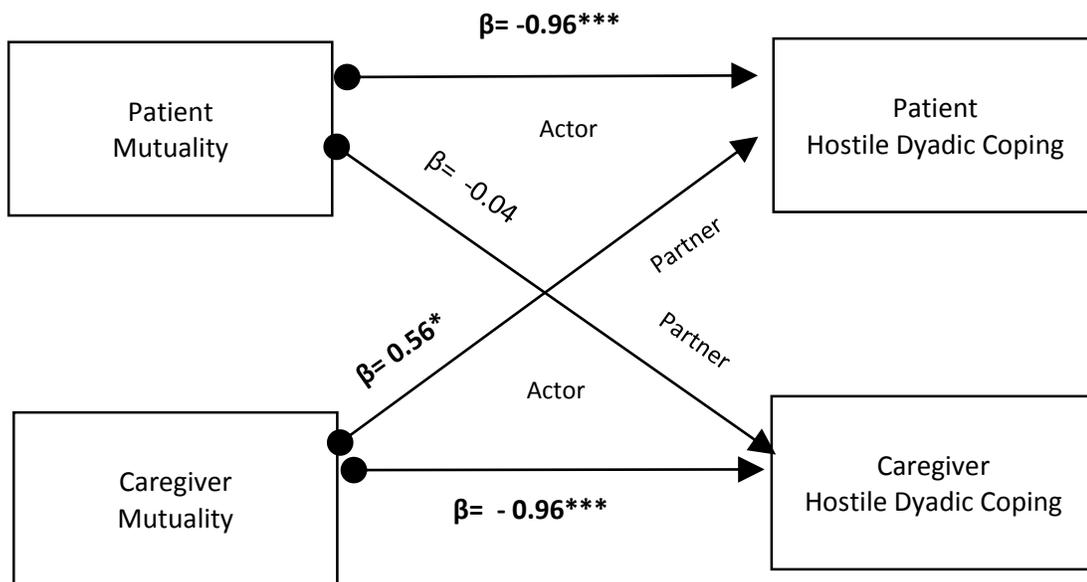
**Table 42.** Simple slope regression coefficients estimating separate mutuality actor and partner effects for patients and caregivers on Hostile Dyadic Coping in Younger Couples

	<i>b</i>	$\beta$	<i>t</i> ( <i>df</i> )
Intercepts			
Patients	2.09		
Caregivers	2.13		
Actor's Mutuality			
Patients	-1.02	-1.16	-6.87*** (32)
Partners	-0.66	-0.75	-5.35*** (32)
<b>Partner's Mutuality</b>			
<b>Patients</b>	<b>0.50</b>	<b>0.56</b>	<b>2.29* (32)</b>
<b>Caregivers</b>	<b>-0.04</b>	<b>-0.04</b>	<b>-0.43 (32)</b>

\* $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

**Figure 17.** The actor and partner effects of Mutuality as predictors of Hostile Dyadic Coping in Younger Couples. APIM with distinguishable dyads regression model.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$



**Table 43.** Multilevel regression coefficients estimating actor and partner effects of Mutuality on Hostile Dyadic Coping in Older Couples

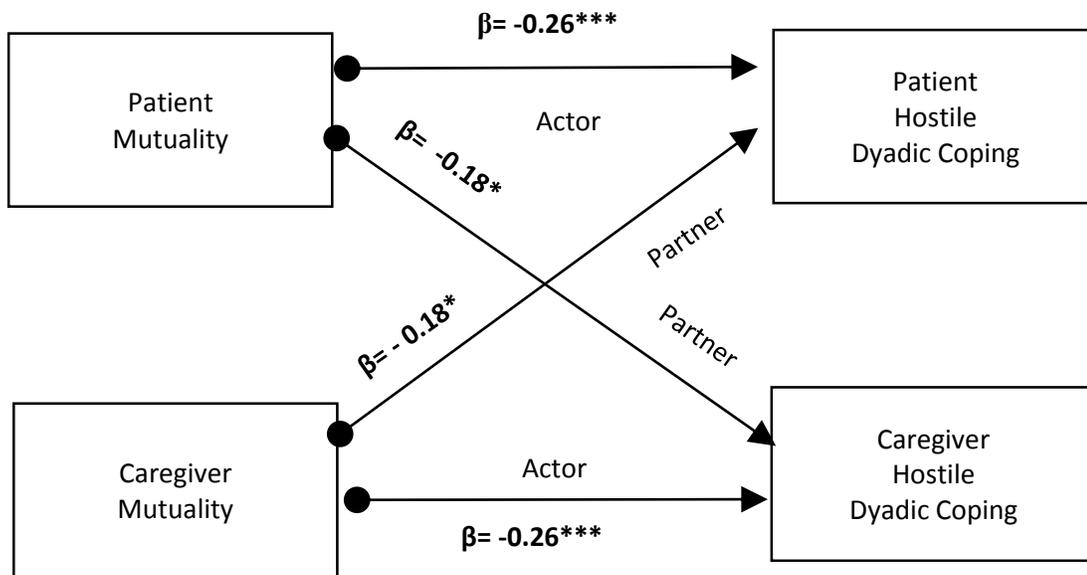
	<i>b</i>	$\beta$	<i>t</i> ( <i>df</i> )
Intercept	1.84		
Role	0.03	0.04	0.55 (48)
<b>Actor Mutuality</b>	<b>-0.23</b>	<b>-0.26</b>	<b>-3.73*** (84)</b>
<b>Partner Mutuality</b>	<b>-0.16</b>	<b>-0.18</b>	<b>-2.55 * (86)</b>
Role*Actor Mutuality	-0.05	-0.06	-0.80 (84)
Role*Partner Mutuality	0.10	0.11	1.57 (87)

Note. Participant role was coded patient = 1, caregiver = -1.

\* $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

**Figure 18.** The actor and partner effects of Mutuality as predictors of Hostile Dyadic Coping in Older Couples. APIM with distinguishable dyads regression model.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$



### *Avoidance of Dyadic Coping*

Finally, the last analysis examined avoidance of dyadic coping in the two groups. The Intraclass Correlation Coefficient indicates that actor and partner's scores on this type of dyadic coping are not interdependent in both groups (Younger Couples: ICC = .09,  $p > .05$ ; Older Couples: ICC = .26,  $p > .05$ ). It was then tested whether role should be treated as a distinguishable factor in the analyses. The distinguishability test was significant for the younger group ( $\chi^2_{(4)} = 11.786, p < .05$ ), while the results failed to reach significance for older participants (Appendix B). Despite this, older dyads were treated as distinguishable.

The results of the APIM analysis are presented in Table 44 and 45. Among younger couples, only an average actor effect was detected. The absence of other significant results suggests that no differences are associated to the role covered by the individual in the couple or that the mutuality scores reported by the other member of the dyad do not predict avoidant dyadic coping behaviors. Present findings indicate that as mutuality increases, so avoidance of dyadic coping is reduced by .90 points in younger participants. Differently, for older couples both an average actor and partner effect of mutuality exist. This indicates that there are no differences in the actor and partner effects of patients and caregivers. A one unit increase in the mean score of mutuality is associated to .40 reduction in avoidance of dyadic coping among older patients and caregivers. Having a partner high on mutuality, contributed to reduced maladaptive coping. Among older participants, patients and caregivers experience a .22 reduction in avoidance of dyadic coping for every unit increase in mutuality of their partner.

Finally, the approximate proportion of variance in avoidance of dyadic coping explained by actor and partner mutuality was estimated. For younger patients and caregivers pseudo  $R^2$  were .29 and .53 respectively, indicating a larger impact of mutuality for the younger caregivers' outcome score. In the older group, pseudo  $R^2$  for patients was 0.22 and the  $R^2$  for partners was 0.18, indicative of the fact that approximately 22% and 18% of the variance in avoidance of dyadic is accounted for by patients and partners' mutuality.

**Table 44.** Multilevel regression coefficients estimating Actor and Partner effects of Mutuality on Avoidance of Dyadic Coping in Younger Couples

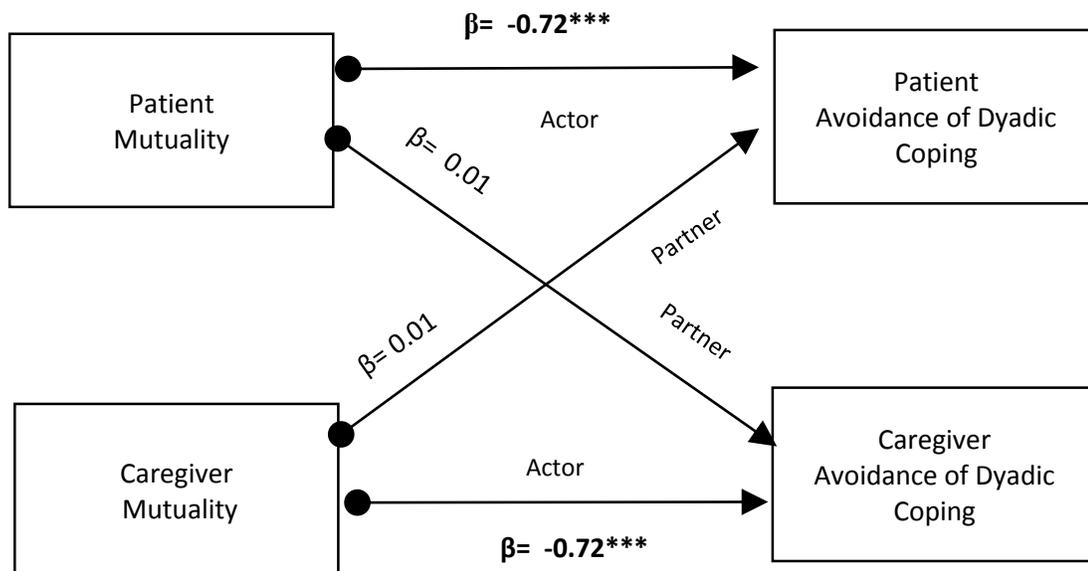
	<i>b</i>	$\beta$	<i>t</i> ( <i>df</i> )
Intercept	2.74		
Role	0.06	0.07	0.69 (32)
<b>Actor Mutuality</b>	<b>-0.90</b>	<b>-0.72</b>	<b>-5.83*** (53)</b>
Partner Mutuality	0.01	0.01	0.08 (40)
Role*Actor Mutuality	0.08	0.06	0.53 (59)
Role*Partner Mutuality	0.25	0.20	1.38 (41)

Note. Participant role was coded patient = 1, caregiver = -1.

\* $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

**Figure 19.** The actor and partner effects of Mutuality as predictors of Avoidance of Dyadic Coping in Younger Couples. APIM with distinguishable dyads regression model.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$



**Table 45.** Multilevel regression coefficients estimating actor and partner effects of Mutuality on Avoidance of Dyadic Coping in Older Couples

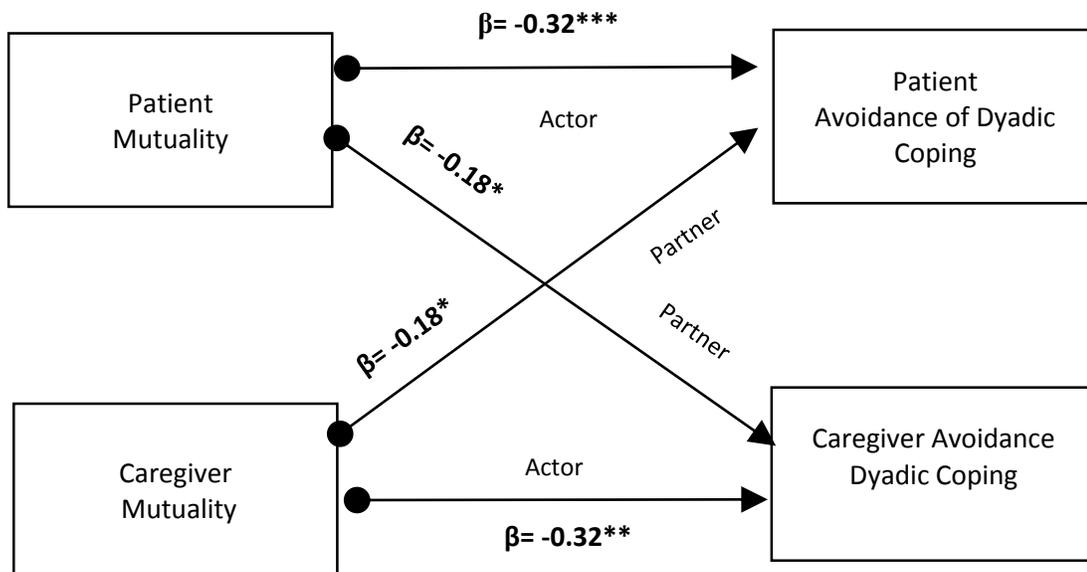
	<i>b</i>	$\beta$	<i>t</i> ( <i>df</i> )
Intercept	2.57		
Role	0.04	0.05	0.74 (48)
<b>Actor Mutuality</b>	<b>-0.40</b>	<b>-0.32</b>	<b>-3.75*** (80)</b>
<b>Partner Mutuality</b>	<b>-0.22</b>	<b>-0.18</b>	<b>-2.14* (92)</b>
Role*Actor Mutuality	-0.13	-0.10	-1.21 (74)
Role*Partner Mutuality	0.02	0.01	0.21 (83)

Note. Participant role was coded patient = 1, caregiver = -1

\* $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

**Figure 20.** The actor and partner effects of Mutuality as predictors of Avoidance of Dyadic Coping in Older Couples. APIM with distinguishable dyads regression model.

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$



***Specific Aim 4: To test the mediating role of dyadic coping on the relationship between Mutuality and Quality of Life of patients and partners and to identify differences by age group***

***Hypothesis 4.1: Self-reported dyadic coping score will mediate the relationship between mutuality and quality of life of breast cancer patients***

***Hypothesis 4.2: Self-reported dyadic coping score will mediate the relationship between mutuality and quality of life of partners of breast cancer patients***

***Hypothesis 4.3: Differences exist by age group, between younger and older dyads***

Finally, the present study was aimed at investigating the relationship between mutuality, dyadic coping and quality of life to further our understanding of how adaptive relational coping style contributes to better individual quality of life and higher satisfaction, as evidenced by the literature. In particular, by using the Relational-Cultural Model of dyadic coping (Kayser et al., 2007) as the guiding framework, it was hypothesized that dyadic coping would mediate the relationship between mutuality and quality of life for both patients and partners. More simply, it was anticipated that higher scores on mutuality would have contributed to the individual's engagement in adaptive dyadic coping styles, which would have ultimately predicted higher quality of life and reduced the impact of the illness' demands.

Regression analysis was initially used to investigate the hypothesis that dyadic coping mediates the effect of mutuality on quality of life of cancer patients and caregivers, controlling for age. This variable was preferred to duration of relationship because of the high positive correlation between the two variables ( $r = .66, p < .001$ ), especially for females ( $r = .75, p < .001$ ). Models were run for each dyadic coping style and each subscale and total score on the FACT-B for breast cancer patients, while for partners the tested models included all the dyadic coping styles and the two variables of

emotional well-being and illness intrusiveness. No significant result emerged from this first approach and also removal of age did not contribute to the identification of significant mediation models for patients and partners.

Given the overall aim of the present study it was then decided to divide each group by age and to run the analysis separately for younger and older patients and partners using the following equations:<sup>36</sup>

$$M = i_1 + aX + e_M$$

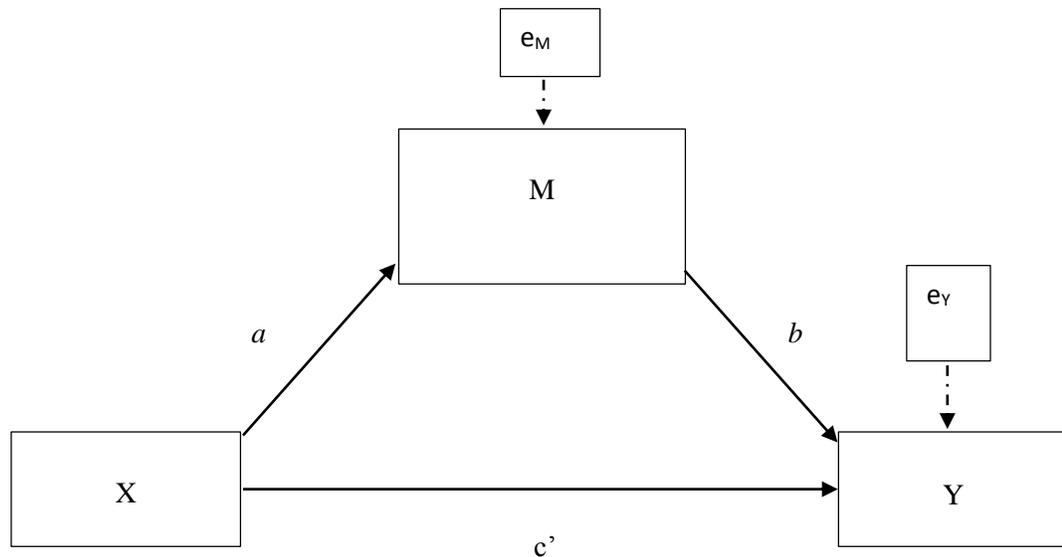
$$Y = i_2 + c' X + bM + e_Y$$

where  $i$  are the regression intercepts,  $e$  are the errors in the estimation of  $M$  and  $Y$ , and  $a$ ,  $b$ , and  $c'$  represent the path between  $X$  and  $M$ ,  $b$  the path between  $M$  and  $Y$ , and  $c'$  the direct effect of  $X$  on  $Y$  (see Figure 21). The product of  $a$  and  $b$  is the indirect effect of  $X$  on  $Y$  through  $M$  and indicates how much two cases that differ by one unit on the predictor ( $X$ ) are estimated to differ on the outcome in  $ab$  units as a result of the effect of the predictor on the mediator ( $M$ ), which ultimately affects the score reported on the outcome ( $Y$ ). Of the 84 models tested for patients and the 24 models analyzed for partners, only two led to significant results and are presented in the following paragraphs.

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<sup>36</sup> A mediation analysis was initially performed using the Baron and Kenny casual steps approach (1986) to identify that significant relationships exist among the variables included in the analysis. However given the limitations of the approach and the emergence in recent years of more accurate modalities to test the significance of the indirect effect the PROCESS macro developed by Hayes (2013) was used and a bootstrap estimation approach implemented

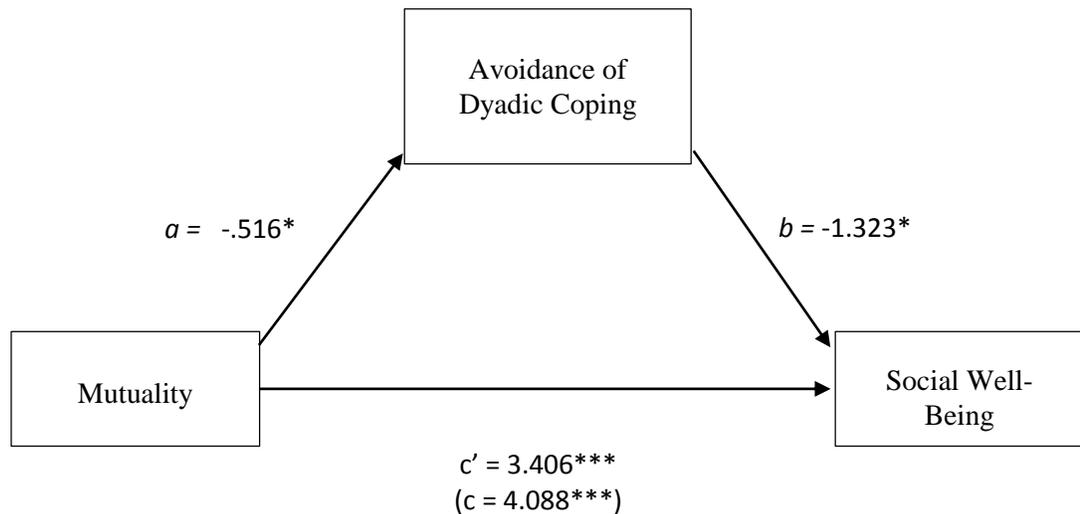
**Figure 21.** Statistical diagram of the Simple Mediation Model



Regression analysis was used to investigate the hypothesis that avoidance of dyadic coping mediates the relationship between mutuality and social well-being for younger women with breast cancer (Table 46). Results indicate that mutuality was a significant predictor of avoidance of dyadic coping ( $b = -.516$ ,  $SE = .203$ ,  $p < .05$ ) and that avoidance of dyadic coping was a significant predictor of social well-being score ( $b = -.1.323$ ,  $SE = .580$ ,  $p < .05$ ). These results support the mediational hypothesis. After controlling for the mediator, mutuality was still a significant predictor of social well-being ( $b = 3.406$ ,  $SE = .580$ ,  $p < .05$ ); which is consistent with a partial mediation. Approximately 57% of the variance in younger women social well-being was accounted for by the predictors ( $R^2 = .567$ ). The significance of the indirect effect was tested using a bootstrap estimation approach with 5000 samples (Hayes, 2013; Shrout & Bolger, 2002). Results indicate that the indirect coefficient was significant ( $b = .682$ ,  $SE = .509$ , 95% CI = .062, 2.167). If we

illustrate these relationships in a statistical diagram, we obtain the following figure (Figure 22).

**Figure 22.** Simple Mediation Model for Younger Patients



Present findings indicate that for each unit increase in mutuality, younger patients are estimated to report a .516 reduction in the score on avoidance of dyadic coping. Younger women who differ by one unit on avoidance of dyadic coping are expected to differ by 1.323 units on social well-being, with women higher on avoidance of dyadic coping reporting lower scores on social well-being. The total effect  $c$  indicates how much two cases that differ by one unit on mutuality are estimated to differ in social well-being. In our sample one unit increase on mutuality contributes to a 4.09 unit increase in social well-being, while this increase is limited to 0.68 as the result of the effect of mutuality on avoidance of dyadic coping ( $ab$ , indirect effect). The direct effect of mutuality on social well-being indicates that women who report the same score on avoidance of dyadic Coping but who differ by one unit in mutuality are estimated to report a 3.41 increase in

social well-being. Practically speaking, for younger women the positive effect of mutuality on their social well-being is negatively impacted by avoidance of dyadic coping, which significantly reduces their quality of life.

**Table 46.** Model coefficients of the Simple Mediation Model between Mutuality, Avoidance of Dyadic Coping and Social Well-being for Younger Patients

Antecedent	Consequent							
	M (Avoidance of Dyadic Coping)			Y (Social Well-being)				
		Coeff	SE	<i>p</i>		Coeff	SE	<i>p</i>
X(Mutuality)	<i>a</i>	-.516	.203	.016	<i>c'</i>	3.406	.738	<.001
M (Avoidance of Dyadic Coping)		–	–	–	<i>b</i>	-1.323	.580	.020
Constant	<i>i</i> <sub>1</sub>	5.053	.899	<.001	<i>i</i> <sub>2</sub>	10.304	4.187	.019
		R <sup>2</sup> =0.164 F(1, 33)= 6.476, <i>p</i> < .05				R <sup>2</sup> = .567 F (2, 32)=20.947, <i>p</i> <.001		

The second significant simple mediation model was identified for older partners. Regression analysis was used to investigate the hypothesis that hostile dyadic coping mediates the relationship between mutuality and illness intrusiveness (Table 47). Results indicate that mutuality was a significant predictor of hostile dyadic coping ( $b = -.415$ ,  $SE = .107$ ,  $p < .001$ ) and that hostile dyadic coping was a significant predictor of illness intrusiveness ( $b = 9.618$ ,  $SE = 4.317$ ,  $p < .05$ ). These results support the mediational hypothesis. After controlling for the mediator, mutuality was no longer a significant predictor of illness intrusiveness ( $b = -3.70$ ,  $SE = 3.69$ ,  $p > .05$ ), which is consistent with full mediation. Approximately 18% of the variance in older partners' impact of the patients' illness on their quality of life was accounted for by the predictors ( $R^2 = .181$ ). The significance of the indirect effect was tested using a bootstrap estimation approach with 5000 samples (Hayes, 2013; Shrout & Bolger, 2002). Results indicate that the indirect coefficient was significant ( $b = -3.996$ ,  $SE = 2.585$ , 95% CI = -10.159; -.032).

**Table 47.** Model coefficients of the Simple Mediation Model between Mutuality, Hostile Dyadic Coping and Illness Intrusiveness for Older Partners

Antecedent	Consequent							
	M (Hostile Dyadic Coping)			Y (Illness Intrusiveness)				
		Coeff	SE	<i>p</i>		Coeff	SE	<i>p</i>
X(Mutuality)	<i>a</i>	-.415	.107	<.001	<i>c'</i>	-3.703	3.696	.321
M (Hostile Dyadic Coping)		–	–	–	<i>b</i>	9.618	4.317	.031
Constant	<i>i</i> <sub>1</sub>	3.702	.492	<.001	<i>i</i> <sub>2</sub>	31.236	21.821	.159
		R <sup>2</sup> =0.235 F(1, 49)= 15.092, p<.001			R <sup>2</sup> = .181 F (2, 48)=5.318, p<.01			

**Figure 23.** Simple Mediation Model for Older Partners

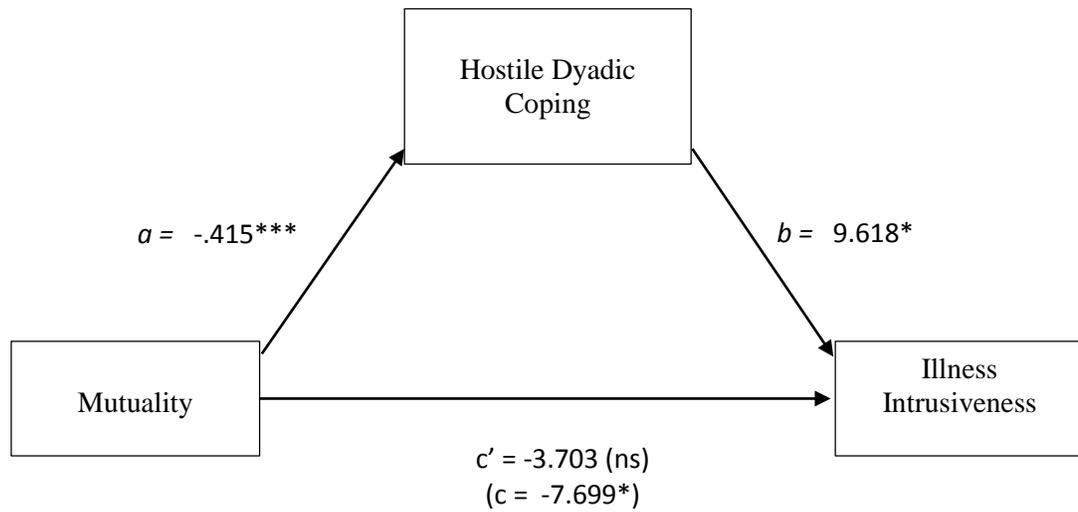


Figure 23 summarizes in a statistical diagram these relationships. Among older partners for each unit increase in mutuality, a .415 reduction in hostile dyadic coping occurs. Caregivers who differ by one unit on hostile dyadic coping are expected to differ by 9.618 units on illness intrusiveness, with higher impact of the illness demands on the partner's quality of life for those higher on hostile dyadic coping. The total effect  $c$  indicates how much two cases that differ by one unit on mutuality are estimated to differ in illness intrusiveness. A significant large reduction in the score for illness intrusiveness is in fact estimated (-7, 70), while this reduction is equal to 3.966 for the indirect effect of mutuality on hostile dyadic coping ( $ab$ , indirect effect). The direct effect of mutuality on illness intrusiveness indicates that older partners who report the same score on hostile dyadic coping but who differ by one unit in mutuality are estimated to report a 3.70 decrease in the outcome measure. Practically speaking, for older partners the protective effect of mutuality on their quality of life, as evidenced by a significant reduction in the score for illness intrusiveness, is negatively impacted by hostile dyadic coping.

## Summary

*The chapter described the results of this investigation of dyads coping with early-stage breast cancer. The first aim of the study was to identify differences between younger and older couples on quality of life, mutuality, communication, and dyadic coping. As hypothesized, younger women with breast cancer reported worse quality of life compared to older patients. Specifically, younger women experienced more affected physical, social and emotional functioning, when compared to women diagnosed with breast cancer at older age. However, no statistically significance difference existed in the present sample for mutuality, communication and dyadic coping styles, suggesting that younger and older women have similar abilities in communicating with a partner, in the repertoire of dyadic coping strategies, as well as in their self-reported level of mutuality. Hence this hypothesis can only be partially accepted. The younger group of partners did report higher scores of maladaptive dyadic coping, lower mean scores of stress communication, common and positive dyadic coping, and worse quality of life than the older group. However, significant mean differences were identified only in hostile dyadic coping, emotional well-being, and illness intrusiveness suggesting that also this hypothesis was only partially supported by the results. Differences between younger and older couples were also investigated referring to the diverse amount of association of quality of life scores and dyadic coping scores between younger and older patients and partners. Although it was hypothesized that associations between older patients and partners would have been higher, both these hypotheses are rejected in their current forms. Correlations coefficients of younger couples were higher for quality of life and common positive dyadic coping. However, results of this analysis suggest that a further*

*reflection is necessary. First, the association between patients and partners' quality of life in older couples exists for both measures of quality of life, while among the younger group significant correlations are limited to emotional well-being. Second, if the association between dyadic coping scores are considered, in the older group patients and partners' association of dyadic coping scores extended also to negative coping styles, while this was not reported in the younger dyads.*

*The relationship between dyadic coping and quality of life for young breast cancer patients and partners was then considered. While for younger women with breast cancer positive forms of dyadic coping are associated with higher levels of quality of life, especially for their social well-being, surprisingly no association was found for their partners. Hence, the hypothesized association between positive dyadic coping styles and quality of life is accepted only for patients. The next step of the analysis was to test whether the relationship between dyadic coping styles and quality of life for patients and partners is influenced by socio-demographic, clinical, relational and mental health variables. The limited sample size of the younger group required for the multiple regression to be conducted on the whole sample of patients and partners. Multiple regression analyses unveiled the role age and hostile dyadic coping have for the quality of life of both patients and partners, with these two variables consistently identified among the predictors of worse quality of life scores in the present sample.*

*The third aim of the study was to assess the actor and partner effects of mutuality on dyadic coping among breast cancer patients and partners, and to identify differences by age group. As hypothesized, patients' and partners' perceived mutuality influenced their own and their partner's dyadic coping but only for a limited number of dyadic*

*coping style. Findings from the initial analysis indicate that both patients and caregivers' scores on mutuality contribute to common, positive and reduced avoidance of dyadic coping. More complex was the scenario for hostile dyadic coping. In the overall sample, patients and caregivers' mutuality predicted a reduction in their own hostile dyadic coping, but having a partner high on mutuality reduced these coping behaviors only for caregivers. It was then the decision to conduct separate APIM analyses on younger and older dyads that allowed for the identification of different relational exchanges in the two groups, which would have been otherwise unnoticed. Several differences in common, positive, hostile and avoidance of dyadic coping were identified between younger and older couples, which will be discussed in detail in the next chapter.*

*Finally, the mediating role of dyadic coping on the relationship between mutuality and quality of life of patients and partners was examined. Only two models were significant, with avoidance of dyadic coping mediating the relationship between mutuality and social well-being for younger women with cancer. The other significant result was identified for older partners. For them the relationship between mutuality and illness intrusiveness is mediated by hostile dyadic coping. It follows that the three hypotheses identified for this last aim of the study can only be partially accepted and future investigation is needed. In the next chapter the relevance of these findings will be discussed, specifically by addressing the implications for future research and practice.*

## CHAPTER V: DISCUSSION

*The final chapter of the dissertation presents the implications of the results described in the prior chapter. First, the findings of the performed analyses will be discussed in relation to whether they converge or diverge with the existing literature. Next, implications for practice will be outlined. Finally, study limitations and future directions of research about younger couples coping with cancer will be delineated.*

In the last decade there has been an increasing recognition that younger women with breast cancer represent a separate group among all women diagnosed with this illness because of unique clinical and psychosocial issues. Among the most relevant problems reported by younger women, there is an increased concern for their relationship with the partner. However, despite the recent trend toward a relational view of cancer and the evidence that has identified more difficulties and challenges for young couples, the literature hasn't been attentive and responsive to this topic. There are only a limited number of studies addressing younger women's close relationships or including both partners. The present study has addressed this gap investigating younger couples' adaptation and coping with the diagnosis of breast cancer, and by comparing them to a group of older dyads. More specifically, given the increasing interest in the psychosocial

literature about dyadic coping and its impact on marital quality and individual's well-being in the context of a chronic illness, the relationship among mutuality, dyadic coping and quality of life of patients and partners has been examined to test for empirical evidence a conceptual framework inspired by the Relational-Cultural Model of dyadic coping (Kayser et al., 2007).

## **Discussion**

Results of this cross-sectional investigation confirm the differential impact a diagnosis of cancer has on younger patients and partners' quality of life. Compared to older couples, younger patients and their partners' adjustment to cancer is significantly compromised within the first three months from diagnosis, with impaired functioning and significant worse quality of life. Younger women in this sample experienced a more negative impact of the illness such as elevated side effects of treatment, reduced closeness to friends, low support from family/partners and more difficult adjustment to the illness. Compared to their older counterparts, the younger group also had more numerous symptoms associated with the illness, concerns for their body image and heightened self-consciousness. These findings are consistent, despite the small sample, with results from larger studies targeting the quality of life of younger women with breast cancer (Avis et al., 2004; Avis et al., 2005; Baucom et al., 2005; King et al. 2000; Kroenke et al., 2004; Wenzel et al., 1999; Ganz et al., 2003; Howard-Anderson et al., 2012; Luutonen et al., 2011). In particular, when the same instrument (FACT-B) has been administered to younger patients, other authors have indeed identified the presence of significant differences between younger and older breast cancer patients' overall quality

of life (Avis et al., 2005; Di Sipio et al., 2008; Brennan et al., 2014), with more negative physical well-being, emotional well-being and breast cancer symptoms that resonate with our results (Park, Lee, Lee, Lee & Hwang, 2011; So et al, 2011). Furthermore, when compared to normative data (Brucker et al., 2005)<sup>37</sup>, younger women from this study score significantly worse than other female patients with cancer ( $t_{(34)} = - 3.80, p < .01$ ) and healthy peers ( $t_{(34)} = - 2.78, p < .01$ ), confirming the unique experience of this group.

In a similar way, younger partners did report a more negative impact of the illness on their quality of life, with statistically significant higher intrusiveness, lower emotional well-being, and a higher use of maladaptive dyadic coping styles compared to partners of older breast cancer patients. While earlier works only postulated increased difficulties for younger partners (Baucom et al., 2005), the results of the present study contribute to the evidence collected by the few studies to date that found a more detrimental effect of the patient diagnosis on the quality of life of younger partners, who are faced especially with concerns about everyday life, negative affectivity, apprehension about the future and the couple cohesion (Antoine et al., 2012; Christophe et al., 2015; Duggleby et al., 2014; Fergus et al., 2015; Hasson-Ohayon et al., 2014; Vanlemmens et al., 2015a; Vanlemmens et al., 2015b). Finally, the higher score on illness intrusiveness is a finding that is similar to results emerged in the literature about cancer caregiving, which has identified higher burden, mood disturbances and worse quality of life for those who assume this role at a

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<sup>37</sup> General population and cancer patient norms for the Functional Assessment of Cancer Therapy – General (FACT-G; Cella, 2004) have been collected for Physical, Social/Family, Emotional and Functional Well-being and the FACT General score. A one-sample t test analysis was conducted comparing younger and older patients' score on the FACT-G with the data of the general U.S. adult population and the normative data of cancer sample for females.

younger age (Harden et al., 2013; Kim, Spillers, & Hall, 2012; Lee et al., 2013; Shahi et al., 2014; Sjolander, Rolander, Järhult, Martensson & Ahlstrom, 2012).

While these results confirmed the greater negative impact of a diagnosis of breast cancer on the two individuals, little is known about younger couples' coping abilities and their impact on quality of life because previous studies on younger breast cancer patients and partners did not examine dyadic coping. While it was hypothesized that quality of life and dyadic coping scores were less correlated within the younger group, the examination of these relationships suggests that younger couples are characterized by moderate to high associations of these constructs. Hence, younger dyads in our sample are characterized by higher reciprocal influence of their quality of life and adaptation to stress. This finding is consistent with the work of some authors who have hypothesized that young couples tend to adhere to a cultural influence that emphasizes similarity and underestimates differences in the early stage of a relationship (Acitelli, Douvan & Veroff, 1993; Bertoni et al., 2007; Iafrate et al., 2012), and the close relationships literature, which identifies the early years of marriage as a crucial time for the future quality of the relationship (Bradbury & Karney, 2014, Carra' Mittini, 1999; Lavner & Bradbury, 2010; Lavner et al., 2013; Scabini & Cigoli, 2000; Scabini & Iafrate, 2003; Scabini & Rossi, 2012; van Steenbergen, Kluwer, & Karney, 2011). Mature functioning between older couples is on the contrary characterized by higher coordination of quality of life and coping mechanisms, with older individuals described in the literature as more willing to accept differences and uniqueness in their couple relationship because of a stronger sense of identity (Berg & Upchurch, 2007; Bertoni et al., 2007; Blanchard-Fields & Coats, 2008; Hoppman et al., 2008; Iafrate et al., 2012). This observation can contribute to the

emergence of a different view about younger and older dyads, where quality may be juxtaposed to quantity. It is not only the amount of association among the members of the dyad to be of interest for the researcher, but also how patients and partners' scores can affect different areas of quality of life and coping across the life trajectory. Hence, it is possible that for younger dyads facing cancer stronger correlations are necessary to support a relationship more vulnerable to stressors, while for mature couples -who have developed more elaborated and coordinated relational exchanges- the role of the other becomes more pervasive on the reciprocal well-being.

In line with these findings are the results related to the second aim of the study, where the relationship between dyadic coping and quality of life was investigated among the younger dyads. While higher quality of life, and specifically higher social well-being, characterized younger women showing positive styles of dyadic coping, the absence of correlation between dyadic coping and quality of life scores of younger partners seems to suggest that for them other variables contributed to their well-being at time of diagnosis, as highlighted by the work of Christophe et al. (2015a; 2015b) about differences between patients and partners. Although unexpected, given the large body of literature that supports the association between dyadic coping and quality of life, this result can also be linked to the different developmental processes the Relational-Cultural Theory identifies for men and women. As men develop through autonomy and separation (Gilligan, 1982; Miller, 1976), it is possible to hypothesize that for younger partners other factors may be relevant to their well-being and that their quality of life may be more dependent on individual coping strategies, personality factors or support received from other contexts rather than on their close relationships. Multiple regression analysis confirmed the role

younger age and hostile dyadic coping have for the quality of life of both patients and partners, with these two variables consistently identified as predictors of worse quality of life scores. This indication is consistent with the well-established literature that has identified negative dyadic coping strategies as predictors of more affected individual's functioning and adaptation to stress (Falconier et al., 2015; Rottman et al., 2015; Traa et al., 2015b).

Next, the Actor Partner Interdependence Model furthered our understanding of the underlying dynamics associated with the emergence of different dyadic coping styles within the dyads and between the two groups. While findings from the initial analysis indicate that both patients and caregivers' scores on mutuality contribute to higher adaptive (common, and positive) and reduced negative forms of dyadic coping (avoidance of dyadic coping, and reduced hostile dyadic coping<sup>38</sup>), separate APIM models on younger and older dyads unveiled the interaction between patients' and caregivers' mutuality score and how they contribute to different outcomes, especially among the younger group. In contrast to older couples, where actor and partner effects of mutuality predicted reduced hostile and avoidance of dyadic coping, younger couples are characterized by more complex interactions, and both adaptive and maladaptive coping results from the patients and partners' perceived mutuality. Most interesting differences between the two groups pertain to common and hostile dyadic coping. Higher scores for common dyadic coping existed for the younger group as a consequence of

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<sup>38</sup> Hostile dyadic coping is predicted by the individual's mutuality score of both patients and caregivers. Furthermore, role moderated the actor and partner effects of mutuality and results suggest that although both patients and caregivers' own mutuality predicts reduced hostile dyadic coping, the patient's actor effect was significantly stronger than the caregiver's. The partner effect of mutuality was significant only for caregivers, indicating that increases in the mutuality scores of patients were associated to lower levels of hostile dyadic coping in the caregivers.

actor and partner effects, suggesting that higher scores for this coping style are the result of the individual's self-reported scores, as well as the score of the partner. This finding illustrates well the above mentioned higher reciprocal influence of younger couples. The resulting higher adaptive coping predicted by patients and partners' mutuality may represent a great resource to promote couple's adaptation to cancer, because greater relationship satisfaction, dyadic adjustment and less distress have been consistently associated with common dyadic coping (Badr et al., 2010; Bodenmann et al., 2010; Papp & Witt, 2010; Rottman et al., 2015). However, this interdependence represents an element of risk whether discrepancies in mutuality may exist within partners, or when both partners are not able to engage in this exchange of thoughts, feelings and actions (Jordan, 1997). Similarly, the results obtained for hostile dyadic coping call for a greater attention to the adaption of couples facing cancer earlier in life. Younger patients and caregivers high on mutuality reported lower hostile dyadic coping. However, as the mutuality score of the caregiver increases, for younger women with breast cancer hostile dyadic coping is predicted to significantly increase, suggesting that the origin of maladaptive coping behavior in younger women is influenced by the perceived emotional support in their close relationships.

Hence, some considerations can be made. First, these findings confirm the role of relationship qualities in the enactment of dyadic coping behaviors, thus providing empirical support for the Relational-Cultural Model of Dyadic Coping (Kayser et al., 2007). Often neglected by the literature, mutuality emerges as vital in the theoretical reflection about dyadic coping and the relationship among partners (Godwin, Swank, Vaeth, & Ostwald, 2013; Lyons, Stewart, Archibald, & Carter, 2009; Park &

Schumacher, 2013; Simeone, Savini, Torino, Vellone, & Alvaro, 2014). The second consideration is that, despite no significant differences have been found between the dyadic coping scores of younger and older patients and partners (with the exception of hostile dyadic coping), dyadic coping originates differently among the two groups. Both positive and negative dyadic coping behaviors in the younger group result from the scores of both partners on mutuality. It follows that, by assuming a Relational-Cultural Model, it is inaccurate to treat younger and older dyads as a homogeneous group because dyadic coping, albeit not statistically different, emerges from different relational exchanges of emotional support. Having a partner high on mutuality has a detrimental effect for younger patients; a datum that indicates the need for interventions aimed at promoting more beneficial relational exchanges in younger dyads and to enhance communication strategies that facilitate the beneficial disclosure of feelings. In this way partners will learn how to express their participation in more effective ways. It is possible that the communication of emotional involvement of the partner can be perceived by the younger patient as a reminder of the illness and its consequences –including the impact of the illness on the partner’s well-being-, and thus originates a defensive reaction to minimize and distancing the emotional experience of stress. At the same time, it is also possible to contemplate that these differences exist because men and women in younger couples diverge in their ability to accurately perceive the behaviors of the other partner. Women are more accurate in detecting partner’s negative behaviors and men in perceiving positive ones (Donato & Parise, 2011). As a consequence, by promoting strategies that facilitate the communication of mutuality in the partner, it may be ultimately possible to protect also the quality of life of the woman.

Finally, the study tested the mediating role of dyadic coping on the relationship between mutuality and quality of life. Although the absence of significance in most of the models tested can be ascribed to the limited sample included in the present investigation, results indicate that negative dyadic coping styles mediate the relationship between mutuality and quality of life for younger patients and older partners. Among younger women, avoidance of dyadic coping partially mediated the relationship between mutuality and their social well-being. This finding highlights the relevance of perceived exchanges of emotional support within the close relationship with a partner in predicting the social well-being of younger women with cancer, and the negative effect of withdrawal and avoidance in a moment of stress. This finding provides further support to the fact that “women’s coping abilities are shaped by and continue to develop in the context of ongoing close relationships” (Kayser, Sormanti & Strainchamps, 1999, p. 727), and that the presence of forms of coping which threaten these relationships negatively impact younger women’s perception of closeness with significant ones. The fact that the mediation model was significant only for younger women strengthen the findings earlier discussed about the major disruption caused by cancer in their social well-being. Furthermore, the absence of significant findings suggests again that other factors become relevant for younger partners. Among older partners, the protective effect of mutuality on illness intrusiveness was negatively affected by the perception that the partner was showing disinterest and was minimizing their emotional experience of stress. It is possible to affirm that older partners may be particularly vulnerable to negative forms of dyadic coping, confirming the literature that places higher value on relationships as age increases, especially for men (Birditt & Fingerman, 2003; Carr, Freedman,

Cornman, & Schwarz, 2014; Carstensen, Fung, & Charles, 2003; Charles & Piazza, 2007; Fingerman, Hay & Birditt, 2004; Gurung, Taylor & Seeman, 2003; Luong, Charles & Fingerman, 2011)

Summarizing, the present study contributes to the understanding of the experience of younger couples coping with breast cancer. This study has highlighted the more negative effect of the illness on the quality of life of the two partners. It has also examined factors that contribute to this greater vulnerability investigating the different association between dyadic coping and quality of life among the dyads. Younger couples may be more at risk because of the greater association of their respective quality of life and dyadic coping scores, a finding that suggests the need to further understand how dyadic coping develops in this groups and its association with individual and relational outcomes. From this investigation it emerges that patients and partners' mutuality contributes to dyadic coping and that the relationship between mutuality and quality of life is mediated by negative coping styles for younger women and older partners. In particular, among younger couples it appears that both positive and maladaptive outcomes in terms of couple's coping are the results of patients' and partners' mutuality. It therefore follows that both members of the dyad have an essential role in developing coping strategies that will contribute to better adjustment to the disease and the preservation of their relationship. Hence, the study is consistent with the recent trend to identify the mechanism through which dyadic coping originates and leads to individual and relational outcomes (Levesque, Lafontaine, Caron, Flesh & Bjornson, 2014; Regan et al., 2015; Traa et al. 2015b; Vedes et al., 2013).

## **Implications for Practice**

Findings from the present study suggest the need for a renewed attention to the psychosocial issues of patients and partners (Institute of Medicine, 2008; 2013). Social workers and health care professionals need to develop greater understanding of how to work effectively with younger patients and their significant ones, and to promote their ability to find support within the health care system.

First, this study emphasizes the need to address the multiple domains of quality of life that are impacted by a diagnosis of breast cancer at a younger age. As identified by the literature, areas like emotional and social well-being acquire more relevance for younger women. Younger patients have also greater psychosocial needs about the gynecological, sexual and reproductive consequences of treatment (Brennan et al., 2014; Duffy, Allen, & Clark, 2005; Easley, Miedema & Robinson, 2013; Howard-Anderson et al., 2012; Gorman et al., 2011). Unfortunately, many of them are not fully aware of the adverse effects of cancer and their informational needs are currently not being met (Avis et al., 2004; Gorman et al, 2011; Schover et al., 2014). This creates a significant gap in the quality of care for younger women with cancer. In order to provide comprehensive care to them, oncology social workers need to be knowledgeable about the psychosocial needs of younger generations of women. Although increasing attention has been paid to young adult issues, at the moment only one training program for health care professionals exists (Vadaparampil, Hutchins & Quinn, 2013). Previous research has shown that poor communication with patients and partners is associated with psychological distress and reduced satisfaction with care (Regan, Levesque, Lambert, & Kelly, 2015b). Hence,

enhancing health care professionals' preparation in discussing psychosocial issues could provide significant benefits.

Furthermore, the identification of unique needs and stressors requires the utilization of screening and assessment strategies able to capture the life experience of younger women and their well-being, in order to promote effective and timely referrals. Close relationships, emotional functioning, body image, sexuality, and reproductive health should be examined with great attention within this group (Lawson, Klock, Pavone, Hirshfield-Cytron, Smith & Kazer, 2014; Ruddy & Partridge, 2012), given the potential long-term consequences for the quality of life of the patient, and the well-being of the couple. As part of the recently implemented mandatory distress screening protocol, some of these areas are only marginally targeted. It is then recommended to integrate instruments developed specifically for these purposes like the Young Women with Breast Cancer Inventory (Christophe et al., 2015b), the Cancer Needs Questionnaire – Young People (Clinton-McHarg, Carey, Sanson-Fisher, D'este & Shakeshaft, 2012) or the Reproductive Concerns Scale (Wenzel et al., 2005). Aubin and Perez (2015) have recently developed a “clinical toolbox” to assess sexuality in younger patients, which include clinical interviews and self-report questionnaires that can be easily administered.

When compared with older partners, younger caregivers were more negatively affected by the cancer diagnosis. Hence, social workers should be attentive to their experience as well. Screening and assessment should be inclusive of the significant other in order to identify individuals who may have difficulties coping with the patient's diagnosis and its demands. Among the numerous questionnaires available to assess caregivers' quality of life and distress (Edwards & Ung, 2002), Vanlemmens et al. (2012)

have advocated for the creation of instruments that focus on the experience of younger partners and recently introduced the Partner-YW-BC Inventory. Since the questionnaire has been developed in France, an adaptation and validation is necessary because of cross-cultural differences. However, areas of quality of life investigated by the instrument can be used to develop questions to guide the conversation with younger partners.

Since younger patients and partners' mutuality contributes to dyadic coping, psychosocial interventions should address the dyad as a unit of intervention. Over the last two decades, several couple-based interventions have been developed and tested in RCTs (Badr & Krebs, 2012; Baik & Adams, 2011; Regan et al., 2012; Scott & Kayser, 2008; Zimmermann, Heinrichs, & Baucom, 2007). Despite more investigation is warranted to evaluate their effectiveness and application in practice settings, authors have found greater improvements in dyadic coping for younger couples (Kayser & Acquati, 2011). Programs aimed at supporting younger dyads coping with breast cancer should assist participants identifying their relationships qualities, positive and negative coping patterns and their impact on their reciprocal quality of life. Through this experience younger couples should be taught how to modify dysfunctional coping patterns and to establish new coping repertoires, while enhancing couple resilience within the safe setting of a therapeutic intervention (Skerrett & Fergus, 2015). It is, however, necessary to adapt existing protocols to target topics that are relevant for younger couples in the early years of marriage or cohabitating couples who are preparing for marriage (Ponzetti, 2016). Additional issues could include: social relations with families of origin and the extensive supportive network, financial planning, fertility preservation options and transition to parenthood for couples interested in having children after cancer or strategies to cope

with cancer-related infertility. While preliminary data indicate beneficial changes in communication, cancer-related discussion, greater closeness and higher relationship strengths for younger dyads (Fergus et al., 2014; Fergus et al., 2015), it will be important to further investigate factors associated with positive results, timing and the mechanism for therapeutic change (Revenson & DeLongis, 2011; Revenson & Lepore, 2012).

As improvements in early detection and treatment have increased the survival rate, cancer is becoming a chronic condition. Younger breast cancer survivors experience late treatment-related side effects -often including physical, psychosocial, and cognitive issues- and fear of recurrence or of new malignancies (Damaskos & Parry, 2015; Howlader et al., 2011; Siegel, Naishadham & Jemal, 2013; Valdivieso, Kujawa, Jones & Baker, 2012). Very debilitating long-term effects of chemotherapy include cardiac toxicity, secondary leukemia, affected cognitive function and neurotoxicity (Azim, Azambuja, Colozza, Bines & Piccart, 2011). Hence, younger women should be offered care along the cancer continuum through individual, couples and group approaches. Indications from the literature suggest that cognitive behavioral approaches had the highest success in promoting better coping skills and this can represent a starting point for future experiences (Damaskos & Parry, 2015; Traeger, Greer, Fernandez-Robles, Temeland & Pirl, 2010). Furthermore, psychosocial issues should be incorporated in survivorship care plans to promote better coordination of care (ACOS COC, 2012).

### **Limitations**

The study presents several limitations. First, the small sample size affects the generalization of results to other groups. A more appropriately powered sample is needed

to investigate the differential impact of breast cancer among patients and partners across the developmental trajectory. Although difficulties in the recruitment of couples for research are well-established by the literature (Fredman et al., 2009; Hagedoorn et al., 2015; Kenny et al., 2006; Regan, Lambert, & Kelly, 2013), the limited sample and the use of different instruments to measure quality of life of patients and partners negatively impacted the data analysis strategy and the possibility to test more complex models of dyadic data analysis (Ledermann & Kenny, 2012; Ledermann & Macho, 2014; Ledermann, Macho & Kenny, 2011). For example, in the original conceptual framework it was planned to control for socio-demographic variables. Similarly, dyadic data analysis can also be conducted using Structural Equation Modeling. However, most authors recommend this statistical methodology with sample size of at least 200 subjects (Kline, 2011; Raykov & Marcoulides, 2006). Furthermore, in the current study the identification of “younger” and “older” dyads was derived only by the age of the patient at diagnosis. Future studies can benefit from a more in-depth exploration of the role of developmental stages, duration of relationship and cohort effects, and how these interact with couples’ coping with cancer (Baucom et al., 2012; Revenson & Lepore, 2012).

In addition, the sample was largely homogeneous. The absence of diversity in regards to race, socio-economic status, sexual orientation and level of education represents a limitation of the study. Although the two institutions where the research was conducted were selected because they were serving a metropolitan area characterized by diversity and the research materials were available in multiple languages, the sample mirrors the type of patients seeking care at these institutions. Other strategies to increase

diversity would have been to include online study materials (especially to target younger participants) and to partner with a community-based or advocacy organization.

This project used a cross sectional design to assess individuals' and couples' adjustment to the patients' illness in the first three months from diagnosis. Since coping with cancer is a process that changes and evolves with time and along the cancer care continuum, individuals' and couples' adaptation to illness is not static. Hence, it is not possible to elaborate whether the adjustment of younger patients and partners is consistently more affected over time than the one of older participants.

While dyadic coping has been consistently associated to stress reduction and improved quality of the relation (Falconier et al., 2015), marital satisfaction was not included in the original research protocol. Thus, it was not possible to examine the relationship between dyadic coping and marital satisfaction in the two groups, to test whether this association is maintained also in younger couples, or if worse outcomes are reported for those who are already experiencing difficulties in their relationships. Similarly, while some items in the instruments address sexuality, it would have been interesting to include scales about body image and sexual functioning, next to anxiety and depression inventories.

In the present study dyadic coping was measured using the Dyadic Coping Scale. While examining the study variables of interest, very high correlations were identified between common and positive dyadic coping ( $r = .90$  for patients,  $r = .93$  for partners), which raised some concerns for the use of this two subscales in the analyses. Similarly, an element that suggests the need for further reflection on the measurement of mutuality and dyadic coping is the presence of very large actor effects in the APIM analysis.

However, the scale has been recently reviewed and re-named Dyadic Coping Inventory (DCI, Bodenmann, 2008). It includes now 37 items and it is organized around four subscales (delegated, supportive, stress communication, and negative dyadic coping) which can be grouped into two total scores (positive and negative dyadic coping). While the DCI has been extensively used in European countries (Ledermann et al, 2010; Falconier, Nussbeck, & Bodenmann, 2013; Vedes, Nussbeck, Bodenmann, Lind, & Ferreira, 2013), the first validation study for the US population was published while this research project was completed (Levesque, Lafontaine, Caron & Fitzpatrick, 2014). The inclusion of this new instrument in future research projects is recommended, also to test if current results are replicated. In particular, the distinction between dyadic coping by oneself and by the partner may contribute to clarify the results reported by younger dyads.

Finally, since breast cancer in younger women is associated with more aggressive biological characteristics, advanced stage of disease, and worse prognosis (Ademuyiwa et al., 2015; American Cancer Society, 2014), it would have been interesting to examine differences for staging and treatment type, and to test whether these differences may have influenced the quality of life of patients as well as their partners’.

### **Future Directions**

While most previous studies on younger women diagnosed with breast cancer failed to include the partner, and the attention to the developmental trajectory of dyadic coping over the life-span is a significant gap in the current literature about couples coping with cancer, the present investigation has provided important indications about the unique

experience of younger patients and their partners. It also expands our understanding of the inter-relationship between mutuality and dyadic coping, and how they both play important roles in optimal adjustment to a cancer diagnosis. Despite the limitations listed earlier, these results represent the starting point of a future program of research in psychosocial oncology aimed at improving the quality of life of younger women and their partners, and the provision of quality cancer care.

The lower quality of life and emotional well-being of both younger patients and partners (as compared to older patients and partners) suggests that additional studies, both cross-sectional and longitudinal, are needed to examine the differential impact cancer has on couples across the developmental trajectory and to provide confirmation to these findings. Building on larger samples and on dyadic study conceptualizations, this research will lead to better understand sources of stress and relational impairment experienced by younger dyads, which will be used to inform future interventions. Furthermore, future studies will contribute to the identification of individual (i.e.: personality characteristics) and relational characteristics (i.e.: closeness, strength of the relationship; authenticity) associated to better adjustment during a stage of life currently overlooked by the literature (Saita, Acquati, & Kayser, 2015). This will allow for the early identification of individuals and couples who are more vulnerable to a negative adaptation to the illness. Similarly, it will be critical to target different types of cancer and particularly cancers that affect both genders, with the long-term goal to examine the effect of gender, role and dyad characteristics over younger dyads' emotional well-being and adaptation to cancer (Hagedoorn et al., 2008).

One of the most interesting findings from the study is the absence of association between dyadic coping and emotional well-being of younger partners, which has raised numerous questions about factors that contribute to the quality of life of younger caregivers. Given the few precedents in the literature, qualitative investigations will be essential to elaborate more on the meanings associated to the cancer diagnosis of the patient, the new role of caregiver, and to identify significant stressors and sources of support for this group (for example, the role of the larger supportive network/work environment). Findings from these studies will contribute to the development of instruments and supportive interventions.

Recently, the adverse impact of out-of-pocket health costs has been labeled as the financial toxicity of cancer (Zafar et al., 2013). This financial burden negatively affects quality of life of patients and survivors, in the form of worse physical and mental well-being, poor adherence and utilization of care (Azzani et al., 2015; Chino et al., 2014; Fenn et al., 2014; Sharp, Carsin & Timmons, 2013). Within this literature, alarming are the findings about the younger group. Not only younger patients have a 10 times higher likelihood of bankruptcy, but cancer survivors in their 30s report significantly worse financial status than those of younger age (Banegas et al., 2016; Landwehr et al., 2016; Ramsey et al., 2013). Future studies are needed to examine the impact of cancer's costs on the well-being of younger patients during the cancer continuum, and also to examine how financial stress affects the relationship of younger patients' and partners. While the literature has recently demonstrated that economic hardship is associated with higher conflict, lower life satisfaction and negative communication in young couples (Halliday

Hardie & Lucas, 2010; Haid & Seiffge-Krenke, 2013; Williamson et al., 2013), no investigation has been conducted about younger couples coping with cancer.

To date, a few studies have explored differences among younger breast cancer patients based on racial and ethnic backgrounds. However, Morrow and colleagues (2014) identified racial disparities in terms of higher financial distress for Black women, while Hispanic women had higher family distress and higher cancer-specific symptoms, compared to White respondents. Additionally, members from minority groups report a critical need for culturally appropriate information and communication strategies from health-care professionals (Colon, 2015; Rivers et al., 2013; Surbone, Zwitter, Rajer, & Stiefel, 2013). It will be therefore important to investigate differences in the experience of individuals and couples from different racial and socio-economic status, immigrants, with no or inadequate health-care coverage and from segregated neighbors; all factors that contribute to health disparities in cancer care (Elk & Landrine, 2011; Israel, Eng, Schulz, & Parker, 2012; Koh, 2009). Methodologically, this can be achieved implementing community-based participatory research (Gehlert & Coleman, 2010; Israel, Eng, Schulz, & Parker, 2012). Furthermore, only recently studies started to address the role of culture on dyadic coping (e.g.: Falconier et al., 2013; Kayser et al., 2014). While it is well established that culture significantly shapes the individual reaction and adaptation to illness, the paucity of works on couples coping with cancer indicates a current lack of attention to cultural aspects of coping, and our inability to test whether coping strategies developed in Western cultures are confirmed in collectivistic settings (Fu, Xu, Liu, & Haber, 2008; Tran, 2009). In this direction, the work of Kayser et al. (2014) comparing couples from China, India and the United States identified cultural factors influencing the

coping process and revealed that some couples are able to transcend those cultural norms to better adjust.

Finally, an interesting area to consider is the role of attachment on younger couples' adaptation to illness and quality of the relationship (Pietromonaco, Uchino, & Dunkel-Schetter, 2013). Since it is estimated that approximately 55-65% of adults are secure, 22-30% avoidant, and 15-20% ambivalent (Magai, 2008), it is likely that discrepancies exist in the dyad, thus influencing appraisal and coping interactions (Pietromonaco, Feldman Barrett, & Powers, 2006). Furthermore, parents and their adult children share similarities in dyadic coping responses (Donato et al., 2011; Donato, Iafrate & Barni, 2013; Iafrate, Donato, & Bertoni, 2013), with parents acting as role models for the acquisition of dyadic coping. This intergenerational transmission of coping occurs mostly for negative dyadic coping styles and it is registered especially among younger women. These findings have significant implications for younger dyads, as in the early stage of the relationship partners are trying to develop their own identity, norms and roles separated from the dynamics of their families of origin (Carra' Mittini, 1999; Scabini & Cigoli, 2000; Scabini & Iafrate, 2003; Scabini & Rossi, 2012). Future research may explore how the attachment style of the two partners influences their coping with breast cancer and also if more beneficial outcomes are reported by couples where the relationship with the partner has compensated for maladaptive influences of the family of origin.

## **Conclusion**

Although the psychosocial adaptation to a diagnosis of breast cancer continues to be extensively studied in psychosocial oncology research, the experience of younger women and their partners has received little attention by the literature. Furthermore, a paucity of

previous works to date have applied a relational perspective to this phenomenon. To our knowledge this was the first study conducted in the United States to focus specifically on how younger patients and partners cope with early stage breast cancer. By comparing their experience to the one of older dyads, results indicate that younger couples are more negatively affected by the cancer diagnosis and its consequences in the first three months from diagnosis. In particular, younger women's social well-being is highly vulnerable to negative forms of dyadic coping. Although actor and partner effects of mutuality indicate that the perception of a supportive relationship contributes to more adaptive and coordinated coping, an aspect of risk is identified in the increased negative dyadic coping reported by younger women when their partners show high display of emotional support.

On a more theoretical level, current findings provided empirical evidence for the Relational-Cultural Model of dyadic coping (Kayser et al., 2007). This has important implications for the conceptualization of dyadic coping, as the available literature has mostly focused on its consequences rather than on the process that originates conjoint forms of coping within the dyad. Since the present study has investigated only one among the relational characteristics identified by the model, further investigations are needed to test the model in its integrity, with the goal to clarify the connection between relational abilities, coping and individual and relational outcomes.

Future studies should continue to provide attention to the developmental trajectory of dyadic coping over the life-span across a variety of cancer types, socio-economic and cultural contexts. Furthermore, younger couples, because of their higher vulnerability to stress coupled with generational and contextual exposure to more numerous stressors (APA, 2015), would benefit from psychosocial interventions able to address their specific

needs and challenges. These future endeavors should be inspired by the hope and the belief that close relationships can heal and can contribute to greater well-being, despite the uncertainty that accompanies the cancer experience (Cigoli, 2006; Saita, Cigoli, & Margola, 2009).

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## APPENDIX A

### SURVEY – PATIENT

#### Coping with Breast Cancer: Patient Questionnaire

This questionnaire is about your experience with breast cancer. It will help us to assess how you and your partner are dealing with the illness and treatment. All answers are completely confidential.

#### PART 1. WELL-BEING

Below is a list of statements that other people with your illness have said are important. Please circle or mark one number per line to indicate your response as it applies to the past 7 days.

#### PHYSICAL WELL-BEING

		Not at all	A little bit	Somewhat	Quite a bit	Very much
1	I have a lack of energy	0	1	2	3	4
2	I have nausea	0	1	2	3	4
3	Because of my physical condition, I have trouble meeting the needs of my family	0	1	2	3	4
4	I have pain	0	1	2	3	4
5	I am bothered by side effects of treatment	0	1	2	3	4
6	I feel ill	0	1	2	3	4
7	I am forced to spend time in bed	0	1	2	3	4

**SOCIAL/FAMILY WELL-BEING**

		<b>Not at all</b>	<b>A little bit</b>	<b>Somewhat</b>	<b>Quite a bit</b>	<b>Very much</b>
8	I feel close to my friends	0	1	2	3	4
9	I get emotional support from my family	0	1	2	3	4
10	I get support from my friends	0	1	2	3	4
11	My family has accepted my illness	0	1	2	3	4
12	I am satisfied with family communication about my illness.	0	1	2	3	4
13	I feel close to my partner (or the person who is my main support)	0	1	2	3	4
	Regardless of your current level of sexual activity, please answer the following question. If you prefer not to answer it, please mark this box and go to the next section.					
14	I am satisfied with my sex life	0	1	2	3	4

**EMOTIONAL WELL-BEING**

		<b>Not at all</b>	<b>A little bit</b>	<b>Somewhat</b>	<b>Quite a bit</b>	<b>Very much</b>
15	I feel sad	0	1	2	3	4
16	I am satisfied with how I am coping with my illness	0	1	2	3	4
17	I am losing hope in the fight against my illness	0	1	2	3	4
18	I feel nervous	0	1	2	3	4
19	I worry about dying	0	1	2	3	4
20	I worry that my condition will get worse	0	1	2	3	4

**FUNCTIONAL WELL-BEING**

		<b>Not at all</b>	<b>A little bit</b>	<b>Somewhat</b>	<b>Quite a bit</b>	<b>Very much</b>
21	I am able to work (include work at home)	0	1	2	3	4
22	My work (include work at home) is fulfilling	0	1	2	3	4
23	I am able to enjoy life	0	1	2	3	4
24	I have accepted my illness	0	1	2	3	4
25	I am sleeping well	0	1	2	3	4

26	I am enjoying the things I usually do for fun	0	1	2	3	4
27	I am content with the quality of my life right now	0	1	2	3	4

**ADDITIONAL CONCERNS**

		Not at all	A little bit	Somewhat	Quite a bit	Very much
28	I have been short of breath	0	1	2	3	4
29	I am self-conscious about the way I dress	0	1	2	3	4
30	One or both of my arms are swollen or tender	0	1	2	3	4
31	I feel sexually attractive	0	1	2	3	4
32	I am bothered by hair loss	0	1	2	3	4
33	I worry that other members of my family might someday get the same illness I have	0	1	2	3	4
34	I worry about the effect of stress on my illness	0	1	2	3	4
35	I am bothered by a change in weight	0	1	2	3	4
36	I am able to feel like a woman	0	1	2	3	4
37	I have certain parts of my body where I experience pain	0	1	2	3	4

**PART II. PERSONAL RELATIONSHIPS**

We would like you to tell us about your relationship with your spouse or partner. By partner we mean a person with whom you live or with whom you have a steady relationship.

If married, how many years? \_\_\_\_\_

What is your spouse's age? \_\_\_\_\_

If not married, how long have you known your partner?

What is your partner's age?

Are you currently living with your partner?

- YES
- NO

**MUTUALITY**

In this section we would like to explore certain aspects of your relationship with your spouse or partner. Using the scale below, please circle the appropriate number to tell us your best estimate of how often you and your spouse./partner experience each of the following.

*When we talk about things that matter to my spouse/partner, I am likely to...*

	<b>Never</b>	<b>Rarely</b>	<b>Occasionally</b>	<b>More often than not</b>	<b>Most of the time</b>	<b>All the time</b>
Be receptive	1	2	3	4	5	6
Get impatient	1	2	3	4	5	6
Try to understand	1	2	3	4	5	6
Get bored	1	2	3	4	5	6
Feel moved	1	2	3	4	5	6
Avoid being honest	1	2	3	4	5	6
Be open-minded	1	2	3	4	5	6
Get discouraged	1	2	3	4	5	6
Get involved	1	2	3	4	5	6
Have difficulty listening	1	2	3	4	5	6
Feel energized by our conversation	1	2	3	4	5	6

*When we talk about things that matter to me, my spouse/partner is likely to...*

	<b>Never</b>	<b>Rarely</b>	<b>Occasionally</b>	<b>More than often</b>	<b>Most of the time</b>	<b>All the time</b>
Pick up on my feelings	1	2	3	4	5	6
Feel like we are not getting anywhere	1	2	3	4	5	6
Show an interest	1	2	3	4	5	6
Get frustrated	1	2	3	4	5	6
Share similar experiences	1	2	3	4	5	6
Keep feelings inside	1	2	3	4	5	6
Respect my point of view	1	2	3	4	5	6
Change the subject	1	2	3	4	5	6
See the humor in things	1	2	3	4	5	6
Feel down	1	2	3	4	5	6
Express an opinion clearly	1	2	3	4	5	6

### **PART III. COPING**

#### **Section 1**

This section is about what you do when you are feeling stressed. Please respond by circling the appropriate number.

		<b>Never</b>	<b>Rarely</b>	<b>Sometimes</b>	<b>Often</b>	<b>Very Often</b>	<b>Always</b>
1	I let my partner know that I appreciate his/her support, advice, or help	1	2	3	4	5	6
2	I ask my partner to do things for me when I have too much to do	1	2	3	4	5	6
3	I show my partner through my behavior that I am not doing well or that I have problems	1	2	3	4	5	6
4	I tell my partner openly how I feel and that I would appreciate his/her support	1	2	3	4	5	6
5	I try to hide my stress from my partner so that she/he does not notice it	1	2	3	4	5	6

#### **Section 2**

This section is about what your partner does when you are feeling stressed

		<b>Never</b>	<b>Rarely</b>	<b>Sometimes</b>	<b>Often</b>	<b>Very Often</b>	<b>Always</b>
6	My partner gives me feeling that he/she understands me	1	2	3	4	5	6
7	My partner expresses that he/she is on my side	1	2	3	4	5	6
8	My partner makes fun of me when I am feeling stressed	1	2	3	4	5	6
9	My partner helps me see the stressful situation in a different light	1	2	3	4	5	6
10	My partner listens to me and gives me the opportunity to communicate the entire situation	1	2	3	4	5	6
11	My partner lets me know that he/she does not want to be bothered with my problems	1	2	3	4	5	6
12	My partner takes me in his/her arms and is tender toward me	1	2	3	4	5	6

13	My partner consoles me to make me feel better	1	2	3	4	5	6
14	My partner tells me that my way of stress bothers him/her	1	2	3	4	5	6
15	My partner takes on things that I normally do in order to help me out	1	2	3	4	5	6
16	Although my partner makes time for me, his/her thoughts are somewhere else	1	2	3	4	5	6
17	My partner shows me that he/she is standing by me	1	2	3	4	5	6
18	When I am too busy my partner helps me out	1	2	3	4	5	6
19	My partner praises me when he/she realizes I have handled stress well	1	2	3	4	5	6
20	My partner finds it okay when I want to be alone	1	2	3	4	5	6
21	My partner helps me to think through the situation so that I can understand better what is going on.	1	2	3	4	5	6
22	My partner helps me out and takes on tasks when I ask him /her to do so	1	2	3	4	5	6
23	My partner helps me to relax by giving me a massage or something like that	1	2	3	4	5	6
24	I am satisfied with the support I receive from my partner	1	2	3	4	5	6
25	I found the support that I receive from my partner is helpful and effective	1	2	3	4	5	6

### Section 3

This section is about what you do when your partner is feeling stressed

		Never	Rarely	Sometimes	Often	Very Often	Always
26	I communicate understanding to my parent	1	2	3	4	5	6
27	I express to my partner that I am on his/her side	1	2	3	4	5	6
28	I make fun of my partner's stress	1	2	3	4	5	6
29	I tell my partner that his/her stress is not that bad and	1	2	3	4	5	6

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	help him/her to see the situation in a different light						
30	I listen to my partner and give him/her space to communicate the entire situation	1	2	3	4	5	6
31	I let my partner know that I do not want to be bothered with his/her problems	1	2	3	4	5	6
32	I take my partner in my arms and am tender toward him/her	1	2	3	4	5	6
33	When my partner is stressed, I tend to withdraw	1	2	3	4	5	6
34	I console and say nice things to make him/her feel good	1	2	3	4	5	6
35	I tell my partner that his/her way of handling stress bothers me	1	2	3	4	5	6
36	I take on things that my partner would normally do in order to help him/her out	1	2	3	4	5	6
37	Although I say nice things and take him/her in my arms, my thoughts are somewhere else	1	2	3	4	5	6
38	I show my partner that I stand by him/her	1	2	3	4	5	6
39	When my partner heels he/she has too much to do, I help him/her out	1	2	3	4	5	6
40	I tell my partner when I think he/she coped well with stress and praise him/her	1	2	3	4	5	6
41	I take into account when my partner needs to spend time alone and I approach him/her later	1	2	3	4	5	6
42	Although I support my partner, I am amazed at those people who can deal with their problems themselves	1	2	3	4	5	6
43	I try to think through the situation with my partner and help/him her to understand the problem	1	2	3	4	5	6
44	I do things for my partner when he/she asks me to	1	2	3	4	5	6

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45	I help my partner to relax by giving him/her a massage or something like that	1	2	3	4	5	6
46	When my partner is stressed, I tend to get out of his/her way	1	2	3	4	5	6
47	My partner is satisfied with the support I give to him/her	1	2	3	4	5	6
48	The support I give to my partner is helpful and effective	1	2	3	4	5	6

#### Section 4

This section is about what you and your partner do when you are both feeling stressed

		Never	Rarely	Sometimes	Often	Very Often	Always
49	We are supportive of each other and help one another out	1	2	3	4	5	6
50	We divide tasks fairly so that both of us have an equal amount of work to do	1	2	3	4	5	6
51	As a couple, we generally solve our problems on our own	1	2	3	4	5	6
52	We have a good laugh together about it and take it lightly	1	2	3	4	5	6
53	We engage in a serious discussion about the problem and think through what has to be done	1	2	3	4	5	6
54	We meditate or pray together	1	2	3	4	5	6
55	We help one another to put the problem in perspective and see it in a new light	1	2	3	4	5	6
56	We help each other relax with such things like massage, taking a bath together, or listening to music	1	2	3	4	5	6
57	We sit down to talk together and share our feelings	1	2	3	4	5	6
58	When we are both stressed, we withdraw and avoid each other	1	2	3	4	5	6
59	We caress one another and make love	1	2	3	4	5	6

60	I am satisfied with the way my partner and I deal with stress together	1	2	3	4	5	6
61	I found as a couple, the way we deal with stress together is effective	1	2	3	4	5	6

**PART IV. COMMUNICATION**

Next to each statement below, circle the number of the response that best describes the way you feel about the statement

		<b>Definitely False</b>	<b>Usually False</b>	<b>Neither True or False</b>	<b>Usually True</b>	<b>Definitely True</b>
1	It is very easy for me to express all my true feelings to my partner	1	2	3	4	5
2	When we are having a problem, my partner often gives me the silent treatment	1	2	3	4	5
3	My partner sometimes makes comments which put me down	1	2	3	4	5
4	I am sometimes afraid to ask my partner for what I want	1	2	3	4	5
5	I wish my partner were more willing to share his/her feelings with me	1	2	3	4	5
6	Sometimes I have trouble believing everything my partner tells me	1	2	3	4	5
7	I often do not tell my partner what I am feeling because he/she should already know	1	2	3	4	5
8	I am very satisfied with how my partner and I talk with each other	1	2	3	4	5
9	I do not always share negative feelings I have about my partner because I am afraid he/she will be angry	1	2	3	4	5
10	My partner is always a good listener	1	2	3	4	5

## BACKGROUND INFORMATION

Please provide the following information about yourself. Remember that this and all other information will be kept strictly confidential

Age: \_\_\_\_\_

Number of Children: \_\_\_\_\_

Ethnic Background:

- Asian
- Caucasian
- Native American/Indian
- Afro-American
- Latino
- Other: \_\_\_\_\_

Education:

- Less than high school
- High school graduate
- High school plus some college
- College graduate
- College plus some graduate hours
- Master's degree
- PhD. MD, JD
- Other: \_\_\_\_\_

Occupation:

- Unskilled labor
- Managerial
- Homemaker/parent
- Skilled labor
- Professional
- Other: \_\_\_\_\_

Income:

- Less than \$10,000
- \$10,000 - \$29,999
- \$30,000 - \$49,999
- \$50,000 - \$69,999
- \$70,000 - \$89,999
- \$90,000 +

Religious affiliation:

- Catholic
- Protestant
- Jewish
- Atheist/Agnostic
- Other: \_\_\_\_\_

Date of Diagnosis: \_\_\_\_\_

Please list any medications that you are currently taking:

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**Health History:**

Has anyone in your family received treatment for mental illness?

- Yes
- No

If yes, how is the person related to you?

- Parent
- Sibling
- Grandparent
- Other (please specify): \_\_\_\_\_

Have you ever received treatment for depression?

- Yes
- No

If yes, was it before or after your cancer diagnosis

- Before
- After

**Thank you very much for completing the questionnaire.  
Please remember to return your questionnaires in the separate envelopes**

## SURVEY - PARTNER

### Coping with Breast Cancer: Partner Questionnaire

This questionnaire is about your experience with breast cancer. It will help us to assess how you and your partner are dealing with the illness and treatment. All answers are completely confidential.

#### **PART 1. WELL-BEING**

Please indicate how often you have felt concerned or worried by circling the number which indicates how true each statement has been for you during the past 2 weeks.

*How often during the past 2 weeks have you...*

		All of the time	Most of the time	A good bit of the time	Some of the time	A little of the time	Hardly any of the time	None of the time
1	Felt concerned or worried?	1	2	3	4	5	6	7
2	Felt questioning or uninformed?	1	2	3	4	5	6	7
3	Felt tense or upset?	1	2	3	4	5	6	7
4	Felt sad or upset?	1	2	3	4	5	6	7
5	Felt nervous or anxious?	1	2	3	4	5	6	7
6	Felt overprotective?	1	2	3	4	5	6	7
7	Had trouble getting a good night's sleep, or found yourself watching your partner while he is sleeping?	1	2	3	4	5	6	7
8	Felt disappointed or discouraged?	1	2	3	4	5	6	7
9	Felt frustrated or angry?	1	2	3	4	5	6	7
10	Felt tearful or crying?	1	2	3	4	5	6	7
11	Felt isolated, alone or lonely?	1	2	3	4	5	6	7
12	Felt helpless or insecure?	1	2	3	4	5	6	7
13	Happy, satisfied or pleased with your personal life?	1	2	3	4	5	6	7
14	Felt apprehensive or frightened?	1	2	3	4	5	6	7

**IMPACT OF ILLNESS**

The following items ask about how much your partner’s illness and/or its treatment interfere with different aspects of your life. Please circle the one number that best describes your current life situation. If an item is not applicable, please circle the number 1 to indicate that this aspect of your life is not affected very much. Please do not leave any item unanswered.

*How much does your partner’s illness and its treatment interfere with your...*

1	HEALTH								
	Not Very Much	1	2	3	4	5	6	7	Very Much
2	DIET								Very Much
	Not Very Much	1	2	3	4	5	6	7	
3	WORK								
	Not Very Much	1	2	3	4	5	6	7	Very Much
4	ACTIVE RECREATION								
	Not Very Much	1	2	3	4	5	6	7	Very Much
5	PASSIVE RECREATION								
	Not Very Much	1	2	3	4	5	6	7	Very Much
6	FINANCIAL SITUATION								
	Not Very Much	1	2	3	4	5	6	7	Very Much
7	RELATIONSHIP WITH YOUR SPOUSE OR PARTNER								
	Not Very Much	1	2	3	4	5	6	7	Very Much
8	SEX LIFE								
	Not Very Much	1	2	3	4	5	6	7	Very Much
9	FAMILY RELATIONS								
	Not Very Much	1	2	3	4	5	6	7	Very Much
10	OTHER SOCIAL RELATIONS								
	Not Very Much	1	2	3	4	5	6	7	Very Much
11	SELF-EXPRESSION/SELF-IMPROVEMENT								
	Not Very Much	1	2	3	4	5	6	7	Very Much
12	RELIGIOUS EXPRESSION								
	Not Very Much	1	2	3	4	5	6	7	Very Much
13	COMMUNITY INVOLVEMENT								
	Not Very Much	1	2	3	4	5	6	7	Very Much

**PART II. PERSONAL RELATIONSHIPS**

We would like you to tell us about your relationship with your spouse or partner. By partner we mean a person with whom you live or with whom you have a steady relationship.

If married, how many years? \_\_\_\_\_

What is your spouse's age? \_\_\_\_\_

If not married, how long have you known your partner?

What is your partner's age?

Are you currently living with your partner?

YES

NO

**MUTUALITY**

In this section we would like to explore certain aspects of your relationship with your spouse or partner. Using the scale below, please circle the appropriate number to tell us your best estimate of how often you and your spouse/partner experience each of the following.

*When we talk about things that matter to my spouse/partner, I am likely to...*

	<b>Never</b>	<b>Rarely</b>	<b>Occasionally</b>	<b>More often than not</b>	<b>Most of the time</b>	<b>All the time</b>
Be receptive	1	2	3	4	5	6
Get impatient	1	2	3	4	5	6
Try to understand	1	2	3	4	5	6
Get bored	1	2	3	4	5	6
Feel moved	1	2	3	4	5	6
Avoid being honest	1	2	3	4	5	6
Be open-minded	1	2	3	4	5	6
Get discouraged	1	2	3	4	5	6
Get involved	1	2	3	4	5	6
Have difficulty listening	1	2	3	4	5	6
Feel energized by our conversation	1	2	3	4	5	6

*When we talk about things that matter to me, my spouse/partner is likely to...*

	<b>Never</b>	<b>Rarely</b>	<b>Occasionally</b>	<b>More than often</b>	<b>Most of the time</b>	<b>All the time</b>
Pick up on my feelings	1	2	3	4	5	6
Feel like we are not getting anywhere	1	2	3	4	5	6
Show an interest	1	2	3	4	5	6
Get frustrated	1	2	3	4	5	6
Share similar experiences	1	2	3	4	5	6
Keep feelings inside	1	2	3	4	5	6

Respect my point of view	1	2	3	4	5	6
Change the subject	1	2	3	4	5	6
See the humor in things	1	2	3	4	5	6
Feel down	1	2	3	4	5	6
Express an opinion clearly	1	2	3	4	5	6

### PART III. COPING

#### Section 1

This section is about what you do when you are feeling stressed. Please respond by circling the appropriate number.

	Never	Rarely	Sometimes	Often	Very Often	Always
1 I let my partner know that I appreciate his/her support, advice, or help	1	2	3	4	5	6
2 I ask my partner to do things for me when I have too much to do	1	2	3	4	5	6
3 I show my partner through my behavior that I am not doing well or that I have problems	1	2	3	4	5	6
4 I tell my partner openly how I feel and that I would appreciate his/her support	1	2	3	4	5	6
5 I try to hide my stress from my partner so that she/he does not notice it	1	2	3	4	5	6

#### Section 2

This section is about what your partner does when you are feeling stressed

	Never	Rarely	Sometimes	Often	Very Often	Always
6 My partner gives me feeling that he/she understands me	1	2	3	4	5	6
7 My partner expresses that he/she is no my side	1	2	3	4	5	6
8 My partner makes fun of me when I am feeling stressed	1	2	3	4	5	6

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9	My partner helps me see the stressful situation in a different light	1	2	3	4	5	6
10	My partner listens to me and gives me the opportunity to communicate the entire situation	1	2	3	4	5	6
11	My partner lets me know that he/she does not want to be bothered with my problems	1	2	3	4	5	6
12	My partner takes me in his/her arms and is tender toward me	1	2	3	4	5	6
13	My partner consoles me to make me feel better	1	2	3	4	5	6
14	My partner tells me that my way of stress bothers him/her	1	2	3	4	5	6
15	My partner takes on things that I normally do in order to help me out	1	2	3	4	5	6
16	Although my partner makes time for me, his/her thoughts are somewhere else	1	2	3	4	5	6
17	My partner shows me that he/she is standing by me	1	2	3	4	5	6
18	When I am too busy my partner helps me out	1	2	3	4	5	6
19	My partner praises me when he/she realizes I have handled stress well	1	2	3	4	5	6
20	My partner finds it okay when I want to be alone	1	2	3	4	5	6
21	My partner helps me to think through the situation so that I can understand better what is going on.	1	2	3	4	5	6
22	My partner helps me out and takes on tasks when I ask him /her to do so	1	2	3	4	5	6
23	My partner helps me to relax by giving me a massage or something like that	1	2	3	4	5	6

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24	I am satisfied with the support I receive from my partner	1	2	3	4	5	6
25	I found the support that I receive from my partner is helpful and effective	1	2	3	4	5	6

### Section 3

This section is about what you do when your partner is feeling stressed

		Never	Rarely	Sometimes	Often	Very Often	Always
26	I communicate understanding to my parent	1	2	3	4	5	6
27	I express to my partner that I am on his/her side	1	2	3	4	5	6
28	I make fun of my partner's stress	1	2	3	4	5	6
29	I tell my partner that his/her stress is not that bad and help him/her to see the situation in a different light	1	2	3	4	5	6
30	I listen to my partner and give him/her space to communicate the entire situation	1	2	3	4	5	6
31	I let my partner know that I do not want to be bothered with his/her problems	1	2	3	4	5	6
32	I take my partner in my arms and am tender toward him/her	1	2	3	4	5	6
33	When my partner is stressed, I tend to withdraw	1	2	3	4	5	6
34	I console and say nice things to make him/her feel good	1	2	3	4	5	6
35	I tell my partner that his/her way of handling stress bothers me	1	2	3	4	5	6
36	I take on things that my partner would normally do in order to help him/her out	1	2	3	4	5	6
37	Although I say nice things and take him/her	1	2	3	4	5	6

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	in my arms, my thoughts are somewhere else						
38	I show my partner that I stand by him/her	1	2	3	4	5	6
39	When my partner heels he/she has too much to do, I help him/her out	1	2	3	4	5	6
40	I tell my partner when I think he/she coped well with stress and praise him/her	1	2	3	4	5	6
41	I take into account when my partner needs to spend time alone and I approach him/her later	1	2	3	4	5	6
42	Although I support my partner, I am amazed at those people who can deal with their problems themselves	1	2	3	4	5	6
43	I try to think through the situation with my partner and help/him her to understand the problem	1	2	3	4	5	6
44	I do things for my partner when he/she asks me to	1	2	3	4	5	6
45	I help my partner to relax by giving him/her a massage or something like that	1	2	3	4	5	6
46	When my partner is stressed, I tend to get out of his/her way	1	2	3	4	5	6
47	My partner is satisfied with the support I give to him/her	1	2	3	4	5	6
48	The support I give to my partner is helpful and effective	1	2	3	4	5	6

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**Section 4**

This section is about what you and your partner do when you are both feeling stressed

		Never	Rarely	Sometimes	Often	Very Often	Always
49	We are supportive of each other and help one another out	1	2	3	4	5	6
50	We divide tasks fairly so that both of us have an equal amount of work to do	1	2	3	4	5	6
51	As a couple, we generally solve our problems on our own	1	2	3	4	5	6
52	We have a good laugh together about it and take it lightly	1	2	3	4	5	6
53	We engage in a serious discussion about the problem and think through what has to be done	1	2	3	4	5	6
54	We meditate or pray together	1	2	3	4	5	6
55	We help one another to put the problem in perspective and see it in a new light	1	2	3	4	5	6
56	We help each other relax with such things like massage, taking a bath together, or listening to music	1	2	3	4	5	6
57	We sit down to talk together and share our feelings	1	2	3	4	5	6
58	When we are both stressed, we withdraw and avoid each other	1	2	3	4	5	6
59	We caress one another and make love	1	2	3	4	5	6
60	I am satisfied with the way my partner and I deal with stress together	1	2	3	4	5	6
61	I found as a couple, the way we deal with stress together is effective	1	2	3	4	5	6

**PART IV. COMMUNICATION**

Next to each statement below, circle the number of the response that best describes the way you feel about the statement

		<b>Definitely False</b>	<b>Usually False</b>	<b>Neither True or False</b>	<b>Usually True</b>	<b>Definitely True</b>
1	It is very easy for me to express all my true feelings to my partner	1	2	3	4	5
2	When we are having a problem, my partner often gives me the silent treatment	1	2	3	4	5
3	My partner sometimes makes comments which put me down	1	2	3	4	5
4	I am sometimes afraid to ask my partner for what I want	1	2	3	4	5
5	I wish my partner were more willing to share his/her feelings with me	1	2	3	4	5
6	Sometimes I have trouble believing everything my partner tells me	1	2	3	4	5
7	I often do not tell my partner what I am feeling because he/she should already know	1	2	3	4	5
8	I am very satisfied with how my partner and I talk with each other	1	2	3	4	5
9	I do not always share negative feelings I have about my partner because I am afraid he/she will be angry	1	2	3	4	5
10	My partner is always a good listener	1	2	3	4	5

**BACKGROUND INFORMATION**

Please provide the following information about yourself. Remember that this and all other information will be kept strictly confidential

Age: \_\_\_\_\_

Number of Children: \_\_\_\_\_

Ethnic Background:

- Asian
- Caucasian
- Native American/Indian
- Afro-American
- Latino
- Other: \_\_\_\_\_

Education:

- Less than high school
- High school graduate
- High school plus some college
- College graduate
- College plus some graduate hours
- Master's degree
- PhD. MD, JD
- Other: \_\_\_\_\_

Occupation:

- Unskilled labor
- Managerial
- Homemaker/parent
- Skilled labor
- Professional
- Other: \_\_\_\_\_

Income:

- Less than \$10,000
- \$10,000 - \$29,999
- \$30,000 - \$49,999
- \$50,000 - \$69,999
- \$70,000 - \$89,999
- \$90,000 +

Religious affiliation:

- Catholic
- Protestant
- Jewish
- Atheist/Agnostic
- Other: \_\_\_\_\_

**Health History:**

Has anyone in your family received treatment for mental illness?

- Yes
- No

If yes, how is the person related to you?

- Parent
- Sibling
- Grandparent
- Other (please specify): \_\_\_\_\_

Have you ever received treatment for depression?

- Yes
- No

**Thank you very much for completing the questionnaire.  
Please remember to return your questionnaires in the separate envelopes**

**DATE:** June 19, 2015

**TO:** Karen Kayser

**FROM:** The University of Louisville Institutional Review Board

**IRB NUMBER:** 15.0571

**STUDY TITLE:** Younger Couples Coping with Breast Cancer: Examining the Relationship between Mutuality, Dyadic Coping, and Quality of Life of Patients and Partners

**REFERENCE #:** 365202

**IRB STAFF CONTACT:** Jackie Powell, CIP  
852-4101

This study was reviewed on 06/18/2015 by the Chair of the Institutional Review Board and approved through the Expedited Review Procedure, according to 45 CFR 46.110(b), since this study falls under Category 5: Research involving materials (data, documents, records, or specimens) that have been collected, or will be collected solely for non-research purposes (such as medical treatment or diagnosis).

This study was also approved through 45 CFR 46.116 (D), which means that it has been granted a waiver of informed consent because it meets the following criteria:

- The research involves no more than minimal risk to the subjects.
- The waiver or alteration will not adversely affect the rights and welfare of the subjects.
- The research could not practicably be carried out without the waiver or alteration.
- Whenever appropriate, the subjects will be provided with the additional pertinent information after participation.

The following items have been approved:

Submission Components			
Study Protocol and Survey	Version 1.0	06/16/2015	Approved
Data File Overview	Version 1.0	06/16/2015	Approved

This study now has final IRB approval from 06/18/2015 through 06/17/2016.

## Bivariate Analyses: Patients

**Table 1B.** Correlations of the Major Study Variables Patients (n=86)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Stress Communication		.54***	.59***	-.14	-.36**	.65***	.36**	.33**	-.14	.32**	-.19	-.02	-.04	.02	-.03
2. Common Dyadic Coping			.90***	-.43***	-.57**	.87***	.42***	.39***	.06	.26*	-.08	.06	.09	.07	.10
3. Positive Dyadic Coping				-.47***	-.58***	.95***	.51***	.47***	-.08	.30**	-.17	-.03	-.01	-.04	-.01
4. Hostile Dyadic Coping					.34**	-.28**	-.44***	-.39***	-.17	-.35**	-.06	-.11	-.32*	-.22*	-.27**
5. Avoidance of Dyadic Coping						-.48***	-.37***	-.45***	-.01	-.27*	.04	-.13	-.10	-.01	-.09
6. Total Dyadic Coping							.41***	.40***	-.12	.23*	-.21*	-.09	-.08	-.11	-.09
7. Mutuality								.70***	.04	.62***	.01	.24*	.30**	.12*	.27*
8. Communication									-.02	.49***	-.03	.10	.14	.11	.15
9. Physical Well-being										.18	.33**	.59***	.73***	.60***	.75***
10. Social Well-being											.16	.38***	.56***	.29**	.53***
11. Emotional Well-being												.48***	.62***	.35**	.59***
12. Functional Well-being													.88***	.49***	.85***
13. FACT-G														.60***	.76***
14. Breast Cancer Symptoms															.97***
15. FACT-B															

**Table 2B.** Correlations Socio-Demographic Characteristics and Major Study Variables Patients (n=86)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1. Age		<b>.30**</b>	.14	-.15	.19	-.07	-.10	-.05	-.04	-.14	-.03	.01	-.16	-.05	-.14	<b>.27*</b>	.17	<b>.32**</b>	.11	<b>.28*</b>	.17	<b>.27*</b>
2. Number of Children				<b>.06</b>	<b>-.25*</b>	-.09	<b>.26*</b>	<b>-.25*</b>	-.07	-.08	-.06	.09	-.03	-.09	-.08	.06	-.06	.11	-.06	.02	-.13	-.01
3. Race																						
4. Education																						
5. Occupation																						
6. Income																						
7. Religion																						
8. Stress Communication																						
9. Common Dyadic Coping																						
10. Positive Dyadic Coping																						
11. Hostile Dyadic Coping																						
12. Avoidance of Dyadic Coping																						
13. Total Dyadic Coping																						
14. Mutuality																						
15. Communication																						
16. Physical Well-being																						
17. Social Well-being																						
18. Emotional Well-being																						
19. Functional Well-being																						
20. FACT-G																						
21. Breast Cancer Symptoms																						
22. FACT-B																						

**Table 3B.** Correlations Relational Variables and Major Study Variables Patients (n=86)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Marital Status		.27*	.07	-.09	-.06	-.11	-.10	-.05	-.04	.14	-.06	.14	.11	-.05	.05	-.06	.01
2. Length of Relationship			-.02	-.03	-.11	-.07	-.07	-.13	-.01	-.04	.25*	.21*	.28*	.18	.31**	.12	.28*
3. Stress Communication				.54***	.59***	-.14	-.36**	.65***	.36**	.33**	-.14	.32**	-.19	-.02	-.04	.02	-.03
4. Common Dyadic Coping					.90***	-.43***	-.57**	.87***	.42***	.39***	.06	.26*	-.08	.06	.09	.07	.10
5. Positive Dyadic Coping						-.47***	-.58***	.95***	.51***	.47***	-.08	.30**	-.17	-.03	-.01	-.04	-.01
6. Hostile Dyadic Coping							.34**	-.28**	-.44***	-.39***	-.17	-.35**	-.06	.11	-.22*	-.32**	-.27*
7. Avoidance of Dyadic Coping								-.48***	-.37***	-.45***	-.01	-.27*	.04	-.13	-.10	-.01	-.09
8. Total Dyadic Coping									.41***	.40***	-.12	.23*	-.21*	-.09	-.08	-.11	-.09
9. Mutuality										.70***	.04	.62***	.01	.24*	.30**	.12	.28*
10. Communication											-.02	.49***	-.03	.10	.14	.11	.15
11. Physical Well-being												.18	.33**	.59***	.73***	.60***	.75***
12. Social Well-being													.16	.38***	.56***	.29**	.53***
13. Emotional Well-being														.48***	.62***	.35**	.59***
14. Functional Well-being															.88***	.49***	.85***
15. FACT-G																.60***	.97***
16. Breast Cancer Symptoms																	.76***
17. FACT-B																	





## Bivariate Analyses: Partners

**Table 6B.** Correlations of the Major Study Variables Partners (n=86)

<b>Variable</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
1. Stress Communication		.44***	.43***	-.02	-.17	.60***	.30**	.21*	-.02	-.07
2. Common Dyadic Coping			.93***	-.41***	-.45***	.90***	.75***	.67***	.06	-.09
3. Positive Dyadic Coping				-.45***	-.54***	.94***	.76***	.65***	.09	-.09
4. Hostile Dyadic Coping					.49***	-.22*	-.57***	-.54***	-.31**	.37***
5. Avoidance of Dyadic Coping						-.36**	-.58***	-.63***	-.21*	.08
6. Total Dyadic Coping							.65***	.53***	.01	-.02
7. Mutuality								.75***	.10	-.18
8. Communication									.14	-.11
9. Emotional Wellbeing										-.45***
10. Illness Intrusiveness										



**Table 8B.** Correlations Relational Variables and Major Study Variables Partners (n=86)

<b>Variable</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>
1. Marital Status		<b>.27*</b>	-.08	-.01	.01	.06	.02	.01	-.04	.03	-.03	.14
2. Length of Relationship			.06	.16	.18	<b>-.27*</b>	-.13	.13	.04	.02	<b>.26*</b>	<b>-.24*</b>
3. Stress Communication				<b>.44***</b>	<b>.43***</b>	-.02	-.17	<b>.60***</b>	<b>.30**</b>	.21*	-.02	-.07
4. Common Dyadic Coping					<b>.93***</b>	<b>-.41***</b>	<b>-.45***</b>	<b>.90***</b>	<b>.75***</b>	<b>.67***</b>	.06	-.09
5. Positive Dyadic Coping						<b>-.45***</b>	<b>-.54***</b>	<b>.94***</b>	<b>.76***</b>	<b>.65***</b>	.09	-.09
6. Hostile Dyadic Coping							<b>.49***</b>	-.22*	<b>-.57***</b>	<b>-.54***</b>	<b>-.31**</b>	<b>.37***</b>
7. Avoidance of Dyadic Coping								<b>-.36**</b>	<b>-.58***</b>	<b>-.63***</b>	<b>-.21*</b>	.08
8. Total Dyadic Coping									<b>.65***</b>	<b>.53***</b>	.01	-.02
9. Mutuality										<b>.75***</b>	.10	-.18
10. Communication											.14	-.11
11. Emotional Well-being												<b>-.45***</b>
12. Illness Intrusiveness												

**Table 9B.** Correlations Mental Health and Major Study Variables Partners (n=86)

<b>Variable</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>
1. Mental Health Treatment in the Family		<b>-.75***</b>	<b>.22*</b>	.12	.03	.07	-.12	-.12	.07	.13	.01	.05	.09
2. Relationship to person who received treatment			-.14	.03	-.03	-.08	.11	.03	-.06	-.11	.055	-.01	-.14
3. Treatment for Depression				-.03	<b>-.27*</b>	<b>-.24*</b>	.14	.17	-.19	<b>-.28**</b>	<b>-.24*</b>	-.20	.11
4. Stress Communication					<b>.44***</b>	<b>.43***</b>	-.02	-.17	<b>.60***</b>	<b>.30**</b>	<b>.21*</b>	-.02	-.07
5. Common Dyadic Coping						<b>.93***</b>	<b>-.41***</b>	<b>-.45***</b>	<b>.90***</b>	<b>.75***</b>	<b>.67***</b>	.06	-.09
6. Positive Dyadic Coping							<b>-.45***</b>	<b>-.54***</b>	<b>.94***</b>	<b>.76***</b>	<b>.65***</b>	.09	-.09
7. Hostile Dyadic Coping								<b>.49***</b>	-.22*	<b>-.57***</b>	<b>-.54***</b>	<b>-.31**</b>	<b>.37***</b>
8. Avoidance of Dyadic Coping									<b>-.36**</b>	<b>-.58***</b>	<b>-.63***</b>	-.21*	.08
9. Total Dyadic Coping										<b>.65***</b>	<b>.53***</b>	.01	-.02
10. Mutuality											<b>.75***</b>	.10	-.18
11. Communication												.14	-.11
12. Emotional Well-being													<b>-.45***</b>
13. Illness Intrusiveness													

## APIM Model Calculations

### Stress Communication

#### Test of distinguishability:

Deviance of indistinguishable model = 402.538, # parameters = 5

Deviance of distinguishable model = 358.818, # parameters = 9

$\chi^2_{(4)} = 43.72$  p<.001

#### Pseudo R-squared:

Patient pseudo R-squared =  $1 - (0.437613/0.527515) = 1704254855$

Caregivers pseudo R-squared =  $1 - (.508335/.539096) = 0.057060338$

#### Deviance test:

$\chi^2_{(4)} = 21.04$ , p<.001

### Common Dyadic Coping

#### Test of distinguishability:

Deviance of indistinguishable model = 241.457 # parameters = 5

Deviance of distinguishable model = 234.271, # parameters = 9

$\chi^2_{(4)} = 7.186$ , p>.05

#### Pseudo R-squared:

Patients pseudo R-squared =  $1 - (.245377/.550773) = 0.5544861495 = 55\%$

Caregivers pseudo R-squared =  $1 - (.239807/.393337) = 0.3903268698 = 39\%$

#### Deviance test:

$\chi^2_{(4)} = 99.42$ , p<.001

### Positive Dyadic Coping

#### Test of distinguishability:

Deviance of indistinguishable model = 256.956, # parameters = 5

Deviance of distinguishable model = 242.877, # parameters = 9

$\chi^2_{(4)} = 14.08$ , p<.01

#### Pseudo R-squared:

Patients pseudo R-squared =  $1 - (.226486/.642313) = 0.64738 = 64.7\%$

Caregivers pseudo R-squared =  $1 - (.270412/.453944) = 0.404305 = 40.3\%$

#### Deviance test:

$\chi^2_{(4)} = 124.1$ , p<0.001

### Hostile Dyadic Coping

#### Test of distinguishability:

Deviance of indistinguishable model = 247.313, # parameters = 5

Deviance of distinguishable model = 230.365, # parameters = 9

$\chi^2_{(4)} = 16.95$ , p<.01

#### Pseudo R-Squared:

Patients pseudo R-squared =  $1 - (.297522/.448406) = 0.336489$

Caregivers pseudo R-squared =  $1 - (.168289/.234436) = 0.282153765$

#### Deviance test:

$\chi^2_{(4)} = 61.81$  p<0.001

### **Avoidance of Dyadic Coping**

#### **Test of distinguishability:**

Deviance of indistinguishable model = 375.213, # parameters = 5

Deviance of distinguishable model = 364.694, # parameters = 9

$\chi^2_{(4)}=10.51$ ,  $p<.05$

#### **Pseudo R-Squared:**

Patients pseudo R-squared =  $1 - (.650141/.856634) = 0.240516043$

Caregivers pseudo R-squared =  $1 - (.366211/.503035) = 0.2719969783$

#### **Deviance test:**

$\chi^2_{(4)}=47.116$   $p<0.001$

### **Actor Partner Model by Age Group Calculation**

#### **Stress Communication Younger Couples**

##### **Test of distinguishability:**

Deviance of indistinguishable model = 156.22, # parameters = 5

Deviance of distinguishable model = 135.369, # parameters = 9

$\chi^2_{(4)}= 20.851$  ,  $p<.001$

##### **Pseudo R<sup>2</sup> Calculation**

Patients pseudo R-squared =  $1 - (.471552/.632620) = 0.25460466$

Caregivers pseudo R-squared =  $1 - (.355794/.476539) = .2533790519$

##### **Deviance test:**

$\chi^2_{(4)}= 19.531$ ,  $p<.001$

#### **Stress Communication Older Couples**

##### **Test of distinguishability:**

Deviance of indistinguishable model = 240.768 # parameters = 5

Deviance of distinguishable model = 213.372, # parameters = 9

$\chi^2_{(4)}=27.39$ ,  $p<.001$

##### **Pseudo R<sup>2</sup>**

Patients pseudo R-squared =  $1 - (.402495/.451273) = 0.1080897$

Caregivers pseudo R-squared =  $1 - (.562281/.575937) = 0.0237109267$

##### **Deviance test:**

$\chi^2_{(4)}= 6.958$ ,  $p> .05$

#### **Common Dyadic Coping Younger Couples**

##### **Test of distinguishability:**

Deviance of indistinguishable model = 83.347, # parameters = 5

Deviance of distinguishable model = 73.796, # parameters = 9

$\chi^2_{(4)}=9.55$ ,  $p<.05$

##### **Pseudo R<sup>2</sup>:**

Patients pseudo R-squared =  $1 - (.249183/.557419) = .55297$

Caregivers pseudo R-squared =  $1 - (.135984/.263804) = .484526$

##### **Deviance test:**

$\chi^2_{(4)}= 44.794$ ,  $p<.001$

### **Common Dyadic Coping Older Couples**

#### **Test of distinguishability:**

Deviance of indistinguishable model = 155.017, # parameters = 5

Deviance of distinguishable model = - 148.796, # parameters = 9

$\chi^2_{(4)} = 6.221$ ,  $p > .05$

#### **Pseudo R<sup>2</sup> :**

Patients pseudo R-squared =  $1 - (.230922/.538032) = .5707795$

Caregivers pseudo R-squared =  $1 - (.300280/.475479) = .3684684287$

#### **Deviance test:**

$\chi^2_{(4)} = 57.812$ ,  $p < .001$

### **Positive Dyadic Coping Younger Couples**

#### **Test of distinguishability:**

Deviance of indistinguishable model = 79.412, # parameters = 5

Deviance of distinguishable model = 67.421, # parameters = 9

$\chi^2_{(4)} = 11.99$   $p < .05$

#### **Pseudo R<sup>2</sup> :**

Patients pseudo R-squared =  $1 - (.197209/.654071) = .6984899193$

Caregivers pseudo R-squared =  $1 - (.139497/.306525) = .549082457$

#### **Deviance Test**

$\chi^2_{(4)} = 67.408$ ,  $p < .001$

### **Positive Dyadic Coping Older Couples**

#### **Calculations:**

#### **Test of distinguishability:**

Deviance of indistinguishable model = 168.725, # parameters = 5

Deviance of distinguishable model = 160.283, # parameters = 9

$\chi^2_{(4)} = 8.442$ ,  $p > .05$

#### **Pseudo R<sup>2</sup> :**

Patient pseudo R-squared =  $1 - (.245146/.633831) = .613231$

Caregiver pseudo R-squared =  $1 - (.339489/.539157) = .62966$

#### **Deviance Test:**

$\chi^2_{(4)} = 66.025$ ,  $p < .001$

### **Hostile Dyadic Coping Younger Couples**

#### **Test of distinguishability:**

Deviance of indistinguishable model = 92.049, # parameters = 5

Deviance of distinguishable model = 73.654, # parameters = 9

$\chi^2_{(4)} = 18.395$   $p < .01$

#### **Pseudo R-squared:**

Patients pseudo R-squared =  $1 - (.296508/.734593) = .5963642$

Men pseudo R-squared =  $1 - (.095965/.200454) = .5212617359$

#### **Deviance test:**

$\chi^2_{(4)} = 57.949$ ,  $p < .001$

### **Hostile Dyadic Coping Older Couples**

#### **Test of distinguishability:**

Deviance of indistinguishable model = 104.922, # parameters = 5

Deviance of distinguishable model = 108.124, # parameters = 9

$\chi^2_{(4)} = 3.20$ ,  $p > .05$

#### **Pseudo R<sup>2</sup>:**

Patients pseudo R-squared =  $1 - (.171794/.210745) = .1848252628$

Caregivers pseudo R-squared =  $1 - (.156147/.215852) = .276601$

#### **Deviance test:**

$\chi^2_{(4)} = 24.718$ ,  $p < .001$

### **Avoidance of Dyadic Coping Younger Couples**

#### **Test of distinguishability:**

Deviance of indistinguishable model = 149.713, # parameters = 5

Deviance of distinguishable model = 137.927, # parameters = 9

$\chi^2_{(4)} = 11.786$ ,  $p < .05$

#### **Pseudo R<sup>2</sup>:**

Patient pseudo R-squared =  $1 - (.689037/.978048) = .295497767$

Partners/ Caregivers pseudo R-squared =  $1 - (.258508/.554739) = .5340006742$

#### **Deviance test:**

$\chi^2_{(4)} = 38.944$ ,  $p < .001$

### **Avoidance of Dyadic Coping Older Couples**

#### **Test of distinguishability:**

Deviance of indistinguishable model = 215.286, # parameters = 5

Deviance of distinguishable model = 210.482, # parameters = 9

$\chi^2_{(4)} = 4.804$ ,  $p > .05$

#### **Pseudo R<sup>2</sup> Calculation:**

Patients pseudo R-squared =  $1 - (.580291/.746721) = .2228811$

Partners pseudo R-squared =  $1 - (.370646/.454526) = .1845438$

#### **Deviance test:**

$\chi^2_{(4)} = 19.879$ ,  $p < .001$

## CURRICULUM VITAE

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### EDUCATION

Ph.D. Kent School of Social Work, University of Louisville, 2016

*Dissertation: A Comparison of Younger and Older Couples Coping with Breast Cancer: Examining the Relationship among Mutuality, Dyadic Coping, and Quality of Life of Patients and Partners*

Committee: Drs. Karen Kayser (chair), Wanda Collins, Eli Karam, Kristen Mark, Heehyul Moon

MSW Graduate School of Social Work, Boston College, Chestnut Hill, 2011

M.A. Department of Psychology, Catholic University of the Sacred Heart, Milan, 2007

B.A. Department of Psychology, Catholic University of the Sacred Heart, Milan, 2005

### PUBLICATIONS

#### Peer Reviewed Journal Articles

2015 Zebrack, B., Kayser, K., Savas, S.A, Sundstrom, L., Henrickson, C, **Acquati, C.** & Tamas, R. (2015). Psychosocial Distress Screening Implementation in Cancer Care: An Analysis of Adherence, Responsiveness, and Acceptability. *Journal of Clinical Oncology*, Apr 1, 1165-1170 doi:  
<http://jco.ascopubs.org/content/early/2015/02/18/JCO.2014.57.4020.abstract>

Saita, E., **Acquati, C.**, & Kayser, K. Coping with Early Stage Breast Cancer: Examining the Influence of Personality Traits and Interpersonal Closeness. *Frontiers in Psychology: Psychology for Clinical Settings*, doi:  
10.3389/fpsyg.2015.00088

Saita, E., De Luca, L., & **Acquati, C.** What is hope for breast cancer patients? A qualitative study. *Mediterranean Journal of Clinical Psychology*, 3(1), doi:

<http://cab.unime.it/journals/index.php/MJCP/issue/view/89/showToc>

- 2014 Saita, E., Molgora, S., & **Acquati, C.** Development and Evaluation of the Cancer Dyads Group Intervention: Preliminary Findings. *Journal of Psychosocial Oncology*, 32(6):647-64. doi:10.1080/07347332.2014.955242
- 2012 Kayser, K., **Acquati, C.**, & V. Tran, T. No Patients Left Behind: A Systematic Review of the Cultural Equivalence of Distress Screening Instruments. *Journal of Psychosocial Oncology*, 30(6), 679-693. doi:10.1080/07347332.2012.721489

### Submitted

**Acquati, C.** & Kayser, K. Psychosocial Predictors of Distress among Lung and Breast Cancer Patients. *Frontiers in Psychology: Psychology for Clinical Settings*

Saita, E., **Acquati, C.**, Fenaroli, V., Zuliani, C., & Bonanno, G. A Confirmatory Factor Analysis of the Perceived Ability to Cope with Trauma (PACT) Scale in an Italian Sample. *TPM - Testing, Psychometrics, Methodology in Applied Psychology*

### In Preparation

**Acquati, C.**, Zebrack, B., Faul, A., Meeske, K.A., Embry, L., Aguilar, C., Block, R., & Hayes-Lattin, B. Sexual Functioning in Young Adult Cancer Patients: A 2-Year Longitudinal Analysis. Target Journal: *JAMA Pediatrics*

Kayser, K. **Acquati, C.**, Reese, J., Mark, K., Karam, E. & Wittman, D. The Impact of Colorectal Cancer on the Couple Relationship: A Systematic Review. Target Journal: *Supportive Care in Cancer*

### Book Chapters

- 2011 Kayser, K., **Acquati, C.**, Saita, E. & Costa, G. Coping Diadico e Relazione di Caregiving nella sfida alla malattia oncologica (Dyadic Coping and Caregiving while Facing Cancer). In E. Saita, *Pensare alla salute e alla malattia: legami tra mente, corpo e contest di appartenenza. Percorsi di ricerca e di intervento.* (89-116)(*Thinking of Health and Illness: Connections between Mind, Body and Cultural Context. Research and Intervention Pathways.*). Milano: Educatt.

Kayser, K., Saita, E., & **Acquati, C.** Famiglie, fonti di stress e capacita' di fronteggiare gli eventi. Il caso della famiglia Americana (Families, Stress and Coping. The case of the American Family). In E. Saita, *Pensare alla salute e alla malattia: legami tra mente, corpo e contest di appartenenza. Percorsi di ricerca e di intervento* (69-88) (*Thinking of Health and Illness: Connections between Mind, Body and Cultural Context. Research and Intervention Pathways.*). Milano: Educatt.

Kayser, K., **Acquati, C.** & Saita, E. Coping e adattamento familiare: Il ruolo dei fattori culturali (Coping and Family Adjustment: the Role of Cultural Factors). In E. Saita, *Pensare alla salute e alla malattia: legami tra mente, corpo e contest di appartenenza. Percorsi di ricerca e di intervento.* (117-134)(*Thinking of Health and Illness: Connections between Mind, Body and Cultural Context. Research and Intervention Pathways.*). Milano: Educatt.

- 2016 Saita, E., Zanini, S., Minetti, E., & **Acquati, C.** Best Practices to Promote Patient and Donor Engagement to Care in Living Donor Transplant. In G. Graffigna (ed.) *Promoting Patient Engagement and Participation for Effective Healthcare Reform*, IGI-Global.

### **In Preparation**

**Acquati, C.** & Saita, E. Il coping diadico: La gestione degli eventi stressanti a livello di coppia. (Dyadic Coping: The Relational Management of Stressful Events)

Saita, E., Molgora, S., & **Acquati, C.** The idiographic science perspective applied to the treatment of younger women with BRCA mutation

### **FELLOWSHIPS & AWARDS**

- 2015 American Cancer Society Doctoral Training Grant in Oncology Social Work (\$20,000)
- 2014 Faculty Favorite - University of Louisville Delphi Center for Teaching and Learning
- 2013 American Cancer Society Doctoral Training Grant in Oncology Social Work (\$40,000)
- 2012 Oncofertility Conference Award, Northwestern University (\$500)  
AOSW Conference Scholarship, Association of Oncology Social Work (\$500)  
ExCEL in Social Work Scholarship (\$500)
- 2011 Graduate Research Assistantship, University of Louisville School of Graduate and Interdisciplinary Studies  
Academic Excellence Award, Graduate School of Social Work, Boston College
- 2009 Boston College Fellowship in Social Work
- 2008 The Researcher Fund Grant (\$15,000)  
Enrico Legler Study Award, Legler Family Foundation (\$ 2,000)

### **CONFERENCE ACTIVITY**

#### **Papers**

- 2017 Kayser, K., Wittman, D., Reese, J., **Acquati, C.**, Hendren, S., & Mark, K. Couples' Coping with Impaired Sexual Functioning during and after Treatment for Rectal Cancer. 7<sup>th</sup> Dyadic Coping Conference. January 17, Milan, Italy (*accepted*)
- 2016 Fenaroli, V., Molgora, S., **Acquati, C.**, & Saita, E. The Role of Dyadic Coping in the Transition to Parenthood. 8<sup>th</sup> Congress of the European Society of Family Relations, August 31-September 3, Dortmund, Germany. (*submitted*)

- Acquati, C.**, Kayser, K., Moon, H., Mark, K., Karam, E., & Collins, W. Older Couples Coping with Early-Stage Breast Cancer: A Cross-Sectional Examination of Mutuality, Dyadic Coping and Quality of Life. Gerontological Society of America Annual Scientific Meeting, November 16-20, New Orleans, LA  
(submitted)
- 2014 Zebrack, B., Kayser, K., **Acquati, C.**, Sundstrom, L., Savas, S.A., McCoy, M. & Tamas, R. Testing Adherence and Feasibility of Distress Screening Protocols: Implementing Best Practices in Psychosocial Care. 11th American Psychosocial Oncology Society (APOS) Conference, February 13-15 2014, Tampa  
Zebrack, Z., Henrickson, C., Kayser, K., & **Acquati, C.** Distress Screening Implementation: What to Do with the Data? 30th Association of Oncology Social Work (AOSW) Conference, May 28-30, Baltimore, MD
- 2013 Kayser, K., & **Acquati, C.** Testing the Implementation of a Distress Screening Protocol: A Pilot Study. 29th Association of Oncology Social Work (AOSW) Conference, June 5-7, San Diego, CA  
**Acquati, C.** Moving Towards the Future: Fresh Perspectives in Couples Coping with Cancer Research. Sixth International Meeting on Stress & Coping. Couples Coping with Cancer-Related Stress: Translating Research to Practice, June 21-22, Louisville, KY  
**Acquati, C.**, Zebrack, B., Faul, A., Meeske, K.A., Embry, L., Aguilar, C., Block, R., Hayes-Lattin, B. & Cole, S. Sex: A Lost Frontier for Adolescent and Young Adult (AYA) Cancer Patients. International Psycho-Oncology Society (IPOS) 15th World Congress, November 4-8, Rotterdam, The Netherlands.
- 2011 Kayser, K., Saita, E., & **Acquati, C.** Women Coping with Breast Cancer: The Impact of Personality and Close Relationships on Coping Strategies. Society for Social Work and Research (SSWR) 15th Conference, January 12-16, Tampa, FL  
Kayser, K., & **Acquati, C.** Moderating Factors in the Relational Outcomes of Breast Cancer Patients in the Partners in Coping Program. International Psycho-Oncology Society (IPOS) 13th World Congress, 18-20 October, Antalya, Turkey.
- 2010 Kayser, K., Saita, E., & **Acquati, C.** Women's Adaptation to Early Stage Breast Cancer: The Influence of Personality Traits and Interpersonal Closeness on the Style of Coping with Cancer. International Meeting on Stress and Coping in Close Relationships, February 18-19, Zurich, Switzerland.

### Posters

- 2015 Valenti, F., Baratelli, G.M., Molgora, S., **Acquati, C.**, Saita, E., & Grassi, M.M. Il Fallimento della Diagnosi Precoce. Analisi dell'Esperienza di Donne Trattate per Tumore alla Mammella Localmente Avanzato. AIS - Attualità in Senologia, 4-6 November, Florence, Italy  
**Acquati, C.** & Kayser, K. Are We Responding to the Distress of Cancer Patients? An Examination of Psychosocial Response after Distress Screening. APOS-IPOS World Congress of Psycho-Oncology, 28 July - 1 August, Washington, DC

- Saita E., **Acquati C.**, Molgora S., Valenti F., Grassi M. The Failure of Early Detection: The Experience of Women with Advanced Breast Cancer. APOS-IPOS World Congress of Psycho-Oncology, 28 July - 1 August, Washington, DC
- Saita, E., **Acquati, C.** & Irtelli, F. The Cancer Dyads Group Intervention to Promote Breast Cancer Patients' Adjustment, Coping and Perceived Social Support. APOS-IPOS World Congress of Psycho-Oncology, 28 July - 1 August, Washington, DC
- 2014 Saita, E., Jankovic, M., Rossetti, A., Zuliani, C. & **Acquati, C.** Pictures of Me: The Framed Portrait Experience as a Psychological Intervention for Adolescent and Young Adult (AYA) Cancer Survivors. 11th American Psychosocial Oncology Society (APOS) Conference, February 13-15, Tampa, FL
- Acquati, C.**, Zebrack, B., Faul, A., Meeske, K.A., Embry, L., Aguilar, C., Block, R., Hayes-Lattin, B. & Cole, S. Sex - A Lost Frontier: Sexual Functioning in Adolescent and Young Adult (AYA) Cancer Patients in the Two Years Following Diagnosis. Critical Mass, November, Denver, CO
- 2013 **Acquati, C.**, Saita, E., Kayser, K., Zuliani, C. & Zanchi, D. Breast Cancer Pre-Screening Anxiety: Identifying Psychological Vulnerability among Italian Women. 10th American Psychosocial Oncology Society (APOS) Conference, 14-16 February, Huntington Beach, CA
- 2012 **Acquati, C.** & Kayser, K. Reproductive Distress in Female Cancer Survivors: A Systematic Review of Current Issues and Future Directions. 9th American Psychosocial Oncology Society (APOS) Conference, 23-25 February, Miami, FL
- Kayser, K., **Acquati, C.**, Gragg, H., Williams, K., & Tamas, R. Psychological and Clinical Predictors of Self-Reported Distress among Breast Cancer Patients: An Exploratory Analysis of Distress Screening Scores. Research!Louisville, 18-20 September, Louisville, KY
- Acquati, C.**, & Kayser, K. Psychosocial Care for Young Adult Cancer Patients & Survivors: From the Identification of Needs to the Development of Interventions for Cancer-Related Infertility & Reproductive Health. Oncofertility Conference: Dialogues in Oncofertility, 27-28 September, Chicago, IL
- 2009 Saita, E., Negrini, L., & **Acquati, C.** Il diario diadico di pazienti oncologici e dei loro caregiver: valutazione delle dinamiche relazionali (The dyadic diary of cancer patients and their caregivers: an evaluation of the relational dynamics.) 23rd Annual Conference of the European Health Psychology Society, 23 - 26 September, Pisa, Italy.
- 2008 Saita, E., Cigoli, V., Brognoli, S., & **Acquati, C.** Il diario diadico come strumento di valutazione di un intervento clinico di gruppo rivolto a pazienti oncologici e caregiver (The dyadic diary as an evaluation tool of a group clinical intervention for cancer patients and their caregivers). National Congress of Health Psychology, October 1-4, Rovigo, Italy.

## **RESEARCH EXPERIENCE**

### **University of Louisville, Kent School of Social Work**

2011-2015 Grant writing, data collection (individual and dyadic surveys), data management, data analysis and dissemination of results.

Studies:

- 2015 Younger Couples Coping with Breast Cancer: Examining the Relationship between Mutuality, Dyadic Coping and Quality of Life of Patients and Partners
- 2014 Couples Coping with Impaired Sexual Function during and after Treatment for Rectal Cancer
- 2013 Testing the Fidelity and Feasibility of Distress Screening Implementation in Routine Clinical Care with Cancer Patients
- 2012 Screening for Cancer Patients' Psychosocial Distress: A Descriptive Analysis of Distress Thermometer Scores at the James Graham Brown Cancer Center

### **Catholic University of the Sacred Heart, Department of Psychology**

2006-2009 Data collection of individual and dyadic surveys and interviews, qualitative and quantitative data analysis, dissemination of findings

Coordinator and supervisor of research assistants for the project "From the Psychological Assessment to the Supportive-Expressive Group Therapy for Women with Breast Cancer and Their Caregivers. A Multi-Method Design"

Conductor of the Cancer Dyads Group Intervention for breast cancer patients and caregivers

Provided individual and couple therapy to breast cancer patients and caregivers

Liaison between the Oncology Team of the E. Bassini Hospital and the Catholic University of the Sacred Heart Department of Psychology

## **TEACHING EXPERIENCE**

### **University of Louisville, Kent School of Social Work, Sole Instructor**

Psychosocial Practice in Oncology I: Interpersonal Practice (fall 2013)

Psychosocial Practice in Oncology II: Community Approaches to Promote Health Equity (spring 2014)

Mental Health Specialization Integrative Seminar (fall 2014/spring 2015)

Practicum Faculty Liaison for Mental Health and Psychosocial Oncology MSSW Students (fall 2014/spring 2015/fall 2015/spring 2016)

**University of Louisville, Kent School of Social Work, Guest Lecturer**

Psychosocial Practice in Oncology I: Interpersonal Practice (fall 2014)

**University of Louisville, Kent School of Social Work, Teaching Assistant**

Advanced Social Work Practice (fall 2012)

**Catholic University of the Sacred Heart, Teaching Assistant**

Families, Stress and Coping (spring 2008)

Health Psychology (fall 2007, fall 2008)

**CLINICAL EXPERIENCE**

**2010-2011 Massachusetts General Hospital & Yawkey Center for Outpatient Care.  
Clinical Social Work Intern**

Provided individual counseling to pregnant women in Inpatient and Outpatient settings

Provided couple support and counseling for infertility, prematurity, genetic diagnosis, stillbirth, loss and previous cancer history

Facilitated family support and counseling for high-risk pregnancy, long-term hospitalization, NICU and SCN admission

Provided psychosocial assessments, diagnosis and treatment

**2009-2010 Deutsches Altenheim, German Centre for Extended Care, MA. Clinical  
Social Work Intern**

Provided psychosocial assessments, diagnosis, treatment and discharge planning

Provided individual counseling to older adults in long term and transitional care

Facilitated support groups for male caregivers of cancer patients

Facilitated family support and counseling for palliative care and death and dying

Developed educational materials about end-of-life decision making for family members

**2008-2009 Catholic University of the Sacred Heart, Department of Psychology,  
Milan. Post-Master Internship**

Provided individual and couple therapy to breast cancer patients, partners and caregivers

Managed crisis intervention involving patients, families and health related issues

Implemented psychosocial patient/family care plan through collaboration with several health professionals

Provided psychological support to breast cancer patients during their medical appointments with Massimo Grassi, MD

## **PROFESSIONAL SERVICE**

### **Peer Review**

Reviewer: Journal of Psychosocial Oncology, 2015- present

Reviewer: Psycho-Oncology, 2014-present

Reviewer: Supportive Care in Cancer, 2012-present

Abstract Reviewer: American Psychosocial Oncology Society Annual Conference, 2016

Abstract Reviewer: World Congress of Psycho-Oncology, 2015

Abstract Reviewer: Sixth International Meeting on Stress & Coping. Couples Coping with Cancer-Related Stress, 2013

### **To Profession**

Research Committee, American Psychosocial Oncology Society, 2015-present

Mentoring Program Task Force, American Psychosocial Oncology Society, 2014-present

Association of Oncology Social Work (AOSW), Annual Meeting of the Social Work Research Group (SWORG) Committee, Louisville, 2011- 2015

Sixth International Meeting on Stress & Coping. Couples Coping with Cancer-Related Stress 2013: Networking events for graduate students

### **To Community**

Psychosocial Oncology Development Committee, James Graham Brown Cancer Center, 2011- present

Volunteer, Gilda's Club Louisville, 2014-present

Volunteer, S. Leopoldo Mandic Hospital Children's Unit, Merate, 2004-2005

Volunteer, Italian Association for Organ Donation, 2002-present

Volunteer, "S. Luigi" Church Youth Organization, Verderio, 1998-2002

## **ADDITIONAL TRAINING & SKILLS**

### **Research**

2015 Dyadic Data Analysis Workshop; Michigan State University, July 13-17

2014 Hierarchical Linear Modeling: University of Pittsburgh School of Education, May 19-23

Structural Equation Modeling: Advanced Research Design & Analysis II (fall 2013); Advanced Statistical Computer Application in Criminal Justice (fall 2014), University of Louisville

2013 Achieving Better Insights from Psycho-Oncology Research: The Analysis of Longitudinal Data. International Psycho-Oncology Society 15th World Congress 6-8 November, Rotterdam, The Netherlands

2011 Biosocial Methods for Social Work Research. SSWR Summer Institute Workshop, University of Pittsburgh School of Social Work, July 26-28.

Statistical Packages: SPSS, R, LISREL, STATA, MLwiN

### **Teaching**

2015 Delphi Center for Teaching & Learning - Reading Circle: Teaching for Critical Thinking: Tools and Techniques to Help Students Question Their Assumptions, October 9-30

i2a Institute, University of Louisville, Delphi Center for Teaching & Learning, May 18-19

2014 iCOPE Interdisciplinary Curriculum for Oncology Palliative Care Education, September 15

2013 Graduate Teaching Assistant Academy, University of Louisville School of Interdisciplinary and Graduate Studies & Delphi Center for Teaching & Learning (fall 2012/spring 2013)

Delphi U: Principles of Online Course Design, University of Louisville Delphi Center for Teaching & Learning, June 2013

Delphi U Level II, University of Louisville Delphi Center for Teaching & Learning, June 2013

### **PROFESSIONAL ASSOCIATIONS**

American Psychosocial Oncology Society (APOS) - Member in Training; since 2012

Association of Oncology Social Work (AOSW) - Student Member, since 2012

International Psycho-Oncology Society (IPOS) - Member in Training; since 2011

Society for Adolescent and Young Adult Oncology (SAYAO) - Charter Member, since 2012

Society for Social Work and Research (SSWR) - Student Member, since 2010

### **LANGUAGES**

Italian: Native reading, speaking and writing

English: Excellent reading, speaking and writing