

Relationship-Focused Support, Body Image, and
Quality of Life in Older Couples Coping with Skin Cancer

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Abstract

For older couples facing a skin cancer diagnosis, the experience is stressful, not only for the individual with the diagnosis, but also for the healthy partner. Couples may use various types of coping and styles of support to deal with the stress, including relationship-focused support, which addresses the needs and coping efforts of both partners in response to and in conjunction with one another. The current study examined associations between perceptions of three styles of relationship-focused partner support, namely active engagement, protective buffering, and overprotection, and body image of the partner with skin cancer and quality of life of the partner with skin cancer and the healthy partner. Using data collected from 30 older couples ($M_{age} = 70$; $SD = 7.25$) with diagnoses of melanoma ($n = 14$; 47%) or nonmelanoma ($n = 16$, 53%), linear regression models, adjusted for the stressor appraisal by both partners, revealed that when partners with skin cancer reported receiving higher active engagement support, they were more likely to have a positive body image ($\beta = 2.26, p = .04$). A significant interaction was found between active engagement support used by both partners ($\beta = -3.74, p = .05$), indicating that active engagement from healthy partners appears to benefit the body image of the partner with skin cancer when they themselves use less active engagement support. Both protective buffering and overprotection support were not associated with body image. Multivariate actor-partner interdependence models (APIM) assessed the relationships between support received by each partner and its association with their quality of life (actor effects) and their partner's quality of

RELATIONSHIP-FOCUSED SUPPORT AND SKIN CANCER

life (partner effects). Results suggest that active engagement support perceived by either partner was not associated with quality of life. In contrast, overprotection perceived by partners with skin cancer was significantly associated with their quality of life (actor effect: $\beta = -.63, p < .001$), but was not associated with the healthy partners' quality of life. Additionally, protective buffering perceived by healthy partners was associated with their own quality of life (actor effect; $\beta = -.37, p = .05$) as well as their partner with skin cancer's quality of life (partner effect; $\beta = -.43, p = .01$). Nuances based on the sex of the person with skin cancer, type of skin cancer, the stage of skin cancer and couple's appraisal of the stressors of skin cancer are also discussed.

Findings suggest that actively engaging with the stressors of skin cancer can contribute to positive views of one's body, whereas ignoring or avoiding conversations about skin cancer and overprotection provided by healthy partners might lead to poorer quality of life for both partners. These findings illustrate the influence of healthy partners, highlighting that how they give support when their partner is facing a skin cancer diagnosis may affect the overall quality of the couple relationship and couple outcomes.

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General Audience Abstract

The experience of facing a skin cancer diagnosis is stressful, both for a person with the diagnosis, but also for his or her romantic partner. As an increasing number of older adults will experience a skin cancer diagnosis at some point in their lifetimes, partially due to the link between cumulative sun exposure and age, it is important to understand how couples provide support to one another. This study examined three styles of support, active engagement, protective buffering, and overprotection that partners can use to support one another, and how the support partners perceive can be related to the body image of the person with skin cancer and quality of life of both the partners. Thirty couples, with an average age of 70 years, participated in this study. One partner in each couple had received a diagnosis of either melanoma ($N = 14$; 47%) or nonmelanoma ($n = 16$, 53%) in the previous two years. Findings showed that when partners with skin cancer reported receiving higher active engagement support, they were more likely to have better body image, especially when they were using less active engagement support themselves. Neither protective buffering nor overprotection support were associated with body image.

Next, this study examined whether support from one's partner is associated with his or her quality of life (actor effects) and with the partner's quality of life (partner effects). Receiving active engagement support was not associated with quality of life for either partner. Conversely, protective buffering perceived by healthy partners was associated with poorer quality of life for

RELATIONSHIP-FOCUSED SUPPORT AND SKIN CANCER

themselves and their partners. Similarly, overprotection support perceived by partners with skin cancer was associated with poorer quality of life of themselves.

Findings from this study suggest that if couples can actively engage with the stressors of the skin cancer diagnosis such as through open discussions about their fears or worries, the partner with skin cancer may experience a positive view of his or her body. In contrast, avoiding or ignoring concerns about the skin cancer may not be related to body image, but can have a negative impact on the relationship. This study also highlights the important impact healthy partners can have when facing skin cancer. While receiving active engagement support was not related to partners' quality of life, receiving protective buffering and overprotection support from healthy partners was associated with poorer quality of life for both partners. How the healthy partner provides support appears to affect both people, and may also be important for the couple's relationship quality.

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Table of Contents

Abstract	v
General Audience Abstract	vii
Acknowledgments.....	vi
List of Figures	xi
List of Abbreviations	xiii
Chapter I Background and Statement of Problem	1
Problem Statement	5
Research Questions	8
Chapter II Literature Review and Theoretical Framework.....	10
Look at Skin Cancer.....	10
Body Image in Old Age	15
Quality of Life.....	17
Individual Coping with Skin Cancer.....	20
Relationship-Focused Coping with Skin Cancer	21
Theoretical Framework.....	25
Chapter III Methods.....	31
Study Overview	31
Study Area Demographics	31
Recruitment Procedures	33

Inclusion and Exclusion Criteria.....	33
Study Procedures	37
Participant Compensation	38
Study Measures	39
Demographics.	39
Skin cancer diagnosis.....	39
Cognitive Appraisal of Health.	39
Study Outcomes	42
Body Image	42
Quality of Life.....	42
Data Storage.....	44
Analysis Plan	44
Research Question 1.	45
Research Question 2.	45
Research Question 3.	46
Power Analysis	46
Chapter IV Results.....	47
Article 1: Looking Through your Eyes: Body Image of Older Adults with Skin Cancer and Perceived Support from Partner.....	48

Article 2: Couples Facing Skin Cancer in Old Age: A Dyadic Investigation of Partner Support and Quality of Life.....	97
Chapter V Discussion	136
Couple’s Appraisal of Skin Cancer.....	137
Body Image of the Partner with Skin Cancer	139
Quality of Life of both Partners	141
Study Limitations.....	143
Recruitment Advantages and Disadvantages.....	143
Methods Advantages and Disadvantages.....	145
Significance and Implications.....	147
Future Directions	148
Conclusion	149
References.....	150
Appendix A Study recruitment flier	179
Appendix B List of group sites contacted for online recruitment.....	180
Appendix C Study Measures	181
Appendix D IRB Approval Letter.....	195

List of Figures

Figure 1. A theoretical model of stressor appraisal and relationship-focused support.....	26
Figure 2. Flowchart of recruitment and exclusion of participants.	36
Figure 3: Interaction effect of each partner's active engagement on PwSC's body image.	75
Figure 4: APIM of the associations between active engagement and QOL.	115
Figure 5: APIM of the associations between protective buffering and QOL.	116
Figure 6: APIM of the association between overprotection and QOL.	117

List of Tables

Table 1 Demographic Characteristics of PwSCs and HPs.....	68
Table 2 Received Styles of Relationship Focused Support as Perceived by Partner.....	69
Table 3 Perceived Partner Support by Sex	70
Table 4 Perceived Partner Support by Type of Skin Cancer	71
Table 5 Perceived Partner Support by Skin Cancer Stage	72
Table 6 Linear Regression Models Examining Associations among Three Styles of Relationship-Focused Partner Support and Body Image (N=30 couples)	74
Table 7 Descriptive Parameters of Stressor Appraisal, Perceived Support, and PwSCs Body Image.....	94
Table 8 Spearman's Rho Correlations among Partner/Skin Cancer Characteristics, Partner Stressor Appraisal, Received Support, and Body Image	95
Table 9 Demographic Characteristics of PwSCs and HPs.....	114
Table 10 Correlations among Partner/Skin Cancer Characteristics, Perceived Support, and Partner Quality of Life	134

List of Abbreviations

BCC	Basal cell carcinoma
BIS	Body Image Scale
CAHS	Cognitive Appraisal of Health Scale
DCM	Developmental-contextual model
HP	Healthy partner
PwSC	Partner with skin cancer
QOL	Quality of life
SAVI	Strengths and Vulnerability Integration
SCC	Squamous cell carcinoma
SPM	Stress process model
WHOQOL-BREF	World Health Organization Quality of Life-Brief

Chapter I

Background and Statement of Problem

According to statistics compiled by the American Cancer Society (2016a), skin cancer incidence rates in the U.S. have historically been the highest of all cancers, with more cases than all other cancers combined. Skin cancers fall into two main categories: melanomas and nonmelanomas. Basal cell carcinomas and squamous cell carcinomas are the most common nonmelanoma skin cancers. Rogers, Weinstock, Feldman, and Coldiron (2015) estimated that over 3 million people in the U.S. receive treatment for nonmelanoma skin cancer each year. In comparison, roughly 80,000 individuals in the U.S. are diagnosed with melanoma each year (American Society of Clinical Oncology, 2016). While incidences of melanoma only account for 1% of skin cancer cases, these cases account for the majority of skin cancer deaths. On the other hand, basal cell and squamous cell carcinomas are not as deadly, with an estimated 2,000 people in the U.S. dying from these skin cancers each year, in instances where these cancers have gone untreated and spread to other parts of the body (American Cancer Society, 2016a). For men, melanoma is the fifth most common form of cancer, and melanoma is the seventh most common form of cancer for women (American Society of Clinical Oncology, 2016). Additionally, it is estimated that 20 percent of Americans will develop some form of skin cancer over their lifetime (American Academy of Dermatology, 2016). Approximately half of adults who live past the age of 65 will have some form of skin cancer at least one time (Skin Cancer Foundation, 2016), highlighting the relevance of skin cancer for many older adults.

The diagnosis of skin cancer can affect individuals in a variety of ways. Some people may experience stress from the uncertainty of the diagnosis (Stamataki et al., 2015). Stress may also arise when making decisions about which avenues of treatment to pursue and when making

subsequent decisions during the treatment processes (French-Rosas, Moye, & Naik, 2011). Treatments for skin cancer can be physically and emotionally challenging (Cancer Treatment Centers of America, 2017). Specifically, individuals may experience alterations to their perceived body image, resulting from concerns about potential or actual scarring or dissatisfaction following surgical procedures (Stamataki et al., 2015). Treatment for skin cancer such as radiotherapy or chemotherapy may cause nausea, brain fog, a term commonly used to describe confusion, forgetfulness, and a lack of mental clarity, and decreased energy. In addition to physical changes associated with skin cancer, individuals may also experience negative psychological changes including anxiety and depression (Kasparian, McLoone, & Butow, 2009). Skin cancer can also be a source of financial stress (Wilson et al., 2012). Some individuals may not have medical insurance to pay for treatment or may have insurance plans that do not cover all the associated costs. In these cases, individuals may experience stress over how they are going to afford treatment or how treatment costs may affect their finances. In more serious cases of skin cancer, individuals may have to take time away from work, which may contribute to more financial stress (Morris, Cox, & Bosanquet, 2009). Following treatment for melanoma, individuals may experience worry about future sun exposure or reoccurrence of cancer (Oliveria et al., 2013). As illustrated here, skin cancer can contribute to a variety of primary stressors.

Primary stressors directly caused by skin cancer may spill over into other areas of life and impact one's interpersonal relationships and quality of life (QOL; Loquai et al., 2013). A skin cancer diagnosis may negatively affect relationships between the person with the diagnosis and family or friends such as through the loss of time that could have been spent together during treatment or emotional withdrawal during the stressful experience. For example, Lee and colleagues (2016) conducted qualitative interviews with 15 individuals, aged 20-80 years, who

had undergone facial surgery because of various skin cancer diagnoses. During and in the several months following treatment, many participants reported that they withdrew from family and friends, avoiding social situations as their scars healed. Additionally, interviews with individuals with melanoma have revealed that they may experience distance from loved ones in part due to fears or worries that loved ones may not understand their concerns or stress. Such interpersonal or emotional distance can have a harmful impact on partners and partner relationships (Lee-Jones, Humphris, Dixon, & Hatcher, 1997). When facing skin cancer, individuals may also minimize the situation and deny the potential seriousness of the diagnosis (Winterbottom & Harcourt, 2004) or use distraction as a means of coping (Engeli et al., 2016; Witzemann et al., N.D.), which can adversely impact the individuals themselves and other loved ones.

A skin cancer diagnosis can also negatively impact couple relationships in a variety of ways. Drabe and colleagues' (2016) study of couples facing advanced melanoma found that couples reported changes in communication, as well as changes in closeness. In another study of spouses of individuals with melanoma, Baider, Perry, Holland, and Sison (1995) found that both husbands and wives reported experiencing psychological distress while adjusting to and coping with melanoma. Möllerberg and colleagues (2016) studied over 10,000 partners of individuals with cancer, of which 525 were partners of individuals with melanoma. They found that partners experienced negative emotional reactions to severe stress related to the skin cancer and increased incidences of mood disorders. Similarly, in a study of family members and partners of individuals facing various skin conditions, including individuals facing malignant melanoma, basal cell carcinoma, and squamous cell carcinoma, Basra and Finlay (2007) found that family members reported experiencing worry, frustration, and anxiety. Couples may also be affected by

stress surrounding decision making about seeking care. In their qualitative study of individuals with malignant melanoma, Hajdarevic, Schmitt-Egenolf, Brulin, Sundbom, and Hörnsten (2011) found that men especially sought out support from their wives when making care decisions and that wives reported feeling stress and anxiety surrounding seeking care.

Hay and colleagues (2009) discovered that couples facing melanoma may view the melanoma as both an individual and a shared threat, being an experience that threatens the person with melanoma, but also as an experience that can threaten the other partner. If experiencing skin cancer is a couples' stressor, then coping with skin cancer may also be dyadic. In a small qualitative study of eight couples facing malignant melanoma, Engeli and colleagues (2016) found that some participants with melanoma reported that their partners provided the most important support, highlighting the importance of coping together as a couple. Researchers have demonstrated that although individuals use of personal coping resources such as focusing on the positive, distancing, and seeking social support (Roberts, Czajkowska, Radiotis, & Körner, 2013; Trapp et al., 2012), couples that work together on coping with the illness fare better (Drabe, et al., 2016; Engeli, et al., 2016).

Dyadic coping, a process where both partners manage their personal stress, while also simultaneously working to provide support to the other partner, can positively impact relationship quality and stability in the face of stressful life events (Kramer, Ceschi, Van der Linden, & Bodenmann, 2005), such as the stress that comes with facing skin cancer. Witzemann and colleagues found that couples coping with malignant melanoma discussed working to deal with cancer together, frequently focusing on continuing life as they had before cancer. Couples who were able to keep some semblance of their lives beforehand felt better able to make it through the melanoma. Similarly, couples who face skin cancer together may find

that with time, their relationship is closer and more intimate than before (Drabe et al., 2016).

Thus, in the study of coping with skin cancer, examining how couples support one another and face skin cancer together as a unit can shed light on types of support that may be most beneficial in helping mitigate any negative impacts of cancer on the couples' relationship and QOL.

Problem Statement

The current study addresses several gaps in literature related to skin cancer, contributing to an understanding about body image of individuals facing skin cancer, styles of relationship-focused support that couples may use, and how such support may impact QOL of both partners in a couple. In the United States, there is a strong emphasis on youthful physical appearance as the ideal, with various products and medical interventions available to enhance youth and delay physical signs of aging. Researchers have found a relationship between body-image concerns and self-esteem for individuals aged 65-85 (Baker & Gringart, 2009). For older adults who experience a skin cancer diagnosis, treatment approaches including surgery, chemotherapy, or radiotherapy have a profound impact on the body, both internally and on external physical appearance. Such changes not only go against a youthful ideal but can also signify illness or frailty to others who would not otherwise be privy to such medical information. Examining body image of individuals experiencing skin cancer provides insight into one negative outcome from cancer, with additional benefits of informing education or support services to positively impact body image for these individuals.

Much of the research on body image following cancer treatment or in those who are currently undergoing treatment tends to focus on breast cancer, which predominantly affects women and includes a wide range in age of those affected. Yet, findings about body image of women diagnosed with breast cancer do not translate to those experiencing skin cancer, as the

two diagnoses are quite different. For example, skin cancer lesions frequently occur on the face and neck, which are almost always visible, drawing attention from others. The prominence of lesions, discoloration, or scars on the face and neck may uniquely affect body image perceptions in individuals with a skin cancer diagnosis. Similarly, surgical treatment of lesions may require excision of surrounding tissues, which may leave large scars or indentations on the skin. For individuals with skin cancer lesions located on the arms, legs, or trunk, they will likely still experience changes to their body images in response to physical appearance changes, which may be even more pertinent in couple relationships if changes are only visible in more intimate settings. Thus, as less work has been done on skin cancer specifically, and findings from other types of cancer such as breast cancer may not generalize to coping with a skin cancer diagnosis, the current study addresses this gap by focusing on body image of individuals who have a skin cancer diagnosis.

Another key component of the current study is the focus on older adults in contrast to including individuals from across the lifespan. As discussed above, the incidence of skin cancer increases with age partially due to the well-documented link between cumulative sun exposure and skin cancers (Fartasch, Diepgen, Schmitt, & Drexler, 2012; Iannacone et al., 2012; Newton-Bishop et al., 2011). For example, melanoma incidence rates are roughly 10 times higher for individuals over the age of 65 compared to persons under 40 (Lasithiotakis, Petrakis, & Garbe, 2010). As such, the American Cancer Society recommends that adults over the age of 40 receive annual skin examinations (2016b). Some researchers have also speculated that older adults are at special risk for skin cancer (Yuce et al., 2014). As individuals age, a normative weakening of the immune system occurs, which lowers the ability of the immune system to fight against the disease, including skin cancer (Lasithiotakis et al., 2010). Another element placing older adults

at increased risk, which is peripherally related to the current study's inclusion of body image, is that older adults may be less observant of changes to their skin and pay less attention to early symptoms than younger adults and thus be less likely to participate in skin cancer screening programs. The current study focuses on adults age 60 and older as this specific population is at risk of harm due to skin cancer and experiences in older couples coping with skin cancer may not be similar to those of younger couples facing skin cancer.

Additionally, the current study contributes to knowledge about the association between styles of relationship-focused support couples use and self-reported QOL of partners affected by a skin cancer diagnosis. Researchers have studied QOL in the face of skin cancer (Gaulin, Sebaratnam, & Fernández-Peñas, 2015); however, one limitation of such studies is often a singular focus on QOL of one partner, either the individual with the skin cancer diagnosis or the healthy partner. As cancer affects many people in the surrounding network, it is important for researchers to examine the QOL of both members of a dyad, providing more complex insight into the use of styles of relationship-focused support and how partners may impact outcomes for one another. To address the gap in studies focused on couples coping with skin cancer together as a unit, the current study focuses on support efforts that both partners are making, targeting the relationship and needs of each other. Results about the use of relationship-focused support by both partners in response to skin cancer will contribute to the wider literature about the experience of skin cancer and how couples can reduce potentially negative outcomes from cancer.

Research Questions

Research questions and hypotheses guiding this study are:

- i. RQ 1: What styles of relationship-focused support do older couples use to provide support to each other when one partner is diagnosed with skin cancer? Does perception of support received from one's partner differ by sex of the reporting partner, type of skin cancer, and skin cancer stage?
- ii. RQ 2: Controlling for sex, type of cancer, skin cancer stage and subjective stressor appraisal by both partners, does perception of support from one's partner affect the body image of the person with skin cancer?

Hypothesis 2a: Greater active engagement perceived by the partner with skin cancer and the healthy partner will be associated with more positive body image of the partner with skin cancer.

Hypothesis 2b: Greater protective buffering perceived by the partner with skin cancer and the healthy partner will be associated with less positive body image of the partner with skin cancer.

Hypothesis 2c: Greater overprotection perceived by the partner with skin cancer will be associated with less positive body image of the partner with skin cancer.

- iii. RQ 3: At the couple level, is perception of certain styles of relationship-focused support associated with higher overall quality of life among older couples coping with skin cancer?

Hypothesis 3a: Greater active engagement perceived by partners will be associated with higher quality of life of themselves (actor effect) and their partner (partner effect).

Hypothesis 3b: Greater protective buffering perceived by partners will be associated with poorer quality of life of themselves (actor effect) and their partner (partner effect).

Hypothesis 3c: Greater overprotection perceived by a partner with skin cancer will be associated with poorer quality of life of themselves (actor effect) and their healthy partner (partner effect).

Chapter II

Literature Review and Theoretical Framework

Look at Skin Cancer

Worldwide, skin cancers account for more cases of cancer than other types (Roberts et al., 2013). The most common types of skin cancer are melanoma, basal cell carcinoma (BCC), and squamous cell carcinoma (SCC) (American Academy of Dermatology, 2017). BCC and SCC are often collectively referred to as nonmelanoma skin cancer. According to the World Health Organization, roughly 232,000 new cases of melanoma are diagnosed worldwide each year (Aim at Melanoma Foundation, 2014). The American Cancer Society (2017a) has estimated that roughly 87,000 new cases of melanoma will be diagnosed in 2017 in the United States. Approximately 9,000-10,000 individuals die from melanoma every year in the U.S. (American Cancer Society, 2017a; American Society of Clinical Oncology (ASCO), 2017). The risk of developing melanoma increases as individuals age. The American Cancer Society (2017a) states that 63 is the average age for diagnosis of melanoma in the U.S. Some researchers have found a jump in the incidence of melanoma around the age of 60, with incidence rates continuing to increase after age 60 (Cancer Research UK, 2016). Based on statistics from 2014, the U.S. Cancer Statistics Working Group (2017) estimated the incidence rate of melanoma for the state of Texas as 12.6 per 100,000 people; similarly, the estimated incidence rate of melanoma for the state of New Mexico was 14.6 per 100,000 people (2017). Additionally, an estimated 2.1 individuals per 100,000 died due to melanoma in Texas in 2014. Approximately 1.9 people per 100,000 died from melanoma in New Mexico (U.S. Cancer Statistics Working Group, 2017). Compared to other states, Texas and New Mexico are in the group with the lowest rates of melanoma diagnosis and death due to melanoma. In contrast to the diagnosis of

melanoma skin cancer, an estimated 3-4 million people in the U.S. are diagnosed with nonmelanoma skin cancers each year, with basal cell carcinoma accounting for approximately 80% of these cases (ASCO, 2017). Fatality with nonmelanoma skin cancers are less common; it is estimated that roughly 2,000 people die each year in the U.S. from nonmelanoma skin cancers, primarily due to un-treated cancers spreading to other areas of the body (American Cancer Society, 2016a).

Researchers have examined potential risk factors for melanoma. Risks factors for people of color are not yet clearly understood, but some possible risks factors include burn scars, trauma, immunosuppression, and preexisting moles (Skin Cancer Foundation, 2016). For individuals with less skin pigmentation, risk factors include family history, regular use of tanning beds, blistering sunburn incidences, and physical characteristics such as fair skin or freckles (Aim at Melanoma Foundation, 2014). Studies have also found that personal history of previous instances of melanoma may also be a risk factor for future reoccurrence.

Melanoma cases can present with a wide variety of appearance and different rates of progression, making diagnosis challenging in many instances. Criteria established by the American Cancer Society for identifying melanoma are asymmetry, border irregularity, color variation, diameter, and the evolution of the lesion (ABCDE criteria; Rajpar & Marsden, 2008). Melanomas can occur on any part of the body; for individuals with less skin pigmentation, melanoma most frequently occurs on the legs for women and the trunk for men. For African Americans, others of African descent, Asians, Hawaiians, and Native Americans, melanomas most likely occur on the mouth, palms, soles of the feet, and under the nails (Skin Cancer Foundation, 2016). For diagnosis confirmation, the affected area and a determined diameter of surrounding skin are surgically removed so that a biopsy can be performed, which involves

detailed analysis of the skin sample under a microscope. In addition to identifying the presence of melanomas, skin lesions are also diagnosed based on a defined system of stages. Stage 0 melanoma is characterized when the cancer cells remain on the top layer of the skin, or epidermis, and have not yet spread. When cancer cells have grown deeper into the skin but not spread to the lymph nodes, they are classified as stage I. At this stage, cancer may be dividing either slowly or quickly, no more than 2mm deep. If cancer continues to grow deeper into the skin without metastasizing and has more high-risk features such as abnormal coloring, size or ulceration, it is classified as stage II. Melanoma may also metastasize, or spread to the lymph nodes to other parts of the body. Stage III melanoma spreads via the lymph nodes to areas near the original melanoma site, but not distant organs. Stage IV, or metastatic melanoma, is that in which cancer has spread to other parts of the body, often affecting the liver, lungs, bones, or brain (Melanoma Research Foundation, 2016).

Treatments for melanomas vary based on the stage of lesions (Aim at Melanoma Foundation, 2014). For stage 0 melanomas, surgical removal of the affected area is sufficient to eradicate cancerous lesions (American Cancer Society, 2017c). Doctors may also prescribe an imiquimod cream for the treatment of stage 0 melanomas, which is a topical cream that is applied to the affected area, or radiation therapy. Treatment for stage I and II melanomas are similar to treatment for stage 0 melanomas. The primary approach is surgically removing a wide area, including the melanoma and surrounding skin. The removed area is examined under a microscope to see if cancer cells are present at the edges. If cancer cells are present around the edges of the removed skin, a doctor may perform another excision to remove a wider area of skin. This process of excision followed by microscopic examination is repeated until no more cancer cells are seen around the edges of the removed skin. For stage III and IV melanomas,

skin tumors and enlarged lymph nodes are surgically removed; in addition, recommended treatment may include radiation therapy, immunotherapy, or chemotherapy (ASCO, 2016).

Prognosis after treatment is affected by several factors including the size and thickness of the tumor, whether cancer has spread to the lymph nodes, and if cancer has spread to other parts of the body (ASCO, 2016; Rajpar & Marsden, 2008). Survival rates for melanomas varies by stage. The survival rate for stage I melanomas five years after treatment is roughly 92-97%, the rate for stage II melanomas ranges from 55-80%, between roughly 40-80% survival rate for stage III melanomas, and roughly 15-20% survival rate for stage IV melanomas five years post-treatment (American Cancer Society, 2017b).

For nonmelanoma skin cancers, basal cell carcinoma (BCC) is the most common form of skin cancer, accounting for roughly 75% of all reported cases (Rajpar & Marsden, 2008). This type of skin cancer develops in the basal skin cells which produce new skin cells when old cells die (Mayo Clinic, 2016a), and is a slow-growing form of cancer. Squamous cell carcinoma (SCC) is a rapidly growing cancer, so that skin changes are often seen over several weeks or months. SCC lesions most frequently occur on the head and neck, or other areas of the body that see high sun exposure including legs and arms (Rajpar & Marsden, 2008).

A variety of factors increase the likelihood of an individual developing BCC. Fair-skinned individuals are at greater risk than those with darker complexions. Men are at higher risk of developing BCC than women. As BCC is a slow-growing cancer, it typically appears in individuals over the age of 50 (Mayo Clinic, 2016a). Additionally, family history of BCC or a personal history of having BCC previously increase an individual's risk. BCC can increase an individual's risk of developing other skin cancers. Similarly to BCC, factors that increase an individual's risk of developing SCC include fair skin, excessive sun exposure, use of tanning

beds, and a history of sunburns, with cumulative exposure to UV radiation as the leading cause. Personal history is also a factor, as having SCC once makes an individual much more likely to develop it again (Mayo Clinic, 2016b).

Typically, BCC first appears as a waxy-looking bump, but can also be pearly white or even brown on individuals with darker complexions. BCC can also appear as a flat, scaly patch of skin that grows with time. In more rare instances, a white, waxy scar is indicative of morpheaform BCC, which is invasive and especially damaging (Mayo Clinic, 2016a). Lesions develop slowly over many months or years, most often on the face or neck. In very rare instances, BCC can spread to other parts of the body, including muscles and bones. Similarly, there are a variety of symptoms of SCC. Lesions can appear as firm, red nodules or flat sores that have a scaly appearing crust (Mayo Clinic, 2016b). Also, lesions can develop on the lips or inside the mouth as rough patches that develop into open sores. SCC lesions do not heal with time, indicating that medical treatment is necessary.

Treatment for BCC focuses on surgically removing the affected tissue and monitoring the area afterward, as reoccurrence is common over several years if the entire tumor is not removed. Instead of surgery, topical treatment with medicated ointments can be used for small, minor lesions. Radiotherapy or cryotherapy are also used as common treatments. Treatment options for SCC also vary; surgical removal of the affected tissue and surrounding area is the most common treatment approach. Other options include laser therapy to destroy the cancer cells or cryotherapy to destroy the cells by freezing them. Fortunately, following treatment, the prognosis for BCC and SCC are good, with death rarely occurring.

Concerns about skin cancer are especially relevant for older adults. An estimated 40% of diagnosed melanoma cases in the United States are in individuals age 65 years or older

(Garcovich et al., 2017). In fact, the incidence rate for melanomas seen in individuals over the age of 65 is 10 times higher than the incidence rate for cases in individuals younger than age 40 (Lasithiotakis et al., 2010). Approximately 60% of the total melanoma mortality rate each year is due to mortality in older adults (Lasithiotakis et al., 2010). Older adults are also at higher risk of nonmelanoma skin cancer. Compared to younger adults, more cases of basal cell carcinoma are found in adults over the age of 65 (Asgari, Moffet, Ray, & Quesenberry, 2015). Similarly, roughly 80% of squamous cell carcinoma diagnoses occur in older adults (Madan, Lear, & Szeimies, 2010), with the average age at diagnosis of 70 years (Garcovich, 2017). Thus, both melanoma and nonmelanoma skin cancers are likely to impact many older adults at some point across the lifespan.

Body Image in Old Age

Qualitative researchers have found that older adults report experiencing cultural pressure to conform to standards of youthful appearance, which is emphasized in many societies, including the United States, (Becker, Diedrichs, Jankowski, & Werchan, 2013), England, (Jankowski, Diedrichs, Williamson, Christopher, & Harcourt, 2016), and Australia (Baker & Gringart, 2009). Themes include feeling pressure to balance "aging gracefully" while also pushing back physical appearance changes and the importance of appearance on identity (Jankowski et al., 2016). Researchers have also found that dissatisfaction with certain elements of body image increases with age (McKinley, 2006). Alternatively, some researchers have found that individuals reported less focus on physical appearance and lowered pressure to meet cultural standards (Hogan & Warren, 2012; Siegel, 2010). Feingold and Mazzella (1998) proposed that women may benefit from aging because they reach a point where they are no longer exposed or held to societal pressures that emphasize physical appearance. Researchers have also proposed

that men may benefit from age, as external signs of aging may make men appear more distinguished (Grogan, 1999). While researchers have found different results, with some finding that body image remains important in old age, and others finding that body image may become less pertinent to older adults, body image remains an important avenue for further inquiry. In the case of skin cancer, body image may become more nuanced, with pressures surrounding youthful appearance combining with concerns over disease-specific appearance changes, such as scarring following removal of skin cancer lesions.

Societal pressures on physical appearance may impact individuals with cancer in unique ways, as body image concerns are normal and expected for individuals who have or may receive treatment for cancer. Fingeret (2010) described body image concerns of individuals with cancer as being on a continuum, with no body image concerns on one side, and severe body image concerns falling on the other side. Individuals with severe body image concerns experience mental preoccupation with physical changes and behavioral and emotional difficulties. Individuals with no body image concerns are either not bothered by physical changes or may even view such changes positively. Some individuals with nonmelanoma skin cancer report feeling concerns over potential disfigurement or scarring (Bath-Hextall et al., 2013). In their study of 100 women, ranging in age from 21 to 90 years, with melanoma, Atkinson, Noce, Hay, Rafferty, and Brady (2013) found that 64% of the women rated their physical appearances as worse following treatment, and 23% reported being unsatisfied with the appearance of the surgical site, where melanomas had been removed. Following surgery for facial skin cancer, participants were more satisfied with small scars that were located away from the central face (Lee et al., 2016). Similarly, findings from a small qualitative study of 15 participants, ranging in age from 27 to 78 years, three months to five years after diagnosis, with malignant melanoma

found that participants discussed alterations in their body image following surgery, with negative impacts on confidence and perceived appearance (Stamataki et al., 2015). Some participants felt unhappiness about the size of their scars, with several mentioning that their scars were worse than they felt they had been led to believe by medical professionals before the surgical procedure. Additionally, participants mentioned intentionally wearing clothing to cover scars or using makeup as a cover-up technique. Lichtenthal, Cruess, Clark, and Ming (2005) studied 30 participants, aged 22 to 57 years, who were diagnosed with malignant melanoma within the past five years, finding that participants reported concerns about their appearance, with women in the study having greater concerns than men. The researchers also found that higher concerns about physical appearance were associated with worse fatigue and poorer perceived stress, highlighting negative impacts of body image concern. While these studies highlight the impact that skin cancer can have on body image, this is a small body of knowledge, and additional research can contribute more knowledge to understanding body image of individuals facing skin cancer, especially contributing to understanding into body image when facing skin cancer in old age. Other studies on body image and skin cancer either do not focus on age as a study variable or tend to sample younger individuals. This study addresses the importance of examining old age in the discussion on the relationship between skin cancer and body image.

Quality of Life

Studies have found that quality of life (QOL) tends to remain relatively stable in late life (Moons, Budts, & De Geest, 2006), but that it often changes or fluctuates in response to various life events (Webb, Blane, McMunn, & Netuveli, 2011), such as when faced with an illness like skin cancer. Similarly, researchers examining QOL of individuals coping with a cancer diagnosis have found that many report heightened feelings of distress and anxiety (for a review

of the literature, see Kasparian et al., 2009). Specific to individuals facing skin cancer, Beesley and colleagues (2015) found that many participants in their study of 386 individuals diagnosed with invasive cutaneous melanoma reported experiencing anxiety and depression, and lower overall QOL when compared to the general population. Loquai and colleagues (2013) found in their study of 520 individuals with melanoma that approximately half reported increased emotional distress because of the impact of melanoma on work problems, physical problems, and challenges with family members or partners, which can negatively impact their QOL.

As the above studies illustrate, QOL may be negatively affected in individuals with skin cancer, but not all researchers have found this relationship. Some studies have instead found that QOL may not be negatively impacted by a skin cancer diagnosis. From a study of 664 individuals who answered questions about their QOL two years after treatment for malignant melanoma, QOL scores were similar to scores from the general German population (Schlesinger-Raab et al., 2010). The researchers did find small differences based on age; older participants reported lower scores on some elements of QOL, specifically physical, role, and cognitive functioning scores, but these differences were not statistically significant. About half of the study participants reported that their attitudes towards life had changed for the better since the melanoma diagnosis. In their study of melanoma survivors, Beutel and colleagues (2015) did not find a significant difference in overall QOL scores between survivors and the general population. This study did find some decreases in elements of QOL including functional quality of life, physical concerns, and financial problems, in agreement with findings from Schlesinger-Raab and colleagues (2010). These studies highlight how QOL may be affected for some individuals with skin cancer, but it is also possible that only some elements of QOL may be negatively

impacted. Thus, the current study has the opportunity to shed additional light on the complexities of QOL for individuals facing skin cancer.

Researchers have found that an illness like cancer can impact the QOL of the healthy partner in addition to impacts on the partner with cancer (Kim et al., 2008; LaFaye et al., 2014). However, research focused specifically on skin cancer reveals a gap in the literature. Some researchers have included couples coping with skin cancer among other types, but analyses and conclusions are not broken out by cancer type. Nevertheless, studies including couples facing skin cancer are important components for understanding how the QOL of a healthy partner may be affected. Mancini and colleagues (2011) conducted qualitative interviews with 77 caregivers of individuals with cancer, including 17 partners of individuals with melanoma. Study questions focused on inquiry about how the caregivers' lives had changed due to their partner's cancer, with a specific focus on elements of QOL. The most frequently discussed theme was about psychological well-being. Participants discussed worry and doubts about the future, anxiety, fear, and sadness. Also, participants discussed negative impacts on physical well-being, such as severe fatigue, sleep disturbance, and weight changes. Lastly, there was some discussion about cancer bringing family members closer together and providing opportunities for one partner to exhibit care and investment in the life of the other.

In their study of couples ($N = 207$) facing various cancer diagnoses, including breast, intestinal, skin, lung, liver, and testicular cancers, Drabe et al. (2015) found that depression and QOL of both partners were associated with a sense of coherence, relationship quality, and other physical stressors. Thirty-four individuals in the study had a skin cancer diagnosis, with no additional breakdown about what type of skin cancer each had. Specifically, patient stressors, sense of coherence, which is a measure of the resilience that an individual has for stress and his

or her ability to cope with that stress, and relationship quality were associated with QOL of the partner, with these associations being stronger for female partners with cancer than for male partners with cancer. Stressors, sense of coherence, and relationship quality as reported by the healthy partner were associated to a lesser degree with QOL for both male and female patient partners. As the paucity of the body of literature on QOL of partners of individuals coping with skin cancer reveals, there is a need for research in this area, to expand knowledge on how skin cancer in one partner can affect the other partner.

Individual Coping with Skin Cancer

The majority of research on coping with a skin cancer diagnosis has been focused on how individuals cope. Hamama-Raz, Solomon, Schachter, and Azizi (2007) found that how melanoma survivors appraise their situation affects their coping and outcomes. Participants who reported a lower appraisal of the skin cancer as a threat, and higher appraisal of the situation as a challenge and higher confidence in his or her ability to cope also reported lower levels of distress. In their study of 63 participants with nonmelanoma skin cancer at any disease stage, Roberts and colleagues (2013) found that roughly one-fourth of participants reported clinically significant levels of distress, in response to a skin cancer diagnosis. These authors also found that participants used multiple, individually focused coping strategies simultaneously to help with the distress, including distancing, behavioral escape avoidance, focusing on the positive, and using social support. Hajdarevic and colleagues (2013) found similar results in their study of 270 individuals in Sweden, who were coping with a malignant melanoma diagnosis. Specifically, they found that participants used a variety of individual coping efforts, which did not appear to be related to the type of tumor or several personal characteristics. Through qualitative interviews with individuals with skin cancer, Winterbottom and Harcourt (2004) found that participants

discussed many ways in which they attempted to cope, but that those with malignant melanoma reported using a wider variety of strategies than participants with SCC or BCC. In sum, researchers have found evidence that individuals use many coping strategies when facing skin cancer, but these findings are limited due to the individual focus as if one faces a skin cancer diagnosis in isolation.

Relationship-Focused Coping with Skin Cancer

Coping efforts have historically been defined as continually changing intrapersonal strategies or resources that a person uses as an effort to manage external and internal demands, which the individual appraises as being stressful or exceeding the resources at the individual's disposal (Lazarus & Folkman, 1984). Thus, coping efforts can serve different functions, at both individual and dyadic levels (Coyne & Downey, 1991). On an individual level, emotion-focused coping efforts are useful for managing an individual's distress. A second individual coping effort is problem-focused coping, which is suitable for addressing various instrumental tasks related to the stressor.

Building upon these studies, more recently, researchers have used dyadic models of stress and coping to examine how partners cope with various life stressors, including illness-related stressors, both individually and as a couple (Bodenmann, 1997; Berg & Upchurch, 2007). Dyadic coping refers to responses and strategies that a dyad uses as an attempt to recover from stressors (Bodenmann, 2005). There are various ways that dyadic coping has been defined and measured, one of which is relationship-focused support. Specifically, styles of relationship-focused support simultaneously address physical and emotional needs of both partners and needs of the relationship as a whole (Coyne & Smith, 1991). From this dyadic lens, both partners

manage their individual stress, but each also simultaneously responds to the needs and coping efforts of the other.

When facing a stressor such as cancer, couples use a variety of types of support to help cope, which has been found to be beneficial in helping partners adjust to stressors. Findings about the importance of support span a wide range of cancer diagnoses. In a study of women with breast cancer, women who reported being in an unsupportive partnership were at a greater risk of exhibiting anxiety compared to partners in supportive partnerships (Borstelmann et al., 2015). Similarly, in their study of male prostate survivors, Kamen and colleagues (2015) found that men who reported higher levels of partner support had significantly lower levels of psychological distress than both unmarried survivors and married survivors who reported low partner support. Partner support has also been found to be associated with better QOL (Gustavsson-Lilius, Julkunen, & Hietanen, 2007) and lower depressive symptoms (Lal & Bartle-Haring, 2011; Talley, Molix, Schlegel, & Bettencourt, 2010). As these findings illustrate, support appears to be important for helping mitigate some of the stress or other negative outcomes of a cancer diagnosis.

Based on Buunk, Berkhuysen, Sanderman, Nieuwland, and Ranchor's (1996) view of relationship-focused support, the three ways that partners may support one another is through the use of active engagement, protective buffering, and overprotection (Kuijer et al., 2000). *Active engagement* support employed by partners involves discussing thoughts and feelings about the stress and using joint problem solving to cope with a stressor (Hagedoorn et al., 2011; Schokker et al., 2010). *Protective buffering* behaviors include partners hiding or suppressing worries or fears about a stressor, or actively avoiding discussions about the stressor. Last, *overprotection* encompasses an underestimation of the person with the chronic illness or stressor's abilities,

which results in help that is unnecessary, excessive praise for accomplishments, and attempts to restrict activities of the partner. Of the three styles of support, *active engagement* and *protective buffering* are styles in which both partners can use various elements of each; *overprotection*, however, is a one-directional style, in which the healthy partner can be overprotective of the partner with the chronic illness, but not the other way around (Kuijer et al., 2000).

Researchers consider relationship-focused support to be different from traditional conceptualizations of social support because styles of relationship-focused support measure how support is given, instead of measuring the types of support (e.g., emotional, instrumental, companionship, informational; Buunk et al., 1996; Kuijer et al., 2000). For example, an emotionally supportive act of asking the partner with skin cancer how he or she feels is an example of active engagement. Alternatively, asking the partner with skin cancer how he or she feels every time they engage in any activity to the point of asking countless times a day is an example of overprotection. This example highlights how types of support can be given in different ways, as is emphasized in relationship-focused support.

Studies where researchers focused on the dyadic coping of couples facing a skin cancer diagnosis are rare. Some studies have included skin cancer among other types of cancer, such as Litzelman, Green, and Yabroff (2016) who studied over 900 couples who were coping with various cancer diagnoses, including breast, colorectal, prostate, and other cancers. In this study, the number of couples with skin cancer was small in comparison to the other groups, so those coping with skin cancer were grouped with other cancers. Regardless, these authors found that QOL and depression experienced by one partner affected the QOL of the other partner over time, highlighting the connected nature of cancer as a joint stressor. Additionally, the authors found

that couples coping with cancer who reported relying on one another showed better QOL for both partners and fewer depressive symptoms.

Other researchers have studied the use of relationship-focused support by couples coping with a variety of cancer diagnoses, including breast, colon, and colorectal cancers. A review of these studies also highlights that researchers have examined a variety of physical and psychosocial outcomes, such as relationship improvement when partners use more active engagement support and a positive association between overprotection and partner distress (Hagedoorn et al., 2011; Kuijer et al., 2000). However, not all findings of potential benefits of relationship-focused support are clear-cut, especially when studying individual outcomes. For example, use of active engagement support by a significant other may be associated with increased psychological distress in partners coping with a cancer diagnosis (Kuijer et al., 2000) or higher levels of stress (Coyne & Smith, 1994). In a study on the relationship between partner care and use of general practitioner care by individuals with cancer, Heins and colleagues (2016) found that individuals were less likely to discuss physical problems with their general practitioner when they reported experiencing high active engagement from their partners, which could have negative long-term impacts if problems go unseen.

Findings from these studies show that relationship-focused styles of support may have an impact on reducing negative outcomes for couples coping with skin cancer. However, just because relationship-focused support is beneficial for couples coping with some forms of cancer, the same findings may not be found in the study of couples coping with skin cancer.

The scarcity of studies focused on both partners in couple relationships where one partner has skin cancer may be for several reasons: a review of the literature on couples coping with cancer reveals fewer studies on skin cancer than some other forms of cancer. Additionally,

numerous studies on coping with skin cancer have focused on how the individual with skin cancer copes with his or her stress (for examples: Roberts et al., 2013; Sollner et al., 1999; Winterbottom, & Harcourt, 2004). But little work has expanded into examining how both partners cope with skin cancer. This dearth of research could be due to the complexity of gathering data from both partners in a couple or statistical techniques necessary to examine couple data as dyads. Thus, a look at dyadic support perceived by both partners with skin cancer and healthy partners provides an avenue to address this gap, adding to knowledge about individual coping with skin cancer.

Theoretical Framework

An understanding of the process by which exposure to stressors related to chronic and acute illnesses leads to adverse outcomes has been informed by two well-established paradigms, namely Pearlin, Mullan, Semple, and Skaff's stress process model (1990) and Lazarus and Folkman's transactional stress appraisal and coping model (1984). More recently, Berg & Upchurch (2007) proposed the developmental-contextual model (DCM) of stress and coping that takes into account the couples' appraisal of and coping with chronic illnesses. This study is also informed by the systemic transactional model (STM; Bodenmann, 1997) which emphasizes how stress and coping experienced by one partner impacts the other, and vice versa. I use an integrated heuristic model illustrated in Figure 1 to discuss the various features from these theoretical orientations to illustrate how stressors, specifically those arising from skin cancer-related issues, affect the partner with cancer's body image and the QOL of both partners. This model also identifies coping resources that couples may use to buffer the effects of stressors on individual and couple outcomes.

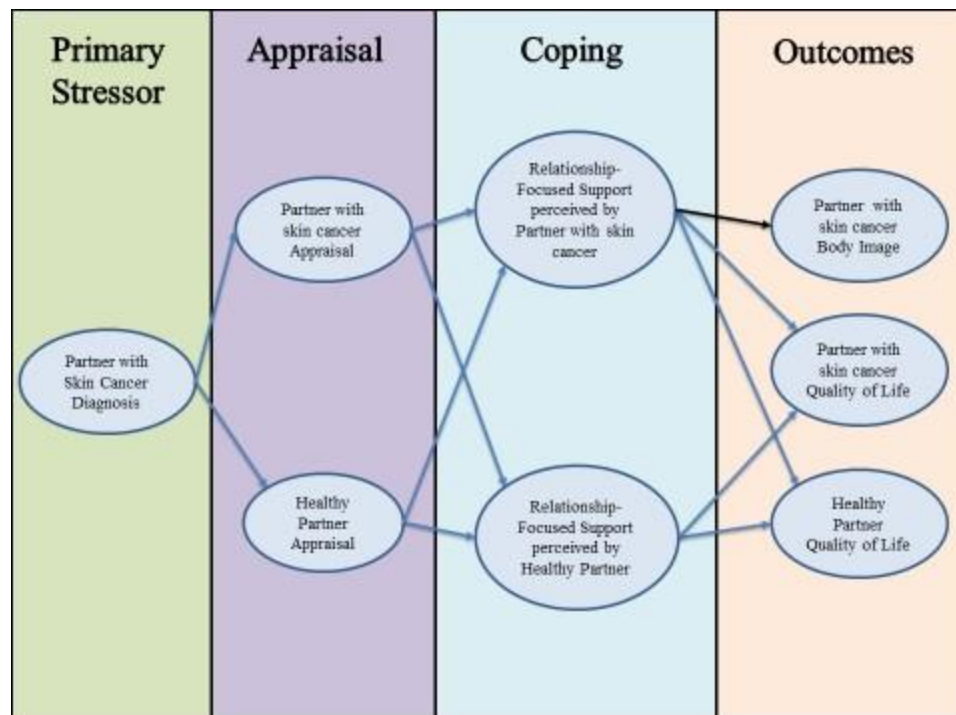


Figure 1. A theoretical model of stressor appraisal and relationship-focused support

The diagnosis of skin-cancer can be a life-altering experience that can signal profound changes for an individual. However, most people do not deal with the illness alone. Particularly among those who are married or in a committed relationship, their relationship with their partner provides the *context* or the beginning point in the illness contact. Context also includes the size and structure of other members of the family (e.g., adult children), social resources, and economic resources. Researchers have long recognized that intimate, close relationships provide a buffer against negative impacts of stressful situations (Berg & Upchurch, 2007).

In this study, a diagnosis of skin cancer in one partner is the primary stressor, which affects many facets of life for couples and initiates the need for coping. As defined by Pearlin and colleagues (1990), primary stressors here are problems that directly emerge from the partner with skin cancer's diagnosis. These include objective measures of the exposure that can vary

greatly along dimensions of duration, level, and severity of the illness (Wheaton, 1994).

According to Lazarus and Folkman (1984), in and of itself the diagnosis of an illness is not stressful; rather, it is how people respond to an event that makes them stressful.

When faced with stress, people make cognitive, behavioral, and emotional appraisals to evaluate the stressor and potential responses to the stress (Lazarus & Folkman, 1987). Cognitive appraisal is a process through which an individual evaluates whether a potential stressor is relevant to his or her well-being (Folkman et al., 1986). Cognitive appraisal influences the intensity and quality of resulting emotional responses. If the potential stressor is appraised as being relevant, the individual also evaluates in what ways or how the stressor is relevant.

When facing a relevant stressor, individuals assess the degree of threat associated with the stressor, as well as what resources he or she has available for coping (Lazarus & Folkman, 1984). Appraisals fall into two categories: primary and secondary. Primary appraisal is an evaluation to determine if an individual has anything at stake in the potential stressor. For example, is the health and well-being of one's self or a loved one at risk? Secondary appraisal involves determining if anything can be done to prevent or overcome any potential harm, or to increase the potential for benefits from the situation (Folkman et al., 1986). During secondary appraisal, an individual evaluates different coping responses (e.g., "Do I have the skills to cope with the problem?"). Bodenmann (2005) highlighted that stress appraisals are critical in how the stress process occurs, particularly in influencing how a couple or individual engages various coping strategies. Stressors that cause more stress and therefore necessitate greater coping are appraised as having more potential to create harm. Additionally, if an individual perceives fewer available coping resources, he or she may appraise a stressful event as being more serious.

Stress appraisal highlights how the same stressor event may be viewed differently by different individuals or dyads.

However, although how partners appraise stressors is important, this view narrowly focuses on individual partners and neglects the importance of the systemic nature of relationships. According to Cohen and Wills's (1985) model of stress-buffering, social support protects partners from the negative effect of stressful experiences. An integration of tenets of STM into the current study add an emphasis on the support provided by both partners, regardless of who may be primarily affected by a stressor. From this perspective, QOL and other outcomes are dependent on one another and the support each provides. The type of support examined in the current study that couples use to cope with skin cancer and that may protect them from negative impacts of the skin cancer is relationship-focused support (Coyne & Smith, 1991). Relationship-focused support attends more to the manner in which support is given (e.g., support given positively versus support given negatively) rather than the type of support provided (i.e., emotion-focused support or problem-focused support). In line with the STM, relationship-focused support too emphasizes the support that each partner gives to the other. While outside the scope of the current study, relationship-focused support provides unique opportunities to examine agreement or discrepancies between the support that partners use or report receiving.

In the face of stressful experiences, individual and dyadic outcomes for older adults can be both positive and negative. Researchers have examined how illness can affect psychological outcomes such as depression (Karakus & Patton, 2011; Monin, Chen, & Stahl, 2016), and anxiety (Tuncay, Musabak, Gok, & Kutlu, 2008). Additionally, researchers have examined various physical outcomes, including activities of daily living (Carlisle, John, Fife-Schaw, & Lloyd, 2005), and self-rated health (Pan & Ward, 2015). Most studies on outcomes have had an

individual focus: for example, what impact does chronic illness have on depressive symptoms of the individual with the illness? How do an individual's coping efforts affect his or her self-rated health? Such research questions, while shedding important light on stress and coping, do not address the interdependence of outcomes, or how the same outcomes of two partners can interact and influence one another. The two outcomes that I examine in my study are body image of the partner with skin cancer, an individual outcome, and QOL of both partners, a dyadic outcome.

While the SPM (Pearlin et al., 1990) and the transactional model of stress and coping (Lazarus & Folkman, 1984) provide strong lenses to understand adjustment to a chronic illness or diagnosis, both are limited as the focus has been on the individual and not on both members of the couple and their relationship (Carver & Scheier, 1999; Maes, Leventhal, & DeRidder, 1996). As discussed earlier, illnesses can challenge couple's communication patterns (Goldsmith, Miller, & Caughlin, 2007; Hodgson, Shields, & Rousseau, 2003; Manne et al., 2006; Milbury & Badr, 2013; Song et al., 2012), roles and responsibilities (Carlson, Bultz, Specia, & St. Pierre, 2000; Frivold, Slettebø, & Dale, 2016; McLean & Nissim, 2007; Starks, Morris, Yorkston, Gray, & Johnson, 2010), and daily lifestyles (Bitsika, Sharpley, & Christie, 2010; Hall, Lynagh, Tzelepis, Paul, & Bryant, 2016; Kostopoulou & Katsouyanni, 2006; Semple, Dunwoody, George-Kernohan, McCaughan, & Sullivan, 2008). These studies indicate that chronic illnesses do have the potential to have wide-reaching impacts on partners. Consequently, some studies report that chronic illness bring couples closer together (Danoff-Burg & Revenson, 2005; Dorval et al., 2005; Mavandadi et al., 2014; Pretter, Raveis, Carrero, & Maurer, 2014; Schokker et al., 2010). Whereas other studies have shown significant adjustment problems that result in chaos and conflict in the relationship (Granek, Danan, Bersudsky, & Osher, 2016; Green & King, 2009; O'Connor, McCabe, & Firth, 2008; Van Der Poel, & Greeff, 2003). As these findings

show, theoretical approaches to coping with illness need to expand from an individual focus to a dyadic focus, as impacts and outcomes affect couples at a dyadic level.

Chapter III

Methods

Study Overview

For this study, I gathered survey data from a non-probability sample of 30 couples coping with skin cancer (melanoma, basal cell carcinoma, and squamous cell carcinoma in stages 0 to III of disease progression). Survey questions asked about how each member of the couple appraise the stressors stemming from the skin cancer diagnosis, their perception of relationship-focused support that both are receiving from one another, the self-reported body image of the individual with skin cancer, and the quality of life (QOL) of both partners.

Study Area Demographics

Couples were recruited starting with the surrounding areas of Temple, Texas ($N = 13$). Recruitment was later expanded to other geographical areas ($N = 17$) to meet the enrollment target of 30 couples.

Roughly 10,000 (or 14%) of Temple's 68,000 residents are age 65 or older (World Media Group, LLC, 2017); around 5,000 households in Temple include two or more individuals age 60+ (Census Viewer, 2010), many of which are couples. There are some relevant, specific features of the Temple area which contributed to it being a good area for recruitment. As a part of the Scott and White Cancer Institute, the Vasicek Center Treatment Center provides multidisciplinary diagnosis and treatment of many prevalent types of cancer including skin cancers, drawing patients from across central Texas. Temple is also home to a large Department of Veterans Affairs (VA) medical center (U.S. Department of Veterans Affairs, 2016), which draws older veterans to Temple for short and long-term visits, including cancer care. These two medical facilities draw many people from areas surrounding Temple, who may have been

reachable via recruitment avenues discussed below. This geographic boundary limited doctor's offices that I visited in-person and locations that I posted advertisements for the study to communities near my primary residence. Additionally, through word-of-mouth and snowball sampling, I was able to recruit couples from other states: New Mexico ($N = 7$), Colorado ($N = 2$), Florida ($N = 2$), South Carolina ($N = 2$), Arizona ($N = 1$), Utah ($N = 1$), Louisiana ($N = 1$), and Georgia ($N = 1$).

Following the largest group of couples recruited from the Temple, Texas area ($N = 13$, 43%), seven couples (23%) were recruited from Los Alamos, NM, and surrounding areas. There are specific qualities of this community that have impacted the demographic characteristics of the overall sample, which are important to note. Los Alamos County has approximately 19,000 permanent residents, with another 7,000 people who commute daily to work at Los Alamos National Laboratory (U.S. Census Bureau, 2017). As a community founded around and sustained by a large Department of Energy national laboratory, Los Alamos has an international reputation for scientific and technological development (Los Alamos County, 2018). Los Alamos is consistently identified as being a community with residents having among the highest levels of educational attainment, with many residents holding a master's degree or Ph.D. Based on 2017 Census data, it was estimated that 32% of Los Alamos residents hold a bachelor's degree, 25% hold a master's degree, and 32% hold a doctorate (Town Charts, 2018). This skewness in higher education degrees is reflected in the couples from this area who participated in my study. As education was not a variable used in my studies, this skewness is not of critical concern but should be noted as contributing to a unique make-up of couples in the sample.

Recruitment Procedures

Recruitment for this study utilized several approaches, with varying degrees of effectiveness. One recruitment avenue involved visiting dermatology offices and skin cancer clinics to request opportunities to advertise and recruit potential participants. Recruitment fliers and descriptions of the study were provided to several clinics, of which four agreed to advertise (Appendix A). Additionally, information about the study was sent to two face-to-face support groups in central Texas for families coping with skin cancer. I was unable to visit the support groups, but one agreed to share the study verbally and have fliers available for interested families at a July 2017 group meeting. I also posted recruitment fliers around the Temple, Texas community. Locations included grocery stores, community centers, libraries, churches, senior housing facilities, and two Senior Centers. Social media was also used for advertising and recruitment. A detailed list of group sites can be found in Appendix B. The most effective recruitment mechanism, however, was snowball sampling approach via personal connections with couples who were eligible to participate or family and friends who knew someone they could recommend. The advantages and disadvantages of the recruitment procedures are further discussed in Chapter V: Discussion.

Inclusion and Exclusion Criteria

Study inclusion criteria were: (a) diagnosis of skin cancer (melanoma, basal cell carcinoma, squamous cell carcinoma, or other), stages 0 to III; (b) age 60 or older; (c) between 0 and 24 months (2 years) since conclusion of skin cancer treatment; (d) married or in a committed romantic relationship, partnered in current relationship for at least 5 years, and living together; (e) ability to read and write in English; and (f) both partners willing to participate in the study. Participants with skin cancer in stages 0 through III were eligible, as the emphasis was on how

couples appraise the skin cancer, which is more important and information-rich than simply the stage of skin cancer. Exclusion criteria were (a) partners who were currently receiving treatment for any other form of cancer or skin cancer more advanced than stage III; (b) more than 2 years since cancer diagnosis; (c) partnered for fewer than 5 years in current relationship; and (d) either partner actively coping with another chronic health condition that is not successfully controlled by medication of another form of treatment.

Based on these criteria, I gathered data from 30 couples, as depicted in Figure 2. I received contact information from a personal connection (e.g., a friend or relative) or through my snowball sampling efforts for 23 potential couples. Of these 23 potential couples, two couples never responded to my contact. Two additional couples declined participation; the first couple declined because one partner was interested in participating but the other partner was not. The second couple did not provide a reason for declining participation.

My convenience sampling group totaled 19 couples. Ten couples saw the recruitment fliers and contacted me. Of those ten couples, one couple left me a voice message but did not respond to my return call and therefore was not included in the study sample. Additionally, nine couples accessed the online format of the survey. Of these nine couples, two couples saw fliers at dermatology doctors' offices or clinics, four couples saw fliers at a church, one couple saw the study advertised online, and one couple indicated that they had heard about the study via "word of mouth." The 9th couple's survey was incomplete; it did not indicate how they heard about the survey.

I next evaluated the 37 responsive couples (19 couples from personal connections or snowball sampling and 18 couples from convenience sampling) to determine if they met the eligibility requirements. Three couples obtained via personal connections or snowball sampling

did not meet the eligibility requirements (one skin cancer diagnosis had occurred approximately ten years prior, a partner in one couple was younger than 60 years, and one couple did not reside in the same home), resulting in 34 eligible couples. Of the 34 eligible couples, three did not complete the survey.

Of the remaining 31 couples, 22 requested the pen-and-paper survey, all of which I received back. Nine couples started the online survey. One participant began the online survey, indicated that he or she consented to participate, but then never answered any of the survey questions. The remaining eight couples completed the survey. Thus, the study findings are based on responses from the 30 couples: 22 couples from personal connections or snowball sampling who completed the pen-and-paper survey and eight couples from the convenience sample who completed the online survey.

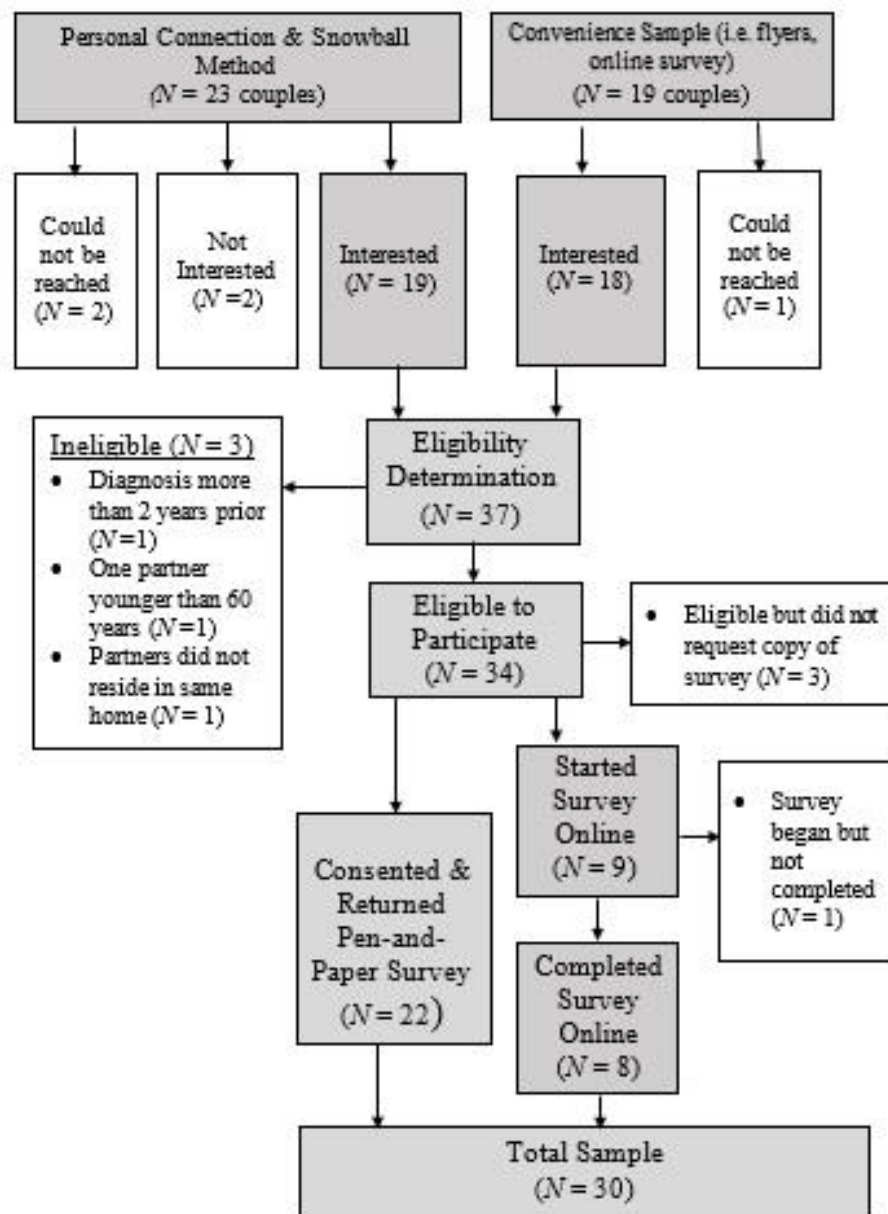


Figure 2. Flowchart of recruitment and exclusion of participants.

Study Procedures

Participants were able to complete the study measures either as a paper version or online via Qualtrics. For couples interested in completing the study measures online, I used Qualtrics as the interface. The survey home page provided required IRB information, including the study purpose, requirements of participants, benefits and potential harms, and contact information for myself, my advisor, and the Virginia Tech IRB. To begin the survey questions online, participants had to indicate willing consent to participate by checking “I give my consent to participate.” Participants who did not give consent, by checking “I do not give my consent” were not directed to the survey questions but instead were prompted to provide a reason for not being interested in participating in the study and were thanked for their interest in the study. Instructions for the study directed partners to complete the study measures independently of one another. To increase compliance of couples completing measures independently, sporadic reminders were included throughout the measures emphasizing the importance of couples working independently to complete the survey questions.

For participants who completed the surveys on paper, partners were given the study purpose, requirements, benefits and potential harms, and researcher contact information, followed by the informed consent form. If participants wished to proceed to complete the study measures, each partner signed and dated his or her separate informed consent form, and the researcher retained the form. I used a different color paper for materials for each partner (yellow for partners with skin cancer, green for healthy partners), to emphasize the importance of each completing measures independently. As all couples who completed the study measures via the paper format did so at home, I included two pre-addressed, stamped envelopes so that each

partner could return completed measures separately, as another effort to ensure the integrity of data as completed without involvement from both partners.

Both partners responded to demographic questions, including questions about age, race, ethnicity, and self-perceived health status. Participants with skin cancer provided information about the specifics of their skin cancer diagnosis, including the type of skin cancer, stage, time since diagnosis, and any current treatments. Both partners also responded to survey questions regarding their appraisal of the illness, the type of support they are receiving from their partner and rated their QOL. The partner with skin cancer also provided an appraisal of their body using a body image scale.

As a cross-sectional study, couples only completed the survey measures once. A total of 8 couples completed the online survey, and 22 couples completed the pen-and-paper version of the survey and were included in the study analyses. While it is unknown how long completing the paper surveys took, for the online surveys, the mean time it took participants to complete the survey measures was 17 minutes, with a time range from 10 to 44 minutes. The advantages and disadvantages of these data collection procedures for this study are discussed in more detail in Chapter IV.

Participant Compensation

Following completion of the online survey, participants provided an email address or mailing address to be entered into a drawing for one of four \$25 Amazon gift cards. Using features of *Qualtrics*, a separate survey collected contact information, ensuring that email addresses or mailing addresses remained separate from all participant data. To combat fraudulent survey takers, I included several filler items in the survey to weed out robot responses (i.e., "Please select option B."). Participants who completed the survey on paper could provide

either an email address or mailing address, which were stored with their informed consent forms. Not all participants elected to provide contact information for the gift card drawing. At the end of data collection, drawing winners were selected at random, and the four Amazon gift cards were mailed to the randomly selected participants in January 2018.

Study Measures

Demographics. Participants provided demographic information, including sex, race and ethnicity, and age. Additionally, participants indicated their current marital status and length of relationship, as well as if they are currently living with their partner, as a partial check that all couples did meet the eligibility requirements. Participants also indicated if they are currently facing any common health conditions, if any health conditions are successfully being controlled, and if so, what those treatment mechanisms are. Last, participants provided a rating of their self-perceived overall health status, gathered via one question: "How would you rate your overall health at present?" Possible responses were poor (1), fair (2), good (3), or excellent (4).

Skin cancer diagnosis. Partners with skin cancer (PwSCs) provided information about their skin cancer diagnosis, including what type of skin cancer they have and the stage of cancer. PwSCs also indicated how long it has been since they received their diagnosis and any treatments that they are currently receiving, will be receiving, or have received in the past for the skin cancer.

Cognitive Appraisal of Health. The Cognitive Appraisal of Health Scale (CAHS) was used to assess subjective appraisal of health-related stressors (Kessler, 1998). The CAHS is a 28-item measure that was developed to assess primary and secondary appraisals of health-related stressors. The CAHS examines how individuals evaluate potentially stressful events and whether or not individuals have resources available to cope with the health-related stressor.

Primary appraisal is an evaluation of potential meaning and importance of an event for well-being. An event can be viewed as not threatening to well-being (benign/irrelevant), threatening to well-being, which results in the view of the event as stressful (harm/loss, threat, a challenge to well-being), or as providing an opportunity for mastery or gain (challenge).

The benign/irrelevant subscale has four items, such as "This skin cancer diagnosis is not stressful to me" and "I do not think much about this skin cancer diagnosis." A sample item from the harm/loss 8-item scale includes "This skin cancer diagnosis has damaged my life." Items on the 5-item threat subscale include "Things will only get worse because of this skin cancer diagnosis" and "I have a lot to lose because of this skin cancer diagnosis." Finally, the challenge subscale includes six items such as, "I can control what will happen to me" and "This skin cancer diagnosis has caused me to learn more about myself." Participants were instructed to indicate how much they agreed or disagreed with each statement, with responses ranging from 1 (Strongly disagree) to 5 (Strongly agree). For the current study, the four items on the benign/irrelevant subscale were reverse coded before the creation of an average for the scale. After creation of an average subscale score for the four subscales, the four subscales were totaled to create a primary appraisal score. Higher primary appraisal indicates a greater view of the skin cancer as stressful. Lower primary appraisal scores indicate less view of the skin cancer as stressful ($\alpha = .54$).

The five remaining items on the CAHS capture secondary appraisal, which is an evaluation of one's sense of personal control over the disease (e.g., "I need to know more before I can do anything about this skin cancer diagnosis" or "I have to accept this skin cancer diagnosis"). Participants rated each item on 5-point Likert-type scales, with responses ranging from 1 (Strongly disagree) to 5 (Strongly agree). One negatively framed item was reverse coded,

before computing an average secondary appraisal score. A higher secondary appraisal score indicates greater perceived personal control over the skin cancer (Guttman split-half coefficient = .62).

Perception of Relationship-Focused Support Received from Partner. Based on work by Coyne and Smith (1991), Buunk and colleagues (1996) developed a questionnaire to measure partner perception of three relationship-focused styles of providing support: active engagement (e.g., “When something bothers me, my partner tries to discuss the problem.”), protective buffering (e.g., “My partner tries to act as if nothing is the matter.”), and overprotection (e.g., “My partner takes over as much of my work as possible.”). The version for the partner with skin cancer (PwSC) diagnosis included 19 items asking to what extent they perceived receiving the three styles of support from their healthy partner (HP). Active engagement was measured via five items ($\alpha = .70$), and protective buffering was measured via eight items ($\alpha = .74$). The overprotection subscale, which was only completed by PwSCs, used six items ($\alpha = .83$). Partners rated each of the items on a 5-point Likert-type scale. Responses ranged from 1 (Never) to 5 (Very often). Items on each of the three subscales were averaged to create three subscale scores. Higher subscale scores indicate the higher perceived use of the particular relationship-focused support type by their partner.

Healthy partners (HPs) completed an 11-item version rating the extent that they perceived receiving relationship-focused support from their PwSC. Active engagement was captured via 5 items ($\alpha = .69$) while protective buffering was captured using 6 items ($\alpha = .79$). The 11 items were rated on 5-point Likert-type scales, with responses ranging from 1 (Never) to 5 (Very often). Items from the active engagement and protective buffering subscales were averaged to create two scores, capturing the perception of support received from the PwSC. The HP

questionnaire was shorter in length because overprotection support was not included as a style of support used by the PwSC.

Study Outcomes

Body Image. The current study used Hopwood, Fletcher, Lee, and Al Ghazal's 10-item body image scale (BIS), which was developed specifically for use with cancer patients (2001). PwSCs were asked to think about the past week and to select the response for each of the items that were closest to how they had been feeling about themselves. Sample items from the BIS include, "Have you been feeling self-conscious about your appearance?" and "Have you felt the treatment has left your body less whole?" PwSCs rated each item on a 0 (Not at all) to 3 (Very much) Likert-type scale. The ratings were summed to create an overall summary score for each participant, ranging from 0 to 30. Higher scores indicated a more positive body image ($\alpha = .94$).

Quality of Life. Both partners completed the World Health Organization Quality of Life-Brief (WHOQOL-BREF) measure of QOL, which is a 26-item scale-revised from the original 100-item World Health Organization Quality of Life measure (WHOQOL Group, 1998). The WHOQOL-BREF measure evaluates the four domains of physical health, psychological health, social relationships, and environment. Elements within the *physical health domain*, which is measured via seven items, include activities of daily living, energy and fatigue, pain and discomfort, and sleep and rest. The 6-item *psychological domain* includes items about positive and negative feelings, self-esteem, and spirituality and religion. The 3-item *social relationships domain* includes elements focused on personal relationships, social support, and sexual activity. Finally, the 8-item *environment domain* includes elements about financial resources, home environment, leisure activities, and the physical environment.

Participants were instructed to think about their lives over the past two weeks and respond to questions based on their thoughts and feelings during this time span, with responses ranging from 1 to 5. Response ratings varied based on the individual wording for items. For example: responses to an item from the *physical health* domain, "To what extent do you feel that physical pain prevents you from doing what you need to do?" ranged from 1 (Not at all) to 5 (An extreme amount). Responses to an item from the *environment* domain, "To what extent do you have the opportunity for leisure activities?" ranged from 1 (Not at all) to 5 (Completely). Responses to an item from the *social relationships* domain, "How satisfied are you with your personal relationships?" ranged from 1 (Very dissatisfied) to 5 (Very satisfied). Participants also responded to two additional items: "How would you rate your quality of life?" which was rated from 1 (Very poor) to 5 (Very good), and "How satisfied are you with your health?" which was rated from 1 (Very dissatisfied) to 5 (Very satisfied).

Individual items from each domain were averaged to calculate the domain score. Next, domain scores were multiplied by four, so that they were comparable to scores used in the original 100-item measure. The four domains are scored such that higher domain scores indicate higher QOL on the specific domain. Next, a summed total QOL score was calculated, using the four separate domain scores, one item on overall QOL ("How would you rate your quality of life?"), and one item on general health ("How satisfied are you with your health?"). Overall scores could potentially range from 6 to 30, with higher scores indicating higher QOL. In the current study, overall QOL demonstrated good reliability (PwSC quality of life $\alpha = .86$; HP quality of life $\alpha = .84$).

Data Storage

Using two methods to collect data, *Qualtrics* and pen-and-paper surveys, required several special considerations for data storage before and during data collection. First, for data collected electronically, because informed consent was indicated by participants checking a box and proceeding to begin the survey, no informed consent forms for these participants needed storage. For couples who completed paper surveys, informed consent forms and study data were stored separately from one another, both in locked cabinets, only accessible to myself. Access to the *Qualtrics* survey responses was limited to my advisor and me.

Study data was stored on a password protected computer, and accessible only by me. Additionally, any dataset containing study data (i.e., Excel, SPSS) was protected separately by a unique password that was different from the main security password on my computer. To match data collected by partners online, before beginning their surveys, couples choose a shared code word that each entered separately at the beginning of his or her survey. For example, a couple may have chosen to use "Florida" as their code word; each separately entered "Florida" as directed before answering the study measures, so that the separate data could be matched when needed for data analysis. I then assigned each couple a unique identifying number, and also assigned individual numbers to each partner. For couples who completed the surveys on paper, I assigned each couple a unique identifying number, and individual numbers for each partner.

Analysis Plan

Analyses for this study were conducted using MPlus version 8 (Muthén & Muthén, Los Angeles, CA, USA) and SPSS version 24 (SPSS Inc., Chicago, IL, USA). After data was cleaned, I used data screening methods to check for assumptions about the distribution of the data, using measures of skewness and kurtosis, histograms, and plots of normality as indicators

of normality. Univariate statistics explored the range, mean for the variables, and checked for outliers and missing data. Bivariate correlations were checked for expected and unexpected correlations.

Research Question 1. To address Research Question 1, I first ran preliminary descriptive analyses to identify what relationship-focused support partners reported receiving. I used paired t-tests to examine differences in the perceptions of support received by partners in each couple. Additionally, I used One-Way Analysis of Variances (ANOVA) tests to compare perceived relationship-focused support by sex, type of cancer, and cancer stage. I used Bonferroni adjustment to correct for multiple comparisons, using an adjusted alpha level of .01 per test. If tests revealed that means for perceived support were not equal across groups, I conducted post-hoc Tukey HSD tests to determine which group means differed and the corresponding effect sizes. Additionally, I compared male and female PwSC reports of body image, and PwSC and HP overall QOL for potential group differences.

Research Question 2. For Research Question 2 and corresponding hypotheses, I used linear regression models to examine the associations among each partner's report of perceived relationship-focused support received from his or her partner and the PwSC's perceived body image. I ran three regression models for each style of support (i.e., active engagement, protective buffering, and overprotection) separately, using type of skin cancer, stage of the skin cancer, sex of the PwSC, and stressor appraisal of both partners as covariates in each model. Additionally, I included interaction effects in each of the regression models, to examine if the effect of support received by one partner on body image depends on the level of support received by the other partner.

Research Question 3. For Research Question 3 and corresponding hypotheses, I used three multivariate actor-partner interdependence models (APIM) to examine the associations among each partner's perception of received support and their QOL (actor effects) and their partner's QOL (partner effects). As a paired regression technique, APIM was appropriate for this study due to the nested nature of couples. The three APIM were run separately to examine the associations between each style of support (i.e., active engagement, protective buffering, and overprotection) and partners' QOL, while additionally controlling for the sex of the partner with skin cancer, skin cancer type, and stage of skin cancer.

Power Analysis

In order to determine an appropriate sample size for multivariate actor-partner interdependence models, the number of observed variables, the number of parameters to be estimated, and the complexity of the models is considered. Based on these factors and using a guideline of a minimum of five participants for each parameter to be estimated (17 parameters to be estimated in the largest proposed APIM models; Bentler & Chou, 1987), approximately 40 couples were to be recruited for the current study. However, due to recruitment challenges, the final sample size of 30 couples was deemed sufficient to conduct the proposed analyses.

Chapter IV

Results

In this chapter, the results of this study are presented in the form of two manuscripts. These manuscripts will be submitted to two peer-reviewed journals as follows. The guidelines for submission for each journal are included in the manuscripts' appendices.

The first article, entitled "Looking Through Your Eyes: Body Image of Older Adults with Skin Cancer and Perceived Support from Partner" will be submitted to the *Journal of Psychosocial Oncology* (impact factor 1.312), which emphasizes clinical and research articles geared toward health professionals who work directly with cancer patients and their families. Manuscripts published in the *Journal of Psychosocial Oncology* focus on but are not limited to, research on hypothesis testing, program evaluation, intervention research, systematic reviews, and theory development.

The second article, entitled "Couples Facing Skin Cancer in Old Age: A Dyadic Investigation of Partner Support and Quality of Life" will be submitted to the *Journal of Aging Studies* (impact factor 1.248). The *Journal of Aging Studies* publishes scholarly papers related to the aging experience and the social and behavioral sciences and the humanities. Published articles emphasize innovation and new directions, as well as critique or challenges to existing theory and empirical work.

Article 1: Looking Through your Eyes:

Body Image of Older Adults with Skin Cancer and Perceived Support from Partner

Abstract

Objective: This study sought explored the styles of relationship-focused support older couples provide to each other when one partner has a skin cancer diagnosis and the association between perceived support received from one's partner and body image of the partner with skin cancer.

Design: Couples answered online or paper survey questions about the skin cancer diagnosis, their appraisal of stressors related to the skin cancer, and each participant's perception of the support provided by his or her partner. Persons with skin cancer also provided information about how they felt about their appearance after the skin cancer diagnosis (i.e., body image). Partners completed study measures once, independently of one another.

Sample: Thirty couples aged 60 and older ($M_{\text{age}} = 70$, $SD=7.25$), in which one partner had a diagnosis of melanoma ($n = 14$; 47%) or nonmelanoma ($n = 16$, 53%) participated in the study.

Methods: Paired t-tests and ANOVA tests assessed differences in perceptions of received partner support, namely active engagement, protective buffering, and overprotection, based on the sex of the partner with skin cancer, type of skin cancer, and stage of skin cancer. Linear regression models examined associations between perceived partner support and partner with skin cancer's body image, adjusted for the sex of the partner with skin cancer, skin cancer type, stage of the disease, and stressor appraisal of the skin cancer diagnosis by both partners.

Findings: On average, partners with skin cancer (PwSC) reported receiving more support from healthy partners (HP) in the form of active engagement ($M = 3.95$, $SD = .44$) than protective buffering ($M = 2.18$, $SD = .58$; $t(29) = 12.72$, $p < .001$) and overprotection ($M = 1.78$, $SD = .67$; $t(29) = 15.81$, $p < .001$). Similarly, HPs reported receiving more active engagement support (M

= 3.82, $SD = .48$; $t(29) = 9.20$, $p < .001$) from PwSCs than protective buffering support ($M = 2.37$, $SD = .60$). Sex differences in active engagement support ($F = 7.22$, $p < .01$) and protective buffering support ($F = 9.27$, $p < .01$) were also found, wherein female HPs reported higher perceived active engagement support, and male HP reported higher perceived protective buffering support from their PwSC. Differences based on cancer type (i.e., melanoma vs. nonmelanoma) revealed that both partners perceived more protective buffering in couples with a melanoma diagnosis compared to couples with a nonmelanoma diagnosis. Similar differences were found based on skin cancer stage; in couples facing mid-stage cancer (Stages II and III), both HPs ($F = 6.31$, $p < .05$) and PwSCs ($F = 9.04$, $p < .01$) perceived higher protective buffering support compared to partners in couples facing early-stage cancer (Stage I). When persons with skin cancer reported higher partner active engagement, they were more likely to have a positive body image ($\beta = 2.26$, $p = .04$). An interaction between perceived active engagement support of both partners was found ($\beta = -3.74$, $p = .05$), indicating that body image benefits from receiving higher active engagement from HPs, but only when PwSC active engagement is low. Perceived protective buffering and overprotection support were not associated with body image.

Conclusions: Couples used a complex array of styles of support when facing skin cancer, which varied based on sex, type of skin cancer, and stage of skin cancer. Active engagement by one's partner had a positive effect on the body image of the partner with skin cancer, whereas protective buffering and overprotection support from one's partner were not consequential.

Implications for mental health providers: Findings suggest that body image can be impacted by partner support. Human service providers need to take advantage of opportunities to inform and educate partners about ways in which they can support one another. For example, support groups

focused on teaching active engagement styles of support to couples coping with skin cancer may positively influence the body image of the individual with skin cancer.

Looking Through Your Eyes:

Body Image of Older Adults with Skin Cancer and Perceived Support from Partner

Skin cancer incidence rates in the U.S. have historically been the highest of all cancers, with more cases than all other cancers combined (American Cancer Society, 2016a). Skin cancer can be categorized into two types: melanoma and nonmelanomas, most commonly basal cell carcinoma (BCC) and squamous cell carcinoma (SCC; American Academy of Dermatology, 2017). Roughly 80,000 individuals in the U.S. are diagnosed with melanoma each year (American Society of Clinical Oncology, 2016), and over 3 million people receive treatment for nonmelanoma skin cancer (Rogers, Weinstock, Feldman, and Coldiron, 2015). Unlike popular belief, skin cancer is not a young person's diagnosis. Studies show that the risk of developing skin cancer increases with age and, approximately half of adults who live past the age of 65 will have a form of skin cancer at least one time (Skin Cancer Foundation, 2016), highlighting the relevance of skin cancer for many older adults.

Skin cancer, whether melanoma or nonmelanoma, causes difficulties for individuals. Physical or emotional distress may arise due to uncertainty about the diagnosis or potential treatment. Individuals may experience psychological stressors such as anxiety or depression, which may, in turn, have negative impacts on interpersonal relationships. In addition, individuals facing skin cancer express concern over body image (Lichtenthal, Cruess, Clark, & Ming, 2005). Individuals worry about scars or appearance alterations due to treatments or may be unsatisfied with their physical appearance following treatment. In addition to the effects that skin cancer may have on the individual with cancer, in instances where persons are in partnered relationships, these stressors may spill over to the healthy partner in the form of anxiety over treatment uncertainty (Basra & Finlay, 2007; Hajdarevic, Schmitt-Egenolf, Brulin, Sundbom, &

Hörnsten, 2011), decreased involvement in social events (Lee et al., 2016), depressed mood (Beesley et al., 2015), reduced relationship satisfaction (Hagedoorn et al., 2011), and lower quality of life (Litzelman, Green, & Yabroff, 2016).

To date, research has primarily examined how individual patients have dealt with the uncertainty and stress of treatment, making treatment decisions, relational challenges, and intrapersonal stress. This individualistic view of coping with skin cancer limits understanding of how couples view this disease, and the support they provide to each other. To move this area of research to the dyadic level of analysis, in the current study we surveyed older couples coping with a melanoma or nonmelanoma skin cancer diagnosis to understand how perceived support from one's partner is associated with the body image of the partner with skin cancer. Findings from this study will inform psychoeducational and psychotherapeutic approaches for assisting older couples facing skin cancer, provide knowledge that medical professionals can use during treatment for skin cancer, and contribute to research supporting the effectiveness of relationship-focused styles of support in the face of stressful life experiences for older adults.

Literature Review and Theoretical Model

Body Image and Skin Cancer

Melanomas can occur on any part of the body, such as on the legs for women and the trunk for men, but may also appear on the scalp, mouth, palms, soles of the feet, and under the nails (Skin Cancer Foundation, 2016). Treatments for melanomas vary (Aim at Melanoma Foundation, 2014), but frequently include surgical removal of the affected areas, imiquimod cream, radiation therapy, immunotherapy, or chemotherapy. Basal cell carcinoma (BCC), one of the most common forms of nonmelanoma skin cancer, is slow-growing and most often found

developing on the face or neck. In very rare instances, BCC can spread to other parts of the body, including muscles and bones. The other most common type of nonmelanoma skin cancer, squamous cell carcinoma (SCC), is a rapidly growing cancer most often found on the head and neck, or other areas on the body that had high sun exposure, including legs and arms (Rajpar & Marsden, 2008). Treatment for nonmelanoma skin cancer focuses on surgically removing the affected tissue, use of topical treatment with medicated ointments, radiotherapy, and cryotherapy.

Much of the research on body image of individuals facing cancer tends to focus on breast cancer, which predominantly affects women and includes individuals across the lifespan. Findings related to body image of women with breast cancer do not translate to persons experiencing skin cancer for a number of reasons. For example, skin cancer lesions often occur on the face and neck, which are almost always visible to others. The prominence of lesions, discoloration, or scars on visible parts of the body may uniquely affect body image perceptions in individuals with skin cancer. Similarly, surgical removal may require excision of large areas of surrounding tissue, which may leave large scars or indentations on the skin. Changes due to lesions located on the arms, legs, or trunk may be even more pertinent in couple relationships if changes are only visible in more intimate settings. For older adults who experience a skin cancer diagnosis, treatment approaches including surgery, chemotherapy, or radiotherapy can have a profound impact on the body, both internally and on external physical appearance.

In research on body image in old age, Feingold and Mazzella (1998) proposed that women may benefit from age because they reach a point where they are no longer exposed or held to societal pressures that emphasize physical appearance. Men also may benefit from age, as external signs of aging may make men appear more distinguished (Grogan, 1999). While

researchers have found different results, with some finding that body image remains important in old age (for example Jankowski, Diedrichs, Williamson, Christopher, & Harcourt, 2016), and others finding that body image may become less pertinent to older adults (Hogan & Warren, 2012; Siegel, 2010), body image remains an important avenue for further inquiry. Adding skin cancer that may necessitate surgical removal as a part of treatment on top of normal physical changes resulting from age may further complicate potential sex differences in body image. Thus, as little research has examined body image in relation to older couples coping with skin cancer, and findings drawn from other cancer populations may not generalize to skin cancer, the current study addresses these gaps by focusing on body image of older individuals who have a skin cancer diagnosis.

Skin Cancer: A Couple's Stressor

Diagnosis and treatment of skin cancers can be stressful for individuals, with stress potentially spilling over into other areas of life (Loquai et al., 2013). Some researchers have found that experiencing skin cancer is a couples' stressor, and therefore coping with skin cancer may also be a joint process (Hay et al., 2009). Although the use of personal coping resources such as focusing on the positive, distancing, and seeking and using social support may be helpful (Roberts, Czajkowska, Radiotis, & Körner, 2013; Trapp et al., 2012), couples that work together on coping with a stressor fare better (Drabe, et al., 2016; Engeli, et al., 2016). Additionally, support received from one's partner can positively impact relationship quality (Kinsinger, Laurenceau, Carver, & Antoni, 2011; Kramer, Ceschi, Van der Linden, & Bodenmann, 2005), improve couples' communication (Song et al., 2012), and influence emotional well-being of both partners (Kim, Han, Shaw, McTavish, & Gustafson, 2010; Vilchinsky et al., 2011). In skin cancer literature, many studies examine individual coping of persons with the skin cancer, even

when individuals cope within various relationships, including romantic partnerships, parent-child relationships, sibling relationships, and others. Examining skin cancer as a joint stressor and the support partners receive from one another to cope with the stressor will provide a more complete picture of the coping process.

The current study focuses on relationship-focused support that address physical and emotional needs of both partners and the relationship (Coyne & Smith, 1991). From this view of dyadic coping, both partners manage their personal stress, while both also simultaneously providing support to the other partner. Previous literature identified three specific styles of relationship-based support that couples use to help cope with stressors: active engagement, protective buffering, and overprotection (Kuijter et al., 2000). Active engagement involves actively discussing thoughts and feelings and using joint problem solving to cope with a stressor (Hagedoorn et al., 2011). Protective buffering support includes hiding or suppressing worries or fears or actively avoiding discussions about the stressor. Last, overprotection is an underestimation of the afflicted person's abilities that results in help that is unnecessary, excessive praise for accomplishments, and attempts to restrict activities of the partner. While some studies have examined the use of relationship-focused support by couples facing various cancer diagnoses (e.g., breast, colon, and colorectal cancers, among others), no studies to date have focused specifically on skin cancer. Examining how partners perceive the support they received from their partner can shed light on the styles of support that may be most beneficial in mitigating the negative aspects of skin cancer, thus filling a gap in the literature on joint coping with this form of cancer.

Limited studies have addressed sex differences in body image of older individuals coping with skin cancer, and contrasting results have emerged. For example, some older adults report

feeling pressure to continue conforming to societal standards associated with a youthful appearance (Becker, Diedrichs, Jankowski, & Werchan, 2013), while others report less emphasis on physical appearance and lower pressure to meet cultural standards surrounding appearance in the later years of life (Hogan & Warren, 2012; Siegel, 2010). These studies did not, however, focus on older adults who have skin cancer. Rather, in studies on body image and skin cancer, participants tended to be young to middle-aged, or a wide range of ages was represented, with no attention given to age as a study variable. Some previous research found that young women whose skin cancers are located on visible areas have greater body image concerns than when skin cancers appear on covered body parts (Kasparian, McLoone, & Butow, 2009); however, such findings may not hold true with older women. In their study of 100 women with melanoma, age 21-90, Atkinson, Noce, Hay, Rafferty, and Brady (2013) found that 64% of the women rated their physical appearances as worse following treatment, and 23% reported being unsatisfied with the appearance of surgical sites after melanomas had been removed. However, data in this study were not analyzed by age of the women. In their study of 48 individuals, age 20-57, Lichtenthal and colleagues (2005) found that women with malignant melanoma reported more concerns about physical appearance than men; specifically, women reported significantly more concerns about their outward body image and concerns about the ability of their bodies to function as they should.

As limited studies have focused on sex differences in body image of individuals with skin cancer, this investigation into sex as a possible covariate was also informed by research on other dermatological conditions with similar treatment approaches. In a study of body image of 48 patients ($M_{age} = 52$) with skin infections that necessitated surgery, Hellgren, Lagergren, Larsson, Schandl, and Sackey (2013) found that women reported more negative body image than men.

Conversely, in their study of 280 individuals with face and neck cancers ($M_{age} = 59.9$), Fingeret and colleagues (2012) found that sex was not a statistically significant predictor of body image. Based on this literature, we anticipated older women would report poorer body image compared to older men.

The current study also examined sex differences in perception of the types of support partners received. Previous research on relationship-focused support in couples has been limited in an examination of sex differences. One main reason is that many studies have focused on chronic illnesses that predominately affect males or females so that any comparisons of support used focused on patient versus partner comparisons. For example, Hinnen, Hagedoorn, Ranchor, and Sanderman (2008) examined relationship-focused support and relationship satisfaction in women with breast cancer and their partners. Additionally, a small subset of studies examining relationship-focused support has focused on chronic illnesses affecting both men and women, such that a comparison between males and females could have been conducted. For example, in their study of couples coping with Type 1 and Type 2 diabetes, Schokker and colleagues (2010) gathered data from 112 couples where the male had diabetes and 93 couples where the female had diabetes. While the authors discussed how sex could distinguish partners, the only additional use of sex in the analyses was the mention that the correlations between relationship satisfaction and use of active engagement and protective buffering remained significant after controlling for sex.

There are a few previous studies that examined sex differences in relationship-focused support, with mixed results. Hagedoorn and colleagues (2011) examined the use of relationship-focused support in 88 couples facing colorectal cancer, with the sample including 29 female patients and 59 male patients. Male patients reported receiving higher levels of active

engagement compared to female patients. Badr (2004) compared couples where one partner had a chronic illness ($N = 92$) to couples where both partners were healthy ($N = 90$) to examine a variety of coping strategies, including relationship-focused support (active engagement and protective buffering). Females with a chronic illness were significantly less likely to use active engagement compared to males with a chronic illness. In contrast, healthy females whose partner had a chronic illness were significantly more likely to use active engagement compared to healthy males. Also, males with a chronic illness used less protective buffering support than females with a chronic illness. In line with these previous findings, the current study expected male partners with skin cancer (PwSCs) would report receiving more active engagement support and less protective buffering support than female PwSCs. Also, the current study expected male healthy partners (HPs) would report receiving less active engagement and female HPs would report receiving less protective buffering.

Type of skin cancer and stage at which the cancer was diagnosed were also examined in this study as additional potential covariates. Research tends to fall into two categories: participants either have melanoma or nonmelanoma cancers, or participants have both melanoma and nonmelanoma and analyses are conducted on the group as a whole. Studies in the first category do not allow for comparison between the type of skin cancer to investigate if skin cancer type is critical. Studies in the second category that lump all types of skin cancer together potentially miss nuances between types, although it is possible that researchers in these studies looked for differences based on skin cancer type and conducted analyses as a group because they did not find any differences. As melanoma skin cancer is a more serious, potentially damaging cancer diagnosis (American Cancer Society, 2016b), couples coping with melanoma may report appraising the diagnosis as more stressful, and partners may express their support to each other

differently. For example, a study on couples where male partners had been hospitalized for heart attacks found that wives used more negative support when they reported experiencing higher distress (Coyne & Smith, 1991). Similarly, Johnson and colleagues (2013) found that in couples facing type 2 diabetes, greater distress was associated with higher use of negative support. However, in both studies by Coyne and Smith (1991) and Johnson and colleagues (2013), distress over the chronic illness was not associated with the use of positive support.

Additionally, the stage at which the skin cancer was diagnosed was examined to determine if the stage was related to the use of relationship-focused support in couples. In past research, skin cancer stage has been included in studies as a demographic characteristic but has not been examined as a potential covariate affecting the support partners' use. For example, Roberts and colleagues (2013) examined stress and coping in 63 individuals with nonmelanoma skin cancer; the authors found that type of nonmelanoma, lesion location, and time since diagnosis did not significantly predict distress, but the analyses did not examine skin cancer stage as a control variable. Thus, the current study is informed by findings of the relationship between stage and coping in response to other cancer diagnoses. Schnoll and colleagues (1998) found that women with lower stage breast cancer (Stage II) reported using more adaptive and less maladaptive coping stages compared to women with more advanced stage cancer (Stage IV). In a study of 257 individuals with various cancer diagnoses, Kim, Yeom, Seo, Kim, and Yoo (2002) found that individuals with stage III cancers used significantly fewer problem-focused and emotion-focused coping strategies when compared to individuals with either stage I or stage II cancers, indicating that those with earlier stage cancer used more positive coping strategies. Guided by these findings, the current study expected partners facing early stage skin cancer (Stage I) to view the diagnosis as less stressful and therefore may use more active engagement

and less protective buffering and overprotection support compared to partners facing mid-stage cancer (Stage II and III).

Type of skin cancer and stage at diagnosis are two objective representations of this illness and the probable stressors accompanied by this diagnosis, but individuals with the same type or stage of skin cancer may appraise the diagnosis quite differently. Thus, the current study also examined subjective measures of partners' appraisals of stressors related to the skin cancer. Combining objective and subjective measures of stress stemming from the skin cancer could provide a clearer picture of how couples face skin cancer.

This study was informed by two theoretical paradigms: Lazarus and Folkman's transactional stress appraisal and coping model (1984) and Berg and Upchurch's developmental-contextual model (DCM) of stress and coping (2007). As an individually-focused model, the transactional stress appraisal and coping model emphasizes the importance of how individuals view the stressors associated with the skin cancer diagnosis in one partner. From this lens, it is not the diagnosis itself that causes stress for couples. Instead stress results from how people appraise and respond to the skin cancer. Appraisals affect how couples engage in supporting one another. In line with this view, the current study examined primary and secondary stressor appraisal of couples to capture how each viewed the skin cancer-related stressors, highlighting how couples may view the stressors differently. To expand upon the individual focus of the transactional stress appraisal and coping model, the current study also integrated tenants from the DCM, which has a dyadic focus (Berg & Upchurch, 2007). This model emphasizes that the couple is the unit where support takes place and dyadic support is the first line of coping couples will use when facing a potentially stressful event, regardless of who may be primarily affected by the skin cancer. Thus, the support partners provide to each other is key to how they cope with

skin cancer, and even an examination of body image as an individual outcome should be examined in relation to the support of both partners. In line with this perspective, the current study investigated how support of both partners was associated with body image of the partner with skin cancer, highlighting the interconnected nature of support.

Purpose/Objectives

The current study addresses several gaps in literature related to skin cancer, contributing to an understanding about body image of individuals facing skin cancer and perception of relationship-focused support received from partners' for the stressors surrounding skin cancer.

In line with these objectives, the research questions and corresponding hypotheses were:

- i. RQ 1: What styles of relationship-focused support do older couples use to provide support to each other when one partner is diagnosed with skin cancer? Does perception of support received from one's partner differ by sex of the reporting partner, type of skin cancer, and skin cancer stage?
- ii. RQ 2: Controlling for sex, type of cancer, skin cancer stage, and subjective stressor appraisal by both partners, does perception of support from one's partner affect the body image of the person with skin cancer?

Hypothesis 2a: Greater active engagement perceived by the partner with skin cancer and the healthy partner will be associated with more positive body image of the partner with skin cancer.

Hypothesis 2b: Greater protective buffering perceived by the partner with skin cancer and the healthy partner will be associated with less positive body image of the partner with skin cancer.

Hypothesis 2c: Greater overprotection perceived by the partner with skin cancer will be associated with less positive body image of the partner with skin cancer.

Design and Methods

Participants

Participants for this study were 30 couples in which one partner had received a skin cancer diagnosis in the previous two years. Couples were recruited between July and December 2017. The inclusion criteria were: (a) diagnosis of skin cancer (melanoma, basal cell carcinoma, squamous cell carcinoma, or other) in stages 0 to III; (b) age 60 or older; (c) ability to read and write in English; (d) married or in a committed romantic relationship for at least five years and co-residing with the partner; and (e) both partners willing to participate in the study. The exclusion criteria were: (a) partners who were currently receiving treatment for any other form of cancer that was not skin cancer; (b) skin cancer in Stage IV; (c) couples where the skin cancer diagnosis had occurred more than two years prior; (d) couples who had not been partnered for at least five years; and (e) couples in which either partner was coping with another chronic health condition besides the skin cancer, that was not successfully controlled by medication or another form of treatment. Using snowball and convenience sampling techniques, participants were first recruited from Temple, Texas, and then from other states in the U.S. Thirteen couples were Texas residents, seven couples were NM residents, two couples each were CO, FL, and SC residents, and one couple each were residents from AZ, UT, LA, and GA.

Procedure

Approval for this study was obtained from the Virginia Tech Institutional Review Board. The survey used for this study was available both online via *Qualtrics* and as a pen-and-paper

survey. After providing informed consent, partners were instructed to complete measures independently from one another about stress appraisal of the skin cancer diagnosis, perceived relationship-focused styles of support their partner uses, and body image of the partner with skin cancer. Partners mailed pen-and-paper surveys back to the primary researcher in separate envelopes to help provide confidentiality to each partner. Twenty-two couples completed pen-and-paper surveys, and eight couples completed the online surveys. Demographics, perceived relationship-focused support, and body image did not differ based on response method.

Measures

All participants answered demographic questions including age, sex, race and ethnicity, length of current partnership, and presence of common health conditions. Additionally, PwSCs provided details on the type of skin cancer (melanoma = 0; nonmelanoma (BCC and SCC) = 1) and stage (early stage (Stage I) = 0; mid-stage (Stage II-III) = 1).

Cognitive Appraisal of Health. The Cognitive Appraisal of Health Scale (CAHS) assessed subjective appraisal of health-related stressors. CAHS is a 28-item measure developed to assess primary and secondary appraisals of health-related stressors, specifically looking at how individuals evaluate potentially stressful events and whether they have the resources to cope with the health-related stressor (Kessler, 1998). A primary appraisal is the evaluation of an event that may be deemed as having no implications for well-being (i.e., irrelevant/benign) or stressful (a harm/loss, threat, or challenge to well-being), or provide an opportunity for mastery or gain (challenge). The measure of primary appraisal included four subscales using 23 items: benign/irrelevant (4 items), harm/loss (8 items), threat (5 items), and challenge (6 items). Participants rated how much they agree or disagree with each item using a 5-point Likert-type scale where 1 = Strongly disagree, and 5 = Strongly agree. Individual items on the

benign/irrelevant subscale were reverse coded before the creation of an average for the total scale. After computing an average subscale score for the four subscales, they were totaled to create a primary appraisal score, wherein a higher score indicated perception of the skin cancer as more stressful ($\alpha = .54$).

Items that capture secondary appraisal on the CAHS evaluate one's sense of personal control over the disease (e.g., "This skin cancer diagnosis is one that I can change or do something about"). Participants responded to each of the five items on 5-point Likert-type scales with responses ranging from 1 (Strongly disagree) to 5 (Strongly agree). One negatively framed item was reverse-coded before computing an average secondary appraisal score, with a higher score indicating greater perceived control over skin cancer (Guttman split-half coefficient = .62).

Perception of Relationship-Focused Support Received from Partner. Based on work by Coyne and Smith (1991), Buunk and colleagues (1996) developed a questionnaire to measure three styles of relationship-focused support: active engagement (e.g., "My partner makes me feel that I am not alone in this."), protective buffering (e.g., "My partner tries to hide his or her worries about me."), and overprotection (e.g., "My partner continuously keeps an eye on me."). The scale for the PwSC diagnosis included 19 items asking the extent respondents perceived receiving the three styles of support from their partner. *Active engagement* was measured via five items ($\alpha = .70$). *Protective buffering* was measured using eight items ($\alpha = .74$). The *overprotection* subscale, completed only by PwSCs, included six items ($\alpha = .83$). Participants rated each of the 19 items on a 5-point Likert-type scale, with responses ranging from 1 (Never) to 5 (Very often). Items on the active engagement, protective buffering, and overprotection subscales were averaged to create three subscale scores with higher scores indicating more frequent perceived use of the particular relationship-focused support by their partner.

HPs completed an 11-item version of this scale to rate the extent to which they perceived receiving support from their partner with skin cancer in the form of active engagement (5 items; $\alpha = .69$) and protective buffering (6 items; $\alpha = .79$). Each of the 11 items were rated on 5-point Likert-type scales, with responses ranging from 1 (Never) to 5 (Very often). Items on the active engagement and protective buffering subscales were averaged to create two scores, to capture the perception of support used by the partner with skin cancer. The HP questionnaire was shorter in length because the overprotection construct was not included as a style of support used by the PwSC.

Body Image. The outcome variable in this study was Hopwood, Fletcher, Lee, and Al Ghazal's 10-item body image scale (BIS), which was developed specifically for use with cancer patients (2001). PwSCs were asked to report how they felt about themselves in the previous week, rating each item on a 0 (Not at all) to 3 (Very much) Likert-type scale (e.g., "Did you avoid people because of the way you felt about your appearance?" and "Have you been dissatisfied with the appearance of your scar?"). The ratings were summed to create an overall score for each participant, ranging from 0 to 30, with higher scores indicating a more positive body image ($\alpha = .94$).

Analysis Plan

Data were screened to check the distribution of the data, using skewness and kurtosis, histograms, and plots of normality as measures of normality. Univariate statistics explored the range and mean, and checked for outliers and missing data. Bivariate correlations revealed expected and unexpected correlations.

For Research Question 1, preliminary descriptive analyses determined types of support received. Paired *t*-tests examined differences in the styles of support perceived by each partner.

Next, One-Way Analysis of Variances (ANOVA) tests were conducted using Bonferroni adjusted alpha levels of .01 per test, to compare the perceived relationship-focused support received from partners based on sex, type of cancer, and cancer stage.

For Research Question 2 and corresponding hypotheses, linear regression models examined the associations between each partner's perspective about the relationship-focused support received from the other partner and body image perceived by the person with skin cancer. These regression models were run for each style of support (i.e., active engagement, protective buffering, and overprotection) separately. Type of skin cancer, stage of skin cancer, sex of the PwSC, and stressor appraisal by both partners were used as covariates in each of the regression models. Additionally, these regression models included interaction effects for support perceived by each partner to examine whether the effect of perceived support by one partner on body image depends on the level of support perceived by the other partner. Results of these regression models are presented in the following section, with standardized beta values discussed.

Findings

Descriptive Analyses

As shown in Table 1, on average, partners were 70 years of age (range 59 to 88 years) and had been together for an average of 38 years (range 10-60). HPs reported their race as White/Caucasian ($n = 30$) while 28 PwSCs reported their race as White/Caucasian, one reported race as American Indian or Alaska Native, and one as Asian. Twenty-four (80%) PwSCs and 23 (77%) HPs identified as not Hispanic or Latino, while six (20%) PwSCs and 7 (23%) HPs identified as Hispanic or Latino. A majority of PwSC were women ($n = 20$, 67%) compared to

men ($n = 10$, 33%). Fourteen (47%) of the PwSCs reported having a melanoma diagnosis, 11 (37%) reported having a basal cell carcinoma (BCC) diagnosis, and 5 (16%) reported a squamous cell carcinoma (SCC) diagnosis. The majority of PwSC had Stage I cancer ($n = 13$, 44%) and Stage II cancers ($n = 12$, 40%), while a smaller percentage had Stage III cancers ($n = 5$, 16%).

Table 1

Demographic Characteristics of PwSCs and HPs

Variables	PwSC (<i>n</i> = 30)	HP (<i>n</i> = 30)
Age: mean (SD)	69.97 (7.79)	70.10 (6.80)
Sex		
Male (%)	10 (33%)	20 (67%)
Female (%)	20 (67%)	10 (33%)
Length of current relationship: mean (SD)	37.79 (13.67)	38.20 (13.57)
Race		
White/Caucasian (%)	28 (94%)	30 (100%)
American Indian or Alaska Native (%)	1 (3%)	
Asian (%)	1 (3%)	
Ethnicity		
Hispanic or Latino (%)	6 (20%)	7 (23%)
Not Hispanic or Latino (%)	24 (80%)	23 (77%)
Years of education completed		
11 to 15 years (%)	7 (23%)	7 (23%)
16 to 18 years (%)	17 (57%)	15 (50%)
18 or more years (%)	6 (20%)	8 (27%)
Type of skin cancer		
Melanoma (%)	14 (47%)	
Basal cell carcinoma (BCC) (%)	11 (37%)	
Squamous cell carcinoma (SCC) (%)	5 (16%)	
Skin cancer stage		
Stage I (%)	13 (44%)	
Stage II (%)	12 (40%)	
Stage III (%)	5 (16%)	
Primary stressor appraisal total score: mean (SD)	11.94 (1.89)	11.23 (2.14)
Secondary stressor appraisal total score: mean (SD)	3.05 (.42)	3.00 (.31)
Body image scale: mean (SD)	22.60 (5.67)	

Note: PwSC = Partner with Skin Cancer; HP = Healthy Partner

Research Question 1A: What styles of relationship-focused support do older couples use to provide support to each other when one partner is diagnosed with skin cancer?

Paired *t*-tests revealed that PwSCs reported perceiving more active engagement support from HPs ($M = 3.95$, $SD = .44$) than both perceived protective buffering ($M = 2.18$, $SD = .58$; $t(29) = 12.72$, $p < .001$) and overprotection support ($M = 1.78$, $SD = .67$; $t(29) = 15.81$, $p < .001$). Healthy partners also reported receiving more support in the form of active engagement from PwSCs, ($M = 3.82$, $SD = .48$) compared to protective buffering support ($M = 2.37$, $SD = .60$; $t(29) = 9.20$, $p < .001$).

Table 2

Received Styles of Relationship Focused Support as Perceived by Partner

	Mean (SD) (Ncouples=30)
Partner support perceived by PwSC	
<i>Active engagement</i>	3.95 (.44)
<i>Protective buffering</i>	2.18 (.58)
<i>Overprotection</i>	1.78 (.67)
Partner support perceived by HP	
<i>Active engagement</i>	3.82 (.48)
<i>Protective buffering</i>	2.37 (.60)

Note: Ranges are 1 (Never) to 5 (Very Often).

PwSC = Partner with Skin Cancer; HP = Healthy Partner

Research Question 1B: Does perception of support received from one's partner differ by sex of the reporting partner, type of skin cancer, and skin cancer stage?

Sex. One-way ANOVA analyses (shown in Table 3) revealed statistically significant sex differences in perception of active engagement and protective buffering, but only for the healthy partner. Specifically, female HPs reported that their PwSC actively engaged in conversations about skin cancer-related stressors more with them ($M = 3.97$, $SD = .44$) compared to male HPs ($M = 3.52$, $SD = .42$; $F(1, 28) = 7.22$, $p = .01$, Cohen's $d = .60$). Additionally, female HPs reported receiving less protective buffering ($M = 2.16$, $SD = .32$) than male HPs ($M = 2.78$, $SD = .81$; $F(1, 28) = 9.27$, $p = .01$, Cohen's $d = .58$).

Table 3

Perceived Partner Support by Sex

	Males ($n = 10$)		Females ($n = 20$)		<i>F</i> -test
	Mean	SD	Mean	SD	
Partner support perceived by PwSC					
<i>Active engagement</i>	3.96	.44	3.95	.45	.00
<i>Protective buffering</i>	2.35	.47	2.09	.63	1.31
<i>Overprotection</i>	2.05	.75	1.65	.61	2.49
	Males ($n = 20$)		Females ($n = 10$)		<i>F</i> -test
	Mean	SD	Mean	SD	
Partner support perceived by HP					
<i>Active engagement</i>	3.52	.42	3.97	.44	7.22**
<i>Protective buffering</i>	2.78	.81	2.16	.32	9.27**

** Significant at the 0.01 level

Note: PwSC = Partner with Skin Cancer; HP = Healthy Partner

Type of skin cancer. Due to the small number of individuals with squamous cell carcinoma and basal cell carcinoma, the two were combined to form a nonmelanoma diagnosis grouping. PwSCs diagnosed with melanoma reported higher perception of protective buffering support ($M = 2.46$, $SD = .53$) compared to PwSCs diagnosed with nonmelanoma ($M = 1.93$, $SD = .52$; $F(1, 28) = 7.76$, $p = .01$, Cohen's $d = .62$; Table 4). No other significant differences were found based on the type of skin cancer.

Table 4

Perceived Partner Support by Type of Skin Cancer

	Melanoma (<i>n</i> = 14)		Nonmelanoma (<i>n</i> = 16)		<i>F</i> -test
	Mean	SD	Mean	SD	
Partner support perceived by PwSC					
<i>Active engagement</i>	3.94	.44	3.96	.46	.01
<i>Protective buffering</i>	2.46	.53	1.93	.52	7.76**
<i>Overprotection</i>	1.99	.69	1.60	.62	2.58
Partner support perceived by HP					
<i>Active engagement</i>	3.66	.47	3.96	.45	3.31
<i>Protective buffering</i>	2.60	.67	2.17	.47	4.22

** Significant at the 0.01 level

Note: PwSC = Partner with Skin Cancer; HP = Healthy Partner

Skin cancer stage. Comparisons were conducted between stage I cancers (early stage) versus stages II and III combined (mid-stage), due to the small number of participants with stage III skin cancers (see Table 5). Partners with mid-stage skin cancer reported higher perception of protective buffering from their healthy partner ($M = 2.43$, $SD = .53$), compared to partners with early-stage skin cancer ($M = 1.86$, $SD = .49$; $F(1, 28) = 9.04$, $p = .01$; Cohen's $d = .68$). No other significant differences in perceived partner support were found based on skin cancer stage.

Table 5

Perceived Partner Support by Skin Cancer Stage

	Early-Stage ($n = 13$)		Mid-Stage ($n = 17$)		<i>F</i> -test
	Mean	SD	Mean	SD	
Partner support perceived by PwSC					
<i>Active engagement</i>	3.98	.51	3.93	.39	.11
<i>Protective buffering</i>	1.86	.49	2.43	.53	9.04**
<i>Overprotection</i>	1.54	.53	1.97	.72	3.30
Partner support perceived by HP					
<i>Active engagement</i>	3.88	.39	3.78	.54	.32
<i>Protective buffering</i>	2.08	.34	2.59	.67	6.31

** Significant at the 0.01 level

Note: PwSC = Partner with Skin Cancer; HP = Healthy Partner

Research Question 2: Does perception of support from one's partner affect the body image of the person with skin cancer?

A one-way ANOVA test revealed that male PwSCs reported significantly better body image ($M = 26.60$, $SD = 2.95$) compared to female PwSCs ($M = 20.60$, $SD = 5.68$; $F(1, 28) = 9.72$, $p < .01$, Cohen's $d = .77$). No differences in body image were found based on type or stage of skin cancer.

A series of regression models were analyzed to examine the associations between perception of the three styles of relationship-focused support and body image of the PwSC. In Model 1, type of skin cancer, skin cancer stage, and sex of the partner with skin cancer were entered in the analyses first (see Table 6). Neither skin cancer type nor stage were associated with PwSC body image. PwSC sex was negatively associated with body image ($\beta = -.56$, $p < .01$) indicating that female PwSCs reported their body image as poorer than male PwSC. In Model 2, primary and secondary stressor appraisal as reported by both partners were added as additional covariate variables. Neither primary nor secondary stressor appraisal reported by PwSCs were associated with body image. Primary stressor appraisal reported by HPs was negatively associated with PwSC body image ($\beta = -.52$, $p < .01$).

Table 6

Linear Regression Models Examining Associations among Three Styles of Relationship-Focused Partner Support and Body Image (N=30 couples)

Predictor Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Type of skin cancer (0 = melanoma; 1 = nonmelanoma)	.09	-.10	-.28	-.16	-.11
Stage of skin cancer (0 = early-stage; 1 = mid-stage)	-.10	-.01	.03	.10	.01
PwSC Sex (0 = male; 1 = female)	-.56**	-.60**	-.66**	-.64**	-.61**
Stressor appraisal reported by PwSC					
Primary stressor appraisal		-.15	-.10	-.14	-.15
Secondary stressor appraisal		.25	.27	.28	.24
Partner support perceived by PwSC					
Active engagement			2.26*		
Protective buffering				-.46	
Overprotection					.06
Stressor appraisal reported by HP					
Primary stressor appraisal		-.52**	-.59**	-.41*	-.51**
Secondary stressor appraisal		.29	.28	.32	.28
Partner support perceived by HP					
Active engagement			2.81*		
Protective buffering				-.23	
Interaction effects					
PwSC's active engagement × HP's active engagement			-3.74*		
PwSC's protective buffering × HP's protective buffering				.57	
R ²	.33	.54	.68	.55	.54
Adjusted R ²	.26	.39	.51	.31	.36
Std. Error of the Estimate	4.89	4.44	3.99	4.71	4.53
	(df = 26)	(df = 22)	(df = 19)	(df = 19)	(df = 21)
F Statistic	4.31**	3.61**	3.95**	2.29*	3.05*

* p<0.05; ** p<0.01

Note: PwSC = Partner with Skin Cancer; HP = Healthy Partner

Hypothesis 2a: Perception of active engagement support and body image. For Model 3, linear regression was used to test if each partner's perception of active engagement support was associated with PwSC body image, while controlling for skin cancer type and stage, PwSC sex, and stressor appraisal of both partners. The nine predictors explained 68% of the variance ($R^2 = .68$, $F(10, 19) = 3.95$, $p < .01$; Table 7). Neither primary nor secondary stressor appraisal reported by PwSCs were associated with body image. HP primary stressor appraisal was negatively associated with PwSC body image ($\beta = -.59$, $p = .01$). PwSCs who reported greater active engagement support used by their partner perceived their body image to be more positive ($\beta = 2.26$, $p = .04$). Similarly, when HPs perceived greater use of active engagement support by PwSCs, the PwSCs perceived their body image to be more positive ($\beta = 2.81$, $p = .03$). A significant interaction (Figure 1) was found between partners' reports of received active engagement support ($\beta = -3.74$, $p = .05$). As seen in Figure 1, perception of higher active engagement received from HPs appears to benefit PwSC body image when PwSC active engagement is low but does not appear to be related to body image when PwSC active engagement is high; thus, the hypothesis that higher perceived active engagement use would be associated with higher PwSC body image, was partially supported.

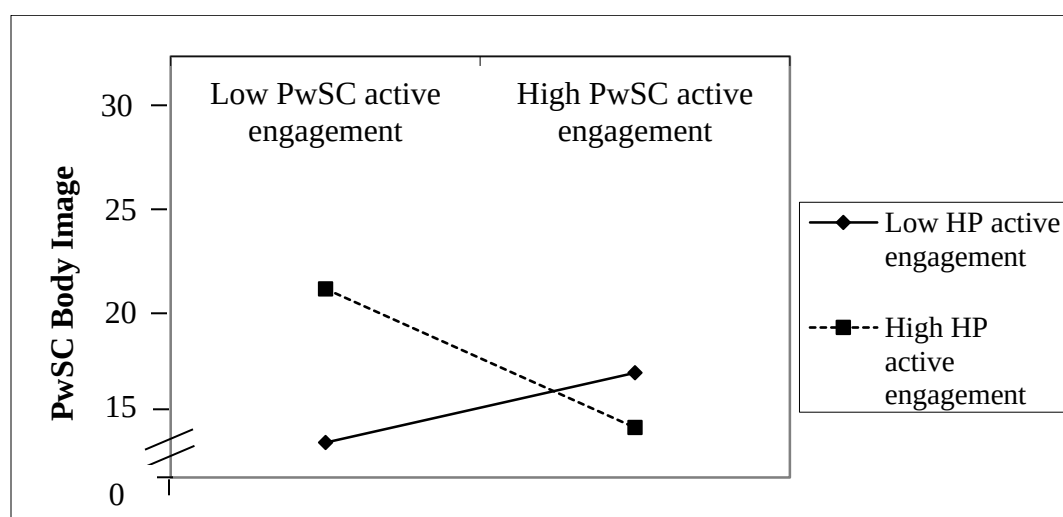


Figure 3: Interaction effect of each partner's active engagement on PwSC's body image.

Hypothesis 2b: Perception of protective buffering support and body image. To examine the relationship between perceived protective buffering and PwSC body image, similar linear regression analyses as described for H2a were conducted. As seen in Model 4 (column 4), perceived protective buffering by either of the partners was not associated with body image. Additionally, the interaction effect between perceived protective buffering of both partners was not associated with body image. Thus, the hypothesis that higher perception of protective buffering use would be associated with poorer PwSC body image was not supported.

Hypothesis 2c: Perception of healthy partner's overprotection and body image. The third hypothesis stated that higher perception of overprotection received by PwSCs would be associated with poorer PwSC body image. As shown in Model 5, the main effect of overprotection from HP was not found to be associated with body image of PwSC; therefore, hypothesis 2c was not supported.

Discussion

The first aim of this study was to provide an understanding of the type of support couples provide to each other when faced with skin cancer. In general, the couples appeared to engage in conversations about skin cancer with each other. Receiving active engagement support may have beneficial implications for couples, such as improving relationship satisfaction or reducing skin cancer-related anxiety. Although seldom used, protective buffering, a form of avoidance, was used more often than overprotection by couples. This finding was particularly highlighted based on sex differences, type of skin cancer and stage of cancer. Although HPs perceived their PwSCs to use more active engagement to cope with their illness, HPs with a female PwSC reported that their partner used protective buffering to help them cope with skin cancer.

Findings suggest that male PwSCs may prefer to address their concerns about skin cancer head-on, working together with their partners to deal with the stress (Badr, 2004). Female PwSCs, on the other hand, may engage in more behaviors designed to actively avoid talking about the skin cancer or hiding fears and worries that they had from their partners (Badr, 2004). This finding underpins the importance of couples seeking help with identifying patterns in the support they provide and learning better ways of coping. Therapists can help women diagnosed with skin cancer to investigate reasons behind their hesitancy to discuss their diagnosis and corresponding fears openly. Additionally, therapy can be a safe place for partners to express fears that they may not feel comfortable talking about otherwise, providing avenues for each to learn about the types of support the other would like to receive.

In couples facing melanoma skin cancer, PwSCs reported receiving more protective buffering support than PwSCs who were facing nonmelanoma. A similar pattern was seen based on skin cancer stage. PwSCs reported receiving more protective buffering support when couples were facing a mid-stage diagnosis compared to partners facing an early-stage diagnosis. It may be that these couples viewed the skin cancer diagnosis as causing greater stress, so avoidance or denial was easier. This finding aligns with previous research indicating that couples use more negative support when facing potentially more stressful diagnoses (Coyne & Smith, 1991; Johnson et al. 2013). This finding also supports the protective buffering hypothesis which states that partners may be holding back their experiences about their cancer in order to protect their partner, in effect using protective buffering support in a way that is intended to be positive (Langer, Brown, & Syrjala, 2009; Manne et al., 2014). Another explanation is that perhaps protective buffering may help couples cope when the stressor is more proximal in time (e.g., denial of the illness severity or stressors). Future research should follow couples over the course

of their illness to see if their styles of support evolve over the progression of the skin cancer disease and treatment.

The second aim of this study was to examine if relationship-focused support perceived by both partners was associated with the perceived body image of the PwSC. Like found in previous work by Hellgren et al. (2013) and Lichtenthal et al. (2005), female PwSCs reported poorer body image compared to male PwSCs. Older women in the current study may experience greater societal emphasis on the importance of physical appearance, making them more susceptible to negative impacts resulting from skin cancer treatment. Females could have felt more comfortable reporting body image concerns. Another possible explanation is that older men experience as serious of physical changes, but that they do not perceive such changes as negatively as women, so male body image was not as impacted.

Of the three styles of relationship-focused support explored in this study, active engagement support received by one's partner was associated with better body image. Not only was active engagement perceived by PwSC related to better body image for PwSCs, but active engagement support perceived by HPs was also associated with better body image. This finding illustrates the relevance of the developmental-contextual model (DCM) in guiding inquiry into how support of both partners can potentially affect outcomes for one partner. Moreover, partner's active engagement was even more important when the PwSC used lower active engagement support. This is in line with previous research that has found a relationship between higher social support received from family and friends and better body image following surgery, albeit following surgery for treatment of breast cancer (Spatuzzi et al., 2016). Expanding on previous literature establishing a relationship between skin cancer and negative impacts on body image, these findings address a gap in how partner support is associated with body image,

underscoring the importance of active engagement support for both partners and its positive effects on body image. Additionally, the importance of support perceived by both partners underscores that inquiry into coping with stressful situations should utilize a couple or dyadic approach, so as to not risk overlooking the interplay of support from both partners. Receiving protective buffering and overprotection support may have damaging impacts on other outcomes, such as depression or outlook on treatment outcomes, possible relationships that should be explored in future research, but body image appears to be immune from such damaging effects.

Limitations

This study is not without its limitations. First, the small number of couples ($N=30$) limits the generalizability of the study findings. For example, the majority of the couples in this study were White/Caucasian (PwSC $n = 28$, 94%; HP $n = 30$, 100%). As individuals with lighter skin tones tend to be at greater risk for BCC and SCC, the high number of White/Caucasian participants may be reflective of this difference. Additionally, diagnosis of skin cancer for individuals with darker complexions tends to occur at a more advanced stage, which may have made some potential participants ineligible for the current study focused on stages I-III. Third, individuals in this study were highly educated. Half of both PwSCs ($n = 17$, 57%) and HPs ($n = 15$, 50%) had 16 to 18 years of education, indicating undergraduate and master's degree level education. Twenty percent of PwSCs ($n = 6$) and 27% ($n = 8$) of HPs reported having 18 or more years of education, indicating master's or doctoral level education. This highly educated sample is due to the snowball sampling used from several sub-populations with a high number of individuals with advanced degrees. These qualities of the current study's sample are not reflective of a general population. It is possible that educational differences may affect access to

skin cancer diagnosis and treatment, resulting in different appraisals of the skin cancer stressor. Finally, this study was cross-sectional, with couples completing the study measures at one time. Therefore, inferences about causal relationships cannot be made and changes in support over time cannot be examined.

Another limitation is the low reliability found for the measure of partners' primary stressor appraisal ($\alpha = .54$). The low reliability could be due to the items being ambiguous or difficult to answer (e.g., "I can control what will happen to me.") so that participants were hesitant of their answers or answered hastily. Additionally, primary stressor appraisal is a complex, multidimensional construct, which makes it susceptible to underestimation. This limitation may not be as serious as it appears, as appraisal was a covariate in the model and not the main predictor.

Future research can address these various limitations. A larger, longitudinal study would allow for examination of causal relationships, as well as providing a more diverse study population by including more couples. As skin-cancer treatment often includes occasional monitoring by a dermatologist or other appropriately trained medical professional, couples may continue to feel anxiety about the possibility of cancer reoccurring. Also, some individuals may have future skin-cancer lesions, requiring additional treatment. Thus, couples may continue to cope with skin cancer for many months or years, and the support that they provide to one another may change over time, which could be examined at various intervals. A follow-up study would also allow for the inclusion of a new measure on stressor appraisal; for example, the Appraisal of Illness Scale (AIS; Oberst, 1991) measures appraisal concerning a broad range of illness-related stressors, including primary and secondary stressor appraisal. This measure may be appropriate for the study of couples facing skin cancer, as it has primarily been used in studies evaluating

appraisal by individuals with various types of cancer, and could provide a more reliable measure than the Cognitive Appraisal of Health Scale (CAHS) used in the current study. To address the lack of diversity in the current study, a stratified sampling approach could be used in future research to recruit couples from more diverse racial and ethnic backgrounds. Similarly, recruiting couples from more diverse educational backgrounds would address the non-representative, highly educated sample in the current study.

Implications for Psychosocial Providers

Psychosocial providers can use the findings from this study to enhance services and support given to older couples facing skin cancer. By targeting their efforts towards older women who are at great risk for skin cancer, providers can help older women reframe and shift their view of the skin cancer and physical changes that may result from the skin cancer or treatment. Providers can work with older women and their partners to explain the importance of active engagement support to help cope with the skin cancer diagnosis.

More protective buffering support was perceived when couples were facing mid-stage or melanoma diagnoses, which are believed to be more distressing. Providers can address these differences in support, targeting their efforts towards couples facing more stressful skin cancer diagnoses thus increasing efficiency, especially in instances where providers can only work with the partner with skin cancer. Perceived protective buffering and overprotection support were not found to be associated with body image of the partner with skin cancer. Thus, while psychoeducational training with older adults at risk of body image damage could focus on helping couples increase their use of active engagement support and decrease their use of protective buffering and overprotection support, findings from the current study indicate that the

optimum approach might be focusing on teaching older couples to use more active engagement support. This may be especially relevant when opportunities to work with couples are limited, such as when a couple meets with a medical family therapist as a component of consultation or treatment for skin cancer for a limited period; providers can optimize such time by focusing on active engagement support. As partners practice using more active engagement support, their use of protective buffering and overprotection support may consequently reduce, which may have beneficial effects on other outcomes.

Providers can also work with couples to explore the reasons motivating them to avoid conversations about the skin cancer diagnosis, providing opportunities for couples to discuss these thoughts and feelings. As discussed previously, avoiding conversations about skin cancer-related stress may be beneficial for couples at certain times. If on the other hand, avoidance has become no longer helpful, providers can ask partners to communicate with one another about the skin cancer to increase active conversations in a safe space. PwSCs may not always be aware that their HPs are willing to talk about the skin cancer. Couples' therapy can be key in these instances, to help partners learn about the ways one another do and do not want to be supported. Providers can provide a positive environment where such conversations can be safely and productively held.

In conclusion, perceived active engagement support from partners in older couples facing a skin cancer diagnosis was associated with better body image of partners with skin cancer. Perceived protective buffering and overprotection support were not associated with body image. Increasing use of active engagement support by older couples may help alleviate negative impacts on body image for PwSCs. Working with older couples to alter the types of support they give one another may also have even farther-reaching implications, such as reducing negative

outcomes in other areas, including depression, anxiety, or quality of life. Although more research is needed, findings from the current study indicate that partners use different styles of support and that perceived active engagement support can help protect partners' body image from skin-cancer related damage.

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Appendix A

Relationship-focused coping measure **completed by partners with skin cancer** on their perception of support given by the healthy partner.

Questions capturing perception of active engagement used by healthy partner

1. My partner tries to discuss it with me openly
2. My partner asks me how I feel.
3. When something bothers me, my partner tries to discuss the problem.
4. My partner is full of understanding towards me.
5. My partner makes me feel that I'm not alone in this.

Questions capturing perception of protective buffering used by healthy partner

1. With the best intentions, my partner makes up excuses to persuade me to follow the clinician's instructions.
2. My partner tries to hide his or her worries about me.
3. My partner tries to act as if nothing is the matter.
4. My partner gives in when I make an issue of something.
5. My partner just waves my worries aside.
6. My partner does everything to prevent me from thinking about my skin cancer diagnosis.
7. My partner can't endure me being concerned and acts as if he or she doesn't notice my worries.
8. My partner takes care that I follow the clinician's instructions.

Questions capturing perception of overprotection used by healthy partner

1. My partner takes over as much of my work as possible.
 2. My partner treats me like a baby.
 3. My partner continuously keeps an eye on me.
 4. When it comes down to it, my partner seems to think that he or she can't leave my recovery to me.
 5. When it comes down to it, my partner seems to think that when he or she is not constantly around, I will not follow the clinician's instructions.
 6. When it comes down to it, my partner seems to think that I don't know what's right for me.
-

Relationship-focused coping measure **completed by healthy partner** on their perception of support given by the partner with skin cancer.

Questions capturing perception of active engagement used by partner with skin cancer

1. My partner tries to discuss it with me openly
2. My partner asks me how I feel.
3. When something bothers me, my partner tries to discuss the problem.
4. My partner is full of understanding towards me.
5. My partner makes me feel that I'm not alone in this.

Questions capturing perception of protective buffering used by partner with skin cancer

1. My partner tries to hide his or her worries about me.
 2. My partner tries to act as if nothing is the matter.
 3. My partner gives in when I make an issue of something.
 4. My partner just waves my worries aside.
 5. My partner does everything to prevent me from thinking about his or her skin cancer diagnosis.
 6. My partner can't endure me being concerned and acts as if he or she doesn't notice my worries.
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Appendix B

Descriptive Parameters, Skewness, and Kurtosis for Study Variables

Table 7

Descriptive Parameters of Stressor Appraisal, Perceived Support, and PwSCs Body Image

	Mean	Std. Dev.	Min.	Max.	Skewness	Kurtosis
Stressor appraisal reported by PwSC						
<i>Primary stress appraisal</i>	11.94	1.89	8.47	15.07	-.10	-.86
<i>Secondary stress appraisal</i>	3.05	.42	2.20	4.00	.42	.36
Partner support perceived by PwSC						
<i>Active engagement</i>	3.95	.44	3.20	5.00	.69	-.09
<i>Protective buffering</i>	2.18	.58	1.25	3.25	.15	-.79
<i>Overprotection</i>	1.78	.67	1.00	3.33	.79	-.20
Stressor appraisal reported by HP						
<i>Primary stress appraisal</i>	11.23	2.14	7.03	14.78	.18	-.96
<i>Secondary stress appraisal</i>	3.00	.31	2.40	3.60	.19	-.50
Partner support perceived by HP						
<i>Active engagement</i>	3.82	.48	2.80	4.60	.02	-.53
<i>Protective buffering</i>	2.37	.60	1.50	4.17	1.37	2.03
PwSC body image	22.60	5.67	13.00	30.00	.43	-1.20

Note: Min. = Minimum score; Max. = Maximum score

PwSC = Partner with Skin Cancer; HP = Healthy Partner

Appendix C

Correlations among Study Variables

Table 8

Spearman's Rho Correlations among Partner/Skin Cancer Characteristics, Partner Stressor Appraisal, Received Support, and Body Image

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 PwSC sex	-														
2 PwSC age	-.34	-													
3 HP age	.06	.74**	-												
4 Type of skin cancer	.38*	-.30	-.28	-											
5 Skin cancer stage	-.25	.24	.16	-.42*	-										
6 PwSC primary stressor appraisal	.35	-.27	.02	.10	-.18	-									
7 PwSC secondary stressor appraisal	-.05	.11	.09	.31	-.33	-.39*	-								
8 Active engagement perceived by PwSC	.02	-.13	-.16	.13	-.13	.09	-.31	-							
9 Protective buffering perceived by PwSC	-.21	.27	.41*	-.48**	.46*	.06	-.37*	-.08	-						
10 Overprotection perceived by PwSC	-.28	.35	.39*	-.32	.32	-.19	-.22	.17	.73**	-					
11 HP primary stressor appraisal	.07	.02	.17	-.33	.22	.11	-.34	.30	.37*	.14	-				
12 HP secondary stressor appraisal	.14	.20	.07	.22	-.15	-.12	.22	-.22	-.11	-.01	-.45	-			
13 Active engagement perceived by HP	.49**	-.19	.01	.42*	-.26	.49**	-.00	-.01	-.22	-.22	.01	-.15	-		
14 Protective buffering perceived by HP	-.38*	.54**	.43*	-.41*	.47**	-.26	-.09	-.11	.67**	.73**	.03	.02	-.30	-	
15 PwSC body image	.34	-.10	.05	-.16	.35	.10	-.34	.24	.25	.12	.52**	.03	-.04	.02	-

* Correlation is significant at the 0.05 level (2-tailed)

**Correlation is significant at the 0.01 level (2-tailed)

Note: PwSC = Partner with Skin Cancer; HP = Healthy Partner

Appendix D

Submission Guidelines for Authors, *Journal of Psychosocial Oncology*

Journal Aim and Scope

The *Journal of Psychosocial Oncology* is an essential source for up-to-date clinical and research material geared toward health professionals who provide psychosocial services to cancer patients, their families, and their caregivers. The journal—the first interdisciplinary resource of its kind—is in its third decade of examining exploratory and hypothesis testing and presenting program evaluation research on critical areas, including: the stigma of cancer; employment and personal problems facing cancer patients; patient education; family involvement in patient care; children with cancer; the psychosocial needs of cancer patients; hospital and hospice staff; and volunteers.

The journal's editorial board represents many different fields in psychosocial oncology, including education, epidemiology, health advocacy, medical oncology, neurology, nursing, nutrition, pastoral counseling, physical therapy, psychiatry, psychology, public health, social work, sociology, and surgical oncology. Regular features of the *Journal of Psychosocial Oncology* include: discussions of current ethical, philosophical, and existential issues; columns on research issues, strategies, and methodologies; announcements of current meetings, symposia, and courses being offered; book reviews that highlight important, new book-length works; selective bibliographies of articles that appear in other journals.

Article 2: Couples Facing Skin Cancer in Old Age:

A Dyadic Investigation of Partner Support and Quality of Life

Abstract

Purpose: This study investigated the associations between received support perceived by partners, in the form of active engagement, protective buffering, and overprotection, and quality of life in older couples facing a skin cancer diagnosis in one partner.

Methods: Thirty couples ($M_{age} = 70$; $SD = 7.25$) in which one partner had a skin cancer diagnosis (melanoma or nonmelanoma at Stage I, II, or III) completed either online or paper surveys about the skin cancer diagnosis, their perception of the way their partner provides support to them, and their overall quality of life.

Analyses: Paired t-tests and ANOVA analyses assessed each partner's quality of life. Three separate actor-partner interdependence models examined the associations between perceptions of the styles of support both partners received and their quality of life, controlling for the sex of the person with skin cancer and the type and stage of skin cancer.

Results: When persons with skin cancer reported perceived overprotection support from their partners ($\beta = -.63$, $p < .001$), they were more likely to report lower quality of life. Protective buffering perceived by the healthy partner was negatively associated with their quality of life ($\beta = -.37$, $p = .05$) and the partner with skin cancer's quality of life ($\beta = -.43$, $p < .01$). Perceived active engagement support, however, was not associated with actor or partner effects on quality of life.

Conclusions: While couples facing skin cancer use all three styles of relationship-focused support, protective buffering and overprotection support had a greater effect on quality of life of both partners. Human services professionals working with couples facing skin cancer need to

help them reduce the use of protective buffering and overprotection support and mitigate some harmful quality of life and relationship consequences of skin cancer. Future research is needed to examine relationships between perceived support and quality of life which may shift or change over time as couples adjust the support they provide when certain styles are no longer useful, or as the skin cancer progresses or potentially reoccurs in the future.

Couples Facing Skin Cancer in Old Age: A Dyadic Investigation of Partner Support and Quality of Life

Even though it is important to recognize the physical bearings of skin cancer, it is equally important to understand the consequences of skin cancer on the patient's quality of life (QOL). Previous research has indicated that skin cancer has a negative impact on QOL for persons with skin cancer, for both those with nonmelanoma (Gaulin, Sebaratnam, & Fernández-Peñas, 2015; Radiotis, Roberts, Czajkowska, Khanna, & Korner, 2014) and melanoma (Beutel et al., 2015; Trask et al., 2001). For example, skin cancer treatment can contribute to fatigue (Albrecht et al., 2013), changes to sexuality (Kasparian, 2013), and poorer body image (Atkinson, Noce, Hay, Rafferty, & Brady, 2013). These negative changes can contribute to psychological distress, which in turn is associated with lower QOL (Beesley et al., 2015; Kasparian, McLoone, & Butow, 2009; Trask et al., 2001). In their study of individuals with a variety of cancer diagnoses, Brown, Kroenke, Theobald, Wu, and Tu (2010) depression and QOL were associated, and Galiano-Castillo and colleagues (2014) found a positive association between QOL and depressed mood in women one year after completion of treatment for breast cancer. Additionally, anxiety or fear over the diagnosis, treatment, or long-term prognosis are also associated with lower QOL (Al-Shakhli, Harcourt, & Kenealy, 2006; Johnson, Brodsky, & Cataldo, 2014). For example, in a study of cancer patients, including individuals with melanoma who made up 23% of the study population, anxiety and QOL were associated (Stark et al., 2002).

While past research presents a strong case for the effect of skin cancer on QOL for the partner with skin cancer (PwSC) and how poor QOL can be associated with other underlying concerns, researchers have not examined healthy partners' QOL. Distress or fears resulting from a partners' skin cancer diagnosis may affect healthy partners (HP) such that they too experience

poorer QOL. HPs may feel anger towards the skin cancer, medical professionals, or even themselves if they feel they should have noticed skin concerns earlier (Woźniak & Iżycki, 2014). Previous research on couples coping with various cancer diagnoses found that HPs report negative impacts on family relationships and less available social support to them compared to support for the partners with cancer (Northouse et al., 2000). Thus, HPs may be at risk of negative outcomes. Poorer QOL may have implications for HPs. HPs may suffer from anxiety or depression, or other negative impacts on psychological well-being (Edwards & Clarke, 2004). Additionally, if QOL of both partners is affected, the couple relationship may suffer from lower relationship satisfaction or emotional closeness, and vice-versa. Thus, additional knowledge about both partners' QOL when facing skin cancer can inform psychoeducational services or guide services from other human services professionals.

The main objective of this study was to address gaps in the literature on QOL of both PwSCs and their HPs, adding new information about the HP to highlight the systemic nature of experiencing skin cancer. The current study also examines associations between relationship-focused support that partners receive when coping with skin cancer and QOL of each, adding to a handful of previous studies that have examined relationship-focused support in the context of other cancer diagnoses. An understanding of how both partners support one another and what associations such support has with QOL of both can inform support groups or couple's therapy sessions, providing opportunities to help couples understand how they can best support one another.

Literature Review

World-wide, skin cancers account for more cases than all other types of cancer combined (Roberts, Czajkowska, Radiotis, & Körner, 2013). An estimated 3-4 million people in the U.S. are diagnosed with nonmelanoma skin cancers each year (American Society of Clinical Oncology, 2017), and 87,000 new cases of melanoma are diagnosed annually (American Cancer Society, 2017). The average age for diagnosis of melanoma in the U.S. is about 63 years (American Cancer Society, 2017). The increase in the incidence of melanoma begins around the age of 60 and continues to increase after age 60 (Cancer Research UK, 2016). This is primarily due to the well-documented link between cumulative sun exposure and skin cancers (Fartasch, Diepgen, Schmitt, & Drexler, 2012; Iannacone et al., 2012; Newton-Bishop et al., 2011).

Further, incidence rates for melanoma have recently been increasing at a rate roughly ten times higher for individuals over the age of 65 compared to those under the age of 40 (Lasithiotakis, Petrakis, & Garbe, 2010). Researchers have postulated other reasons why older adults face more risk from skin cancer than younger individuals (Yuce et al., 2014). One contributing factor to the increased skin cancer risk as individuals age is a normative weakening of the immune system, which lowers an individual's ability to fight disease, including skin cancer (Lasithiotakis et al., 2010). Also contributing to this potential increased risk is that older adults may be less observant of changes to their skin and pay less attention to early symptoms compared to younger adults. Thus, older adults may be less likely to participate in skin cancer screening programs. Skin cancer is an area of concern for many older adults, and as such is an area of opportunity for researchers, including examination of how skin cancer affects older adults and how those in couple relationships support one another.

Experiencing a skin cancer diagnosis can be stressful for both individuals with the diagnosis and others, including romantic partners, other family members, or friends. Persons with skin cancer may experience uncertainty when the diagnosis is first made (Stamataki et al., 2015) or stress about making treatment decisions (French-Rosas, Moye, & Maik, 2011). Individuals may experience heightened depression or anxiety (Kasparian et al., 2009), or worry about physical changes resulting from the skin cancer, especially concerns about actual or potential scarring due to surgical procedures (Stamataki et al., 2015). Additionally, skin cancer can cause financial or work-related stress; concerns may arise about treatments being covered by health insurance or other mechanisms for individuals to afford treatment. In more advanced stages of skin cancer, individuals may have to take time away from work for treatment or for recovery following treatment, which may contribute to additional financial stress (Morris, Cox, & Bosanquet, 2009).

As evidenced by research on other types of cancer, skin cancer can also cause stress for HPs. The stress experienced by HPs can be the result of multiple stressors that accompany the skin cancer diagnosis including becoming an advocate for the PwSC, changes in the relationship dynamics, or concerns over financial and insurance needs. For example, the uncertainty and waiting during the initial diagnosis process can be a source of stress for HPs. They may feel helpless or frightened about the future. HPs often experience as much emotional distress as, if not more than, the partner with the cancer diagnosis (Northouse et al., 2000). Couples may also experience negative impacts on communication, which can be an additional challenge for HPs (Hawes et al., 2006). Partners may avoid communication to protect one another from fears or other negative emotions (Boehmer & Clark, 2001). During treatment, HPs may experience role shifts, such as taking over additional family responsibilities (Manne & Badr, 2010). Additional

stressors for HPs may come from changes to physical intimacy during or after treatment (Lindau, Surawska, Paice, & Baron, 2011), especially if the PwSC experiences negative changes to his or her body image and self-confidence (Fingeret et al., 2014). Similarly to PwSCs, HPs may also experience concerns over the financial implications of treatment (Morgan et al., 2011).

Social support, including support from romantic partners, is beneficial in helping individuals adjust to stressful situations, including cancer diagnoses. For example, in their study of individuals with melanoma and nonmelanoma, Pereira, Ponte, Ferreira, and Machado (2017) found that less perceived social support was associated with poorer QOL. Similarly, Devine, Parker, Fouladi, and Cohen (2003) also found lower social support to be associated with greater intrusive thoughts and poorer QOL in individuals with metastatic melanoma. Findings from studies with non-skin cancer diagnoses have also highlighted the importance of support. For example, women with breast cancer who were socially isolated from both family and friends before their diagnosis were at an elevated risk of mortality compared to women who had strong social support (Kroenke, Kubzansky, Schernhammer, Holmes, & Kawachi, 2006). As these studies show, receiving social support has important impacts on individuals with skin cancer, but not all support is helpful.

As couples work together to cope with skin cancer, certain support that partners use may be more effective than others. For example, active support, which encompasses efforts aimed at facing the problem directly and working to come up with possible solutions to reduce any stress, has been found to contribute to better outcomes compared to passive support, or strategies used to escape the stressor without confronting it, including lower depression and better QOL (Kershaw, Northouse, Kritpracha, Schafenacker, & Mood, 2007; Kim, Han, Shaw, McTavish, & Gustafson, 2010). Passive support is linked to higher level of stress in women at risk of

developing breast cancer (Pieterse et al., 2007). Emotional support from family and friends, characterized by reassurance, comfort, and assistance with problem-solving, is associated with viewing a cancer experience through a positive lens following the completion of treatment (Schroevers, Helgeson, Sanderman, & Ranchor, 2010). As these findings suggest, actively engaging with stressors stemming from a skin cancer diagnosis should be more effective than avoiding or denying stressors.

Although there are numerous ways that researchers have conceptualized and operationalized support, the current study uses Buunk, Berkhuysen, Sanderman, Nieuwland, and Ranchor's (1996) view of relationship-focused support. From this lens, the three styles of support that partners provide are *active engagement*, *protective buffering*, and *overprotection* (Kuijer et al., 2000). *Active engagement* support involves discussing thoughts and feelings and using joint problem solving to cope with a stressor (Hagedoorn et al., 2011; Schokker et al., 2010). *Protective buffering* support include partners hiding or suppressing worries or fears about a stressor, or actively avoiding discussions about the stressor. Last, *overprotection* encompasses an underestimation of the person with the chronic illness's abilities, which results in help that is unnecessary and damaging, excessive praise for accomplishments, and attempts to restrict activities of the partner (Kuijer et al., 2000).

While research focused specifically on the use of relationship-focused support in couples facing skin cancer is scarce in the literature, researchers have studied the use of relationship-focused styles of support by couples coping with a variety of other cancer diagnoses, including breast, colon, and colorectal cancers. A review of these studies illustrates an examination of a variety of physical and psychosocial outcomes, such as relationship improvement when partners use more active engagement support behaviors, and a positive association between

overprotection and partner distress (Hagedoorn et al., 2011; Kuijer et al., 2000). However, not all findings about potential benefits of relationship-focused support are clear-cut; for example, use of active engagement support by a partner may be associated with increased psychological distress in partners with cancer (Kuijer et al., 2000) or higher levels of stress (Coyne & Smith, 1991). Relationship-focused support may have a positive impact for couples coping with some types of cancer but that other couples may not reap benefits as expected; either way, findings from studies with couples coping with various types of cancers may not hold in the study of older couples coping with skin cancer. The current study helps fill this gap in the literature by focusing on older couples facing skin cancer. If previous findings hold true in the examination of relationship-focused support use when facing skin cancer, active engagement support—a style that involves facing the stressor directly and working together to solve problems -- should be more beneficial than protective buffering and overprotection, which include avoidance and denial.

The outcome examined in the current study is QOL of both PwSCs and HPs. Some researchers have studied QOL in the face of skin cancer (Beesley et al., 2015; Gaulin et al., 2015), finding on the one hand that QOL of the person with skin cancer may be negatively impacted. For example, in a study of 178 individuals with stage 0-III melanoma, individuals who reported high levels of distress over the melanoma were likely to experience poor QOL (Trask et al., 2001). Similarly, in a study of 386 individuals who had recently been diagnosed with melanoma, participants reported lower QOL compared to the general population (Beesley et al., 2015). Other studies have found that QOL of the individual with the skin cancer may not be negatively impacted. For example, Schlesinger-Raab and colleagues (2010) found that two years post-treatment for malignant melanoma, participant QOL scores were similar to scores from the

general population. About half of the study participants reported that their attitudes towards life had changed for the better since the melanoma diagnosis. One explanation for why the findings may be that QOL had returned to normal levels in the two years between treatment ending and the study beginning. Beutel and colleagues (2015) also did not find poorer QOL in their study of 683 individuals with melanoma, but it had been an average of 8.41 years since participants had been diagnosed, so they too may have recovered from any negative QOL impacts from the melanoma.

The current study addresses some of the limitations of past research on QOL and skin cancer. Rather than focusing only on the QOL of the person with skin cancer, which neglects half of a two-person equation, this study examines QOL of both partners. As cancer affects many people in the surrounding network, especially romantic partners, it is important for researchers to examine the QOL of both members of a couple, emphasizing how partners may impact outcomes for one another. There may be implications for both HPs and couples if QOL of the healthy partner is also impacted by the skin cancer. For example, poor QOL of HPs may be associated with other negative outcomes such as higher HP anxiety. Additionally, poorer QOL may be linked to lower relationship satisfaction, which could be harmful to both PwSCs and HPs. In turn, HPs may use more protective buffering and overprotection and less active engagement support when they have lower relationship satisfaction (Pankrath et al., 2018). The current study addresses the gap in understanding about healthy partners' QOL, setting a foundation for future work that could examine personal and couple implications.

Theoretical Framework

This study was guided by the developmental-contextual model (DCM; Berg & Upchurch, 2007) and the systemic transactional model (STM; Bodenmann, 1997). According to the DCM, support within couples is a process that is bidirectional in nature. When facing a potentially stressful event, dyadic support is the first line of coping that couples will utilize. Therefore, informed by the DCM, the current study used the couple as the unit to examine perceived support between partners. According to the STM, stress and support of one partner impacts the other, and vice versa, emphasizing the support of both partners regardless of who is primarily affected by the skin cancer. From this perspective, QOL is dependent on one another and the support each provides, as seen in the examination of actor and partners effects, or how perceived support was associated with both the receiver's quality of life and the other partner's quality of life. These two guiding models focus on the importance of the systemic nature of relationships by emphasizing how outcomes affect couples at the dyadic level.

Purpose

The primary aim of this study was to examine the role of dyadic support on QOL in partners coping with skin cancer in one of the partners. It was hypothesized that support received by each partner would affect their QOL (actor effects) as well as their partner's QOL (partner effects), controlling for the type of diagnosed skin cancer, stage of the skin cancer, and sex of the partner with the diagnosis. The specific research question and hypotheses, about each of the three types of relationship-focused support, were:

Research Question: Is receipt of certain types of relationship-focused support associated with higher quality of life among older couples coping with skin cancer?

Hypothesis 1a: Greater active engagement received by partners will be associated with higher quality of life for themselves (actor effect) and their partners (partner effect).

Hypothesis 1b: Greater protective buffering received by partners will be associated with poorer quality of life for themselves (actor effect) and their partners (partner effect).

Hypothesis 1c: Greater overprotection received by a partner with skin cancer will be associated with poorer quality of life for themselves (actor effect) and their healthy partner (partner effect).

Methods

Participants

Thirty couples in which one partner had received a skin cancer diagnosis in the previous two years participated in this study. Couples were recruited between July and December 2017. Inclusion criteria were: (a) diagnosis of skin cancer (melanoma, basal cell carcinoma, squamous cell carcinoma, or other) in stages 0 to III; (b) age 60 or older; (c) ability to read and write in English; (d) married or in a committed romantic relationship for a minimum of 5 years, and living together with the partner; and (e) both partners willing to participate in the study. The exclusion criteria were: (a) either partner was currently receiving treatment for any other form of cancer that was not skin cancer; (b) skin cancer in stage IV; (c) couples where the skin cancer diagnosis had occurred more than 2 years prior; (d) couples who had been partnered fewer than 5 years; and (e) another chronic health condition besides the skin cancer in either partner, that was not successfully controlled by medication or another form of treatment. Twenty-two couples

completed surveys on paper, while eight couples completed the surveys online via *Qualtrics*. Using various sampling strategies (snowball and convenience sampling), participants were first recruited from Temple, Texas, and next from other states in the U.S. In the current study, 13 couples were Texas residents, seven couples were NM residents, two couples each were CO, FL, and SC residents, and one couple each were AZ, UT, LA, and GA residents.

Procedures

Approval for this study was obtained from the Virginia Tech Institutional Review Board. Survey questionnaires were available either as pen-and-paper surveys or online via *Qualtrics*. After giving informed consent, both partners in each couple were instructed to complete survey measures independently from one another on appraisal of the skin cancer diagnosis, received styles of relationship-focused support, and QOL. Following completion of the survey, participants could choose to be entered into a random drawing for one of four \$25 Amazon gift cards. Couples who completed the survey questionnaires as pen-and-paper surveys mailed the surveys back to the primary researcher, in separate envelopes to help provide confidentiality to both partners. Twenty-two couples completed pen-and-paper surveys and eight couples complete the online survey. There were no differences in demographics, received relationship-focused support, and QOL between couples who completed the pen-and-paper surveys and those who completed the online surveys.

Measures

All participants answered demographic questions including age, sex, race and ethnicity, length of current partnership, and presence of common health conditions. Additionally, PwSCs answered questions that were used as control variables in the study analyses. Specifically, the control variables were PwSC sex (0 = male; 1 = female), the type of skin cancer diagnosis

(melanoma = 0; nonmelanoma (BCC and SCC) = 1), and skin cancer stage (early stage (Stage I) = 0; mid-stage (Stage II-III) = 1).

Perception of Relationship-Focused Support Received from Partner. The current study utilized a questionnaire developed by Buunk and colleagues (1996) to measure three styles of relationship-focused support: *active engagement* (e.g. “When something bothers me, my partner tries to discuss the problem.”), *protective buffering* (e.g., “My partner tries to act as if nothing is the matter.”), and *overprotection* (e.g. “My partner continuously keeps an eye on me.”). The version for the PwSC diagnosis included 19 items asking to what extent they perceived their HP had adopted the three styles of providing support to them. Perceived *active engagement* support was measured via five items, rated on 5-point Likert-type scales ($\alpha = .70$). *Protective buffering* support was captured by eight items ($\alpha = .74$). The *overprotection* subscale, which was completed only by the partners with skin cancer, included six items ($\alpha = .83$). PwSCs rated each of the 19 items on a 5-point Likert-type scale, with responses ranged from 1 (Never) to 5 (Very often). Items on the active engagement, protective buffering, and overprotection subscales were averaged to create three subscale scores. Higher subscale scores indicate higher perceived receipt of the particular relationship-focused support from their partner.

HPs completed an 11-item version of this scale to rate the extent to which they perceived their PwSC provided support as *active engagement* (5 items; $\alpha = .69$) and *protective buffering* (6 items; $\alpha = .79$). Each of the 11 items was rated on 5-point Likert-type scales. Responses ranged from 1 (Never) to 5 (Very often). To capture the perception of each style of support received by the PwSC, items on the active engagement and protective buffering subscales were averaged to create two scores. Higher average scores indicated higher perceived receipt of the particular

style of support. The questionnaire completed by HPs was shorter in length because overprotection is not included as a style of support used by the PwSC.

Quality of Life. Both partners completed the World Health Organization Quality of Life-Brief (WHOQOL-BREF) measure, which is a 26-item scale-revised from the original 100-item World Health Organization Quality of Life measure (WHOQOL Group, 1998). The WHOQOL-BREF evaluates the four domains of physical health, psychological health, social relationships, and environment. Elements within the *physical health domain*, which is measured via seven items, include activities of daily living, energy and fatigue, pain and discomfort, and sleep and rest. The 6-item *psychological domain* includes items about negative and positive feelings, self-esteem, and spirituality and religion. The third domain, *social relationships*, focus on personal relationships, social support, and sexual activity, and is measured through three items. Finally, the 8-item *environment domain* includes items about financial resources, home environment, leisure activities, and the physical environment. Participants were instructed to think about their lives over the past two weeks and respond to questions based on their thoughts and feelings during this time span, with responses ranging from 1 to 5. Response ratings varied based on wording for individual items. For example: responses for “How much do you enjoy life?” ranged from 1 (Not at all) to 5 (An extreme amount); responses for “To what extent do you have the opportunity for leisure activities?” ranged from 1 (Not at all) to 5 (Completely); responses for “How satisfied are you with the support you get from your friends?” ranged from 1 (Very dissatisfied) to 5 (Very satisfied); and “How often do you have negative feelings such as blue mood, despair, anxiety, depression?” ranged from 1 (Never) to 5 (Always). Participants also responded to two additional items: “How would you rate your quality of life?” with

responses from 1 (Very poor) to 5 (Very good), and “How satisfied are you with your health?” rated with responses 1 (Very dissatisfied) to 5 (Very satisfied).

Individual items from each domain were averaged to calculate the domain score. Next, domain scores were multiplied by four, so they were comparable to scores used in the original 100-item measure, per scoring guidelines for the WHOQOL-BREF (WHOQOL Group, 1998). The four domains were scored such that higher domain scores indicated higher QOL on the specific domain. A summed total QOL score was created using the four separate domain scores, one item on overall QOL (e.g., “How would you rate your quality of life?”), and one item on general health (e.g., “How satisfied are you with your health?”). Potential overall QOL scores could range from 6 to 30, with higher scores capturing higher QOL. Overall QOL demonstrated good reliability (PwSC QOL $\alpha = .86$; HP QOL $\alpha = .84$).

Analytical Plan

Statistical analyses were preformed using SPSS version 24 (SPSS Inc., Chicago, IL, USA) and MPlus version 8 (Muthén & Muthén, Los Angeles, CA, USA). Multivariate actor-partner interdependence models (APIM) examined associations between partners’ perceptions of received support and their own QOL (actor effects) and associations of perceived support with their partners’ QOL (partner effects), accounting for the nonindependence of the couple data. Three APIM were run separately to assess the association between each type of support (i.e., active engagement, protective buffering, overprotection) and QOL while controlling for PwSC sex, type of skin cancer, and skin cancer stage. An a priori p -value of $<.05$ was considered statistically significant. Fit indices (χ^2 , Root Mean Square Error of Approximation (RMSEA), Confirmatory Fit Index (CFI), and Standardized Root Mean Square Residual (SRMR)) are reported for the results of the three models. Cut-off values to assess fit are as follows for each

indices: $\chi^2 p > .05$ indicates good fit; RMSEA $< .08$ indicates acceptable fit; CFI $\geq .9$ indicates good fit; SRMR $< .08$ indicates acceptable fit (Kenny, 2015).

Results

Descriptive Analyses

Descriptive characteristics of the study sample are presented in Table 1. The mean age for PwSCs was 69.97 years ($SD = 7.79$) with a range of 60 to 88 years. The mean age for HPs was 70.10 years ($SD = 6.80$), with a range of 60 to 87 years. Partners had been together for an average of 38 years (range 10-60 years). All HPs reported their race as White/Caucasian ($n = 30$), mostly not Hispanic or Latino, whereas 28 PwSCs reported their race as White/Caucasian, again mostly not Hispanic or Latino, one indicated race as American Indian or Alaska Native, and one as Asian. The majority of PwSCs were women ($n=20$, 67%) in comparison to men ($n=10$, 33%). Fourteen PwSCs (47%) reported a melanoma diagnosis, 11 reported a basal cell carcinoma (BCC) diagnosis (37%), and 5 reported a squamous cell carcinoma (SCC) diagnosis (16%). More PwSCs had Stage I cancers ($n=13$, 43%) and Stage II cancers ($n=12$, 40%) than Stage III cancers ($n=5$, 17%). PwSCs reported an average of 10.90 months since receiving the skin cancer diagnosis ($R = 2$ -20 months, $SD = 5.10$).

Next, a paired t-test was used to assess potential differences between PwSC and HP reports of overall QOL. A significant difference was found between QOL of PwSC ($M = 97.06$, $SD = 11.44$) and HP QOL ($M = 101.76$, $SD = 10.96$; $t(29) = -2.28$, $p = .03$).

Table 9

Demographic Characteristics of PwSCs and HPs

Variable	Partner with skin cancer (<i>n</i> = 30)		Healthy partner (<i>n</i> = 30)	
	Frequency	Percentage	Frequency	Percentage
Sex				
Male	10	33	20	67
Female	20	67	10	33
Race				
White/Caucasian	28	94	30	100
American Indian or Alaska Native	1	3		
Asian	1	3		
Ethnicity				
Hispanic or Latino	6	20	7	23
Not Hispanic or Latino	24	80	23	77
Years of education completed				
11 to 15 years	7	23	7	23
16 to 18 years	14	57	15	50
18 or more years	6	20	8	27
Type of skin cancer				
Melanoma	14	47		
Basal cell carcinoma (BCC)	11	37		
Squamous cell carcinoma (SCC)	5	16		
Skin cancer stage				
Stage I	13	44		
Stage II	12	40		
Stage III	5	16		
	Mean	SD	Mean	SD
Age	69.97	7.79	70.10	6.80
Length of current relationship	37.79	13.67	38.20	13.57
Partner support perceived by PwSC				
Active engagement	3.95	.44		
Protective buffering	2.18	.58		
Overprotection	1.78	.67		
Partner support perceived by HP				
Active engagement			3.82	.48
Protective buffering			2.37	.60
Quality of life	97.06	11.44	101.76	10.96

Note: PwSC = Partner with Skin Cancer; HP = Healthy Partner

Relationship-Focused Support and Quality of Life

Active Engagement Support and Quality of Life (Hypothesis 1a). The APIM representing the relationships between active engagement support and QOL of both partners did not demonstrate significant actor or partner effects (Figure 1; $\chi^2_{(7, N=30)} = 7.95, p = .33$; RMSEA = .07; CFI = .92; SRMR = .08). Specifically, support in the form of active engagement perceived by PwSC was associated neither with their own QOL (actor effect; $\beta = .26, p = .12$) nor their partner's QOL (partner effects; $\beta = .18, p = .33$). Similarly, active engagement support perceived by the HP was not associated with their own QOL (actor effect; $\beta = .11, p = .53$), nor the PwSC QOL (partner effect; $\beta = .00, p = .99$). HPs reported lower active engagement from female PwSCs ($\beta = -.09, p = .05$).

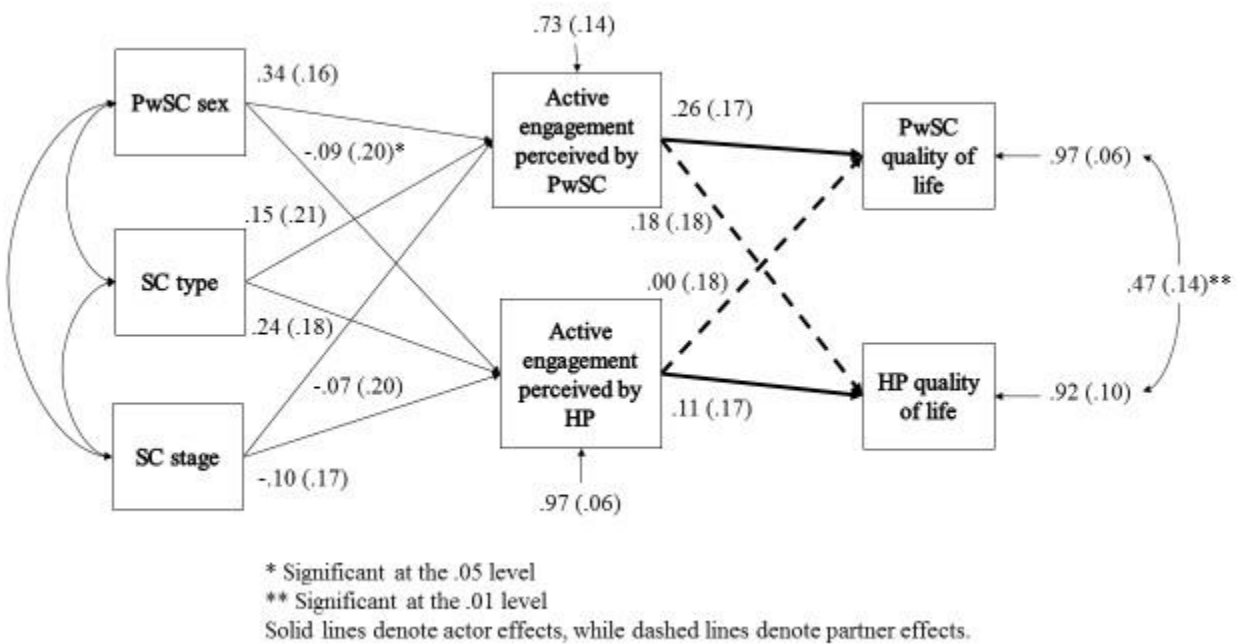


Figure 4: APIM of the associations between active engagement and QOL.
Note: PwSC = Partner with Skin Cancer; HP = Healthy Partner

Protective Buffering Support and Quality of Life (Hypothesis 1b). The APIM representing the relationships between protective buffering support perceived by both partners and QOL of PwSCs and HPs demonstrated significant actor and partner effects (Figure 2). Specifically, protective buffering support perceived by PwSC was not associated with their own QOL (actor effect; $\beta = -.30, p = .09$) nor with their partner's QOL (partner effect; $\beta = -.05, p = .79$). In contrast, protective buffering perceived by HP was associated with their own QOL (actor effect; $\beta = -.37, p = .05$) and associated with their partner's QOL (partner effect; $\beta = -.43, p = .01$). With regard to the control variables, HPs reported perceiving greater protective buffering when their PwSC was female, and when the skin cancer was in mid-stage. PwSC also reported perceiving more protective buffering from their HP when they had melanoma skin cancer. The fit of this model was less optimal than the fit for active engagement, but adequate ($\chi^2_{(7, N=30)} = 10.83, p = .15$; RMSEA = .14; CFI = .92; SRMR = .09).

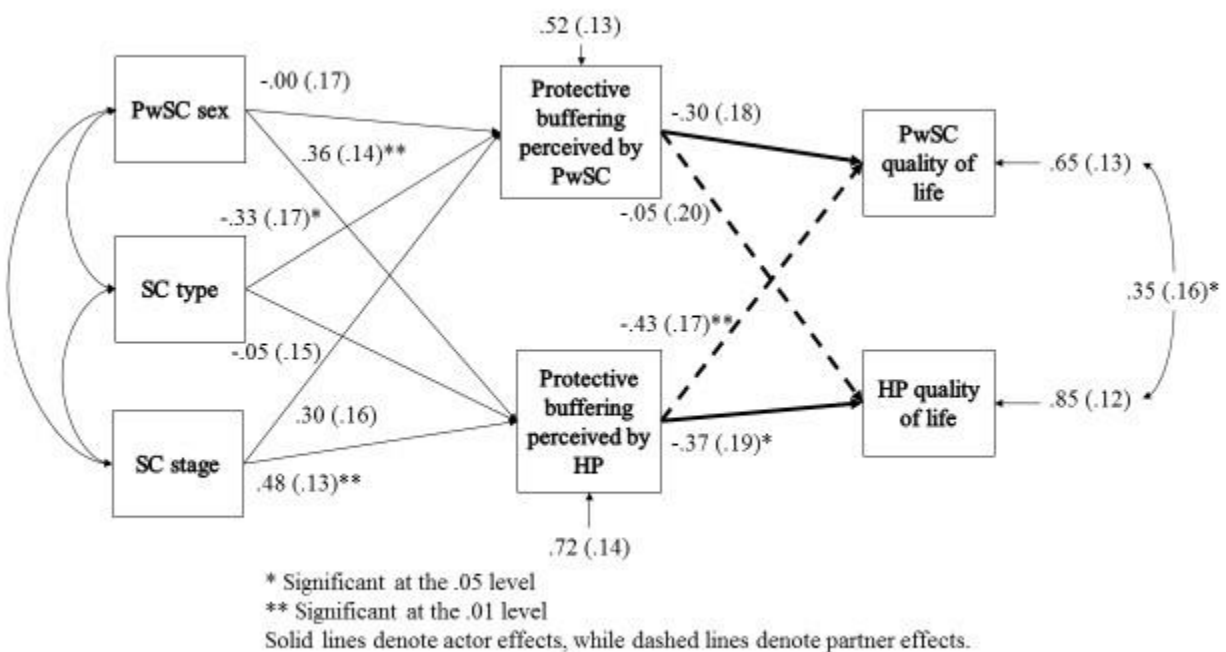


Figure 5: APIM of the associations between protective buffering and QOL.
Note: PwSC = Partner with Skin Cancer; HP = Healthy Partner

Overprotection Support and Quality of Life (Hypothesis 1c). The APIM representing the relationships between overprotection perceived by the PwSC and QOL of both partners demonstrated a significant actor effect, but no significant partner effect (Figure 3). Specifically, overprotection perceived by the PwSC was significantly associated with their own QOL (actor effect; $\beta = -.63, p < .001$). However, overprotection was not associated with HP's QOL (partner effect; $\beta = -.25, p = .14$). This model exhibited good fit ($\chi^2_{(6, N=30)} = 3.04, p = .08$; RMSEA = .00; CFI = 1.00; SRMR = .05).

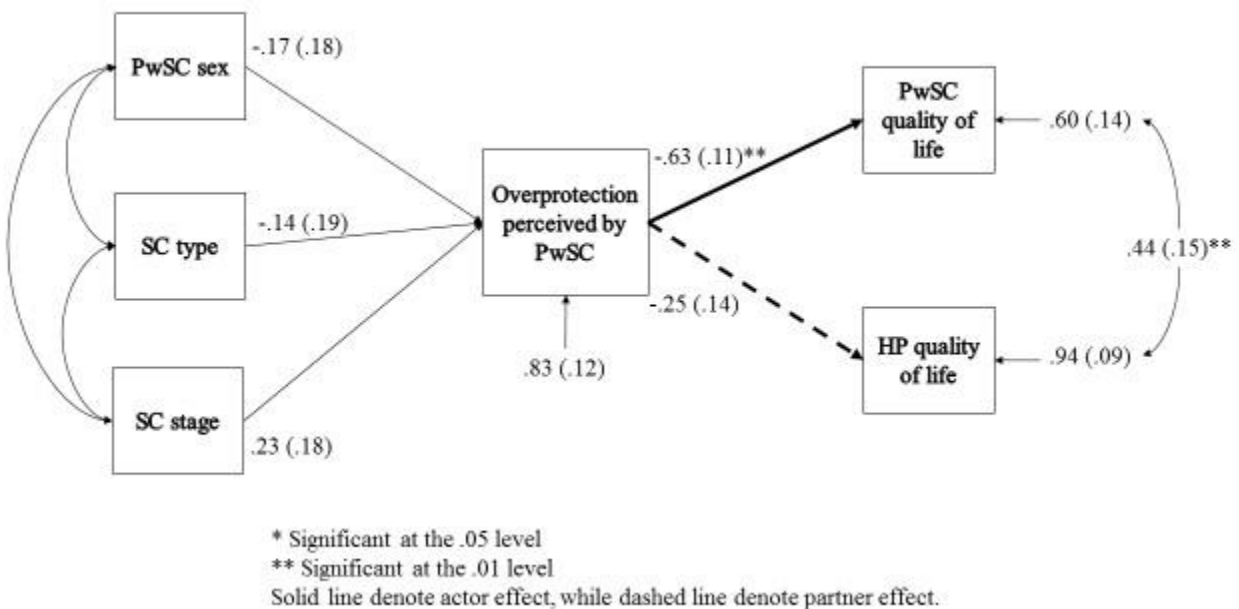


Figure 6: APIM of the association between overprotection and QOL.
Note: PwSC = Partner with Skin Cancer; HP = Healthy Partner

Discussion

Previous research examined the QOL of the person with skin cancer only, ignoring the systemic nature of couples and impact that skin cancer has on both partners. The current study begins to fill this gap in the literature by examining both partners' use of relationship-focused support in couples when one partner in the dyad has a skin cancer diagnosis, along with associations between perceived partner support and QOL of both partners. Overall this study found that protective buffering support provided by PwSCs was associated with lower QOL of both partners. HPs overprotection also was associated with lower QOL for PwSCs. However, contrary to previous research (Banovcinova, & Baskova, 2016; Leung, Pachana, & McLaughlin, 2014), in this study, active engagement support provided by either partner was not associated with QOL.

Protective buffering, provided by PwSCs, was associated with poorer QOL of both themselves and their HP. This finding supports previous research that revealed negative associations between protective buffering and other couple outcomes, including relationship satisfaction (Schokker et al., 2010). When PwSCs hide cancer-related thoughts and concerns, in the form of protective buffering, it may affect how they cope with their illness. HPs may provide less support because they are unaware of the stress or worries that the PwSC is hiding, which could contribute to use of more negative coping (Manne, Alfieri, Taylor, & Dougherty, 1999) or to hurt feelings within the relationship. PwSCs may also hide information about the skin cancer, such as treatment concerns or prognosis details received from doctors (Porter, Keefe, Hurwitz, & Faber, 2005) if they feel their HP is not providing support or is not concerned about the skin cancer. Additionally, if HPs appear to be disengaged with the skin cancer-related stress because they are unaware of the PwSC's support needs, PwSC may use more individual coping (Burri,

Blank Gebre, & Bodenmann, 2017) or they may experience feelings of resentment or loneliness. Similarly, hiding thoughts and concerns may also affect how the HP copes with the skin cancer. HPs may ruminate over their concerns but not find relief from sharing these with their partners (Badr & Taylor, 2006). Hiding concerns could also lead to animosity within the couple relationship (Langer, Brown, & Syrjala, 2009) and passive-aggressive behaviors from one partner to the other (Mao, Bardwell, Dimsdale, & Major, 2003).

Protective buffering support perceived by HPs was associated with QOL of both partners. It appears that when the PwSC does not want to talk about the skin cancer, QOL of both partners is affected. When the HP knows that their PwSC is avoiding discussions about cancer, they both may experience emotional distance. Similarly, HPs may want to have more conversations about the diagnosis but feel hesitant to engage with the PwSC (Venetis, Magsamen-Conrad, Checton, & Greene, 2014). There may also be instances where HPs express their worries, but the PwSC has trouble handling those concerns, so they act as if they do not notice (Badr & Taylor, 2006). As a result, HPs may be even more hesitant to talk about cancer in the future. PwSCs may perceive distance or apprehension in the HP, potentially without being aware that avoidance of the skin cancer is the driving force behind the discord. In these instances, QOL of both partners may be negatively affected.

It is also possible that avoidance of the topic of skin cancer may be a beneficial coping mechanism for some. Perhaps use of protective buffering support can offer some stress relief to the HP; not talking about skin-cancer related stressors may allow the partners to focus on positive thinking (Badr & Taylor, 2006), which may help ease some of the challenges associated with having a partner undergoing skin cancer treatment and recovery. Also, efforts made to prevent the HP from thinking about the diagnosis may be helpful in keeping him or her from

becoming overwhelmed or may reduce anxiety or depressive thoughts and feelings. In these instances, use of protective buffering support may be a constructive coping strategy for the HP, and therefore not associated with poorer QOL.

Additionally, it could be that the relationships between protective buffering used by HPs and QOL may only be revealed over time. Partners may find that support associated with protective buffering such as avoiding conversations about fears for the future may be beneficial soon after the skin cancer diagnosis when the treatment and outcomes are still uncertain, and some concerns may be unwarranted. For example, talking about fears over a skin cancer diagnosis spreading or being fatal may be more harmful than good when the skin cancer is diagnosed in an early stage and treated easily. However, as the treatment progresses or the prognosis changes, hiding worries may become harmful if it leads to avoidance of necessary conversations. In this case, HP protective buffering support may be associated with poorer QOL only when it is no longer a productive coping strategy. Additionally, the styles of support that HPs use may change across the diagnosis, treatment, recovery, and subsequent monitoring process, leading to more use of protective buffering (Langer et al., 2009). HPs may hide their fears about their partner's skin cancer reoccurring, which can have a negative relationship with QOL as these worries could be present for many years, causing greater stress and anxiety.

Overprotection support perceived by PwSCs was associated with lower of QOL for PwSCs. This finding is in agreement with past research that has found overprotection to be harmful to partners' well-being (Kuijer et al., 2000). Perceiving support such as unnecessary praise or being constantly monitored are likely to impact the PwSC's self-confidence and sense of autonomy (Buunk et al., 1996) or to undermine his or her sense of control (Coyne & Smith, 1994), which may then in turn negatively impact his or her QOL. Similarly, when HPs

unnecessarily take over work from PwSCs, they may lose previously held roles or responsibilities within the family, which can cause an upset in the family homeostasis. The heightened level of monitoring and control exhibited by overprotective support (i.e., constant monitoring to ensure the PwSC follows clinician's instructions) has the potential to change the dynamics of the partner relationship to one of unequal power, such that the PwSC feels a sense of loss over what the partnership used to be.

Findings of actor and partner effects of perceived protective buffering and overprotection support on QOL of both partners informs the systemic transactional model's (STM) perspective that support in one partner impacts the other. This is a novel finding in skin cancer literature, and contributes additional confirmation that the STM is an appropriate theoretical lens to guide an examination of support in older couples facing various stressful events. This study contributes deeper understanding than an examination of either partner in isolation would provide, showing how using a dyadic focus can move literature on skin cancer in older adults forward.

Contrary to previous studies, (Hagedoorn et al., 2011; Schokker et al., 2010), the current study found that active engagement support perceived by PwSCs and HPs was not associated with QOL of either partner. One reason for this result is that active engagement may have a greater impact for couples facing late-stage skin cancer. As couples face more advanced skin cancer, which requires more invasive treatment and has poorer prognoses, the impacts on partners of receiving active engagement support may be more pronounced. For example, partners facing skin cancer at any stage value open discussions about the diagnosis, but couples facing stage IV skin cancer that has spread to other distant areas of the body may benefit more from partners feeling that they are not alone compared to partners in couples facing stage 0 skin

cancer. Partners may use and benefit from active engagement support differently when coping with more advanced skin cancer. As no couples in this study were facing late-stage skin cancer, future studies could evaluate these associations by focusing on stage IV.

Overall, in line with the STM, findings from this study emphasize that support provided by both PwSCs and HPs appear to be important for couples, confirming that skin cancer is a couple's stressor. Health care providers and mental health professionals can use these findings to inform work with couples facing skin cancer. Providers can help increase couples' awareness of the associations between the support they provide and their QOL, while also engaging in discussions about how partners can improve the support they give. Psychoeducational services could focus on helping partners learn about the benefits of using different types of support when their needs are different. While partners could work on increasing active engagement support, they could also learn to identify when protective buffering support might be beneficial. Additionally, as protective buffering intrinsically involves avoiding discussions about the skin cancer, partners could work on openly discussing their support needs to help one another provide tailored support, including discussions when support needs change or when previously used support becomes harmful. Providers could also help HPs learn to identify instances when they use overprotection support so that they can work on reducing overprotection, which appears to be damaging for partners with skin cancer. These findings also have implications for couples facing a variety of other diagnoses or stressful life events; understanding the impact that protective buffering and overprotection support have on QOL can inform work with couples facing other stressors, who may experience similar challenges.

Limitations

The findings of this study must be considered in light of their limitations. First, the relatively small sample size limits the complexity of potential analyses, as well as the generalizability of the findings. Small effects among the variables in the current study may not be detected due to the sample size. Thus, although the study findings should be interpreted with caution, they provide an important first step in examining a complex life experience that many older couples may face. Second, as a cross-sectional study, no causal associations among the study variables could be examined. By establishing that some types of support are associated with partners' QOL, the current study creates a foundation for future longitudinal work to examine whether and how the effects of support change over time. There is also room for deeper understanding of the relationships between characteristics of the skin cancer diagnosis, support perceived by each partner, and QOL. Other variables not included in this study would help further explain how skin cancer impacts QOL such as relationship satisfaction prior to the skin cancer diagnosis (Manne et al., 2007). Finally, relationship-focused support does not capture all the support that couples receive. For example, partners may have also been receiving support from adult children, friends, or other family members which likely is associated with their QOL but not examined in the current study. Despite these limitations, the current study demonstrates that relationship-focused support partners perceive is associated with their own QOL and their partner's QOL.

In conclusion, older couples use a variety of styles of support when facing a skin cancer diagnosis of one partner. Partner's support does appear to have some associations with QOL of both partners, but not uniformly. Active engagement support does not appear to be associated with QOL. Protective buffering and overprotection support, on the other hand, may contribute to

low QOL for partners in some instances. As longevity continues to increase, older couples will face chronic health conditions together. How partners support one another and how they cope with an illness has implications for partners' relationship satisfaction, emotional well-being, QOL, and overall health. Overall, the current study demonstrates the importance of paying attention to how partners face skin cancer together.

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APPENDIX A

Table 10

Correlations among Partner/Skin Cancer Characteristics, Perceived Support, and Partner Quality of Life

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1 PwSC sex	-											
2 PwSC age	-.34	-										
3 HP age	.06	.78**	-									
4 Type of skin cancer	.38*	-.27	-.26	-								
5 Skin cancer stage	-.28	.25	.16	-.42*	-							
6 Active engagement perceived by PwSC	-.01	-.13	-.15	.13	-.10	-						
7 Protective buffering perceived by PwSC	-.21	.27	-.36*	-.48**	.44*	-.10	-					
8 Overprotection perceived by PwSC	-.29	.42*	.39*	-.32	.33	.14	.69**	-				
9 Active engagement perceived by HP	.45*	-.12	.07	.42*	-.28	-.11	-.19	.18	-			
10 Protective buffering perceived by HP	.50**	.45*	.31	-.41*	.59**	-.09	.55**	.68*	-.28	-		
11 PwSC quality of life	.12	-.64**	-.65**	.31	-.22	.18	-.58**	-.63**	-.02	-.52**	-	
12 HP quality of life	-.11	-.22	-.39*	.16	-.05	.25	-.40*	-.26	.08	-.26	.49**	-

* Correlation is significant at the 0.05 level (2-tailed)

**Correlation is significant at the 0.01 level (2-tailed)

Note: PwSC = Partner with Skin Cancer; HP = Healthy Partner

APPENDIX BSubmission Guidelines for Authors, *Journal of Aging Studies***Journal Aim and Scope**

The *Journal of Aging Studies* features scholarly papers offering new interpretations that challenge existing theory and empirical work. Articles need not deal with the field of aging as a whole, but with any defensibly relevant topic pertinent to the aging experience and related to the broad concerns and subject matter of the social and behavioral sciences and the humanities. The journal emphasizes innovations and critique - new directions in general - regardless of theoretical or methodological orientation or academic discipline. Critical, empirical, or theoretical contributions are welcome.

Chapter V

Discussion

Skin cancer is a chronic illness on the rise in adults of all ages, but an estimated 40% of melanoma cases in the United States are seen in individuals age 65 years or older (Garcovich et al., 2017). Additionally, melanoma mortality in older adults accounts for roughly 60% of the total mortality from melanoma each year (Lasithiotakis et al., 2010). Older adults are also at greater risk from nonmelanoma skin cancer, mainly basal cell carcinoma, and squamous cell carcinoma. More cases of basal cell carcinoma are found in adults over the age of 65, compared to younger adults (Asgari et al., 2015). Similarly, roughly 80% of squamous cell carcinoma diagnoses occur in older adults (Madan et al., 2010). As these prevalence rates illustrate, skin cancer is an especially important concern for older adults.

Previous research has found support for skin cancer having damaging effects on body image through concerns over scarring (Bath- Hextall et al., 2013), perceived appearance, and confidence (Stamataki et al., 2015). While it appears clear that skin cancer can negatively impact body image, previous studies have rarely included older adults in their investigation. Research has also found that both nonmelanoma (Gaulin et al., 2015; Radiotis et al., 2014) and melanoma (Beutel et al., 2015; Trask et al., 2001) skin cancers can have an impact on quality of life (QOL) of patients and affect family relationships. Yet, a systemic account of how older couples cope with skin cancer has received little attention in the literature. This dissertation study begins to fill the gap in the literature by integrating individual (i.e., stress process model and transactional stress appraisal and coping model) and dyadic (i.e., development-contextual model and systemic transactional model) theories of coping to examine relationship-focused support perceived by older couples facing a skin cancer diagnosis, and how perceived support is

associated with two outcomes: at the individual-level the body image of the partner with skin cancer (PwSC); and at the couple-level, the QOL of both partners. Overall, the findings of this study emphasize the importance of partner's active engagement support for better body image. On the other hand, perceived protective buffering and overprotection support was associated with poorer QOL of both partners. Nuances of these findings are discussed in the following sections.

Couple's Appraisal of Skin Cancer

Each partners' appraisal of the skin cancer as a potentially stressful event were assessed in this study. Contrary to my expectation that melanoma skin cancer, which is believed to be a more serious diagnosis, would be more stressful – partners with skin cancer who had been diagnosed with melanoma did not appraise their stressors to be any more stressful than partners who had been diagnosed with nonmelanoma skin cancer. This finding may be partially explained by the characteristics of the skin cancer diagnoses, such as stage, which capture some of the contextual factors related to the skin cancer. As most partners in this study had cancers in stages I or II, it could be that melanomas were caught early enough that partners felt less stress about the diagnosis. They may have felt confident that they would be able to get any necessary treatment and that treatment efforts would be effective in eliminating the melanoma. The treatments that PwSCs reported receiving may also have contributed to lower stressor appraisal. Only five individuals reported receiving chemotherapy for their skin cancer; the rest reported combinations of surgical removal, laser therapy, freeze therapy, or use of a topical ointment. These treatments are less invasive and could have put less strain on the family system. For example, most Mohs surgery is completed as outpatient surgery under local anesthesia. While there are potentials for scarring and follow-up appointments and monitoring associated with

Mohs surgery, most partners are unlikely to miss work, be unable to maintain household duties, or need extensive physical care from healthy partners during recovery. Also, how partners with skin cancer viewed the stressors stemming from their diagnosis may have been influenced by social messages about skin cancer. For example, increased media attention to skin cancer prevention, diagnosis, and treatment such as through campaigns designating May as “Skin Cancer Awareness Month” (Skin Cancer Foundation, 2018) has helped raise awareness about skin cancers, while simultaneously providing encouragement that if caught early, skin cancer is treatable. Increased discussions about skin cancer may have contributed to partners with skin cancer viewing their early or mid-stage diagnoses as less concerning or more likely to be treated successfully.

Additionally, PwSCs may have already worked through some fears or anxiety about their diagnoses before participating in the current study, resulting in a diminished view of the melanoma as stressful. Another explanation comes from the Strength and Vulnerability Integration (SAVI; Charles, 2010) model, which posits that older adults benefit from a variety of strengths that come along with the aging process. Thus, researchers have speculated that as an individual ages, the frequency of stressors do not decrease. However, older adults become better at evaluating potentially stressful events as less concerning or as less life-altering compared to younger individuals (Vasunilashorn et al., 2015). Having faced several stressors over the years, they may also be more prepared for this illness or similar illnesses.

Healthy partners (HP), however, did not appraise the skin cancer diagnosis in the same way. For HPs, differences in appraisal of stressors were found based on the type of skin cancer. More specifically, when facing a melanoma diagnosis, HPs reported greater stress, which may impact the styles of support that HPs use (Coyne & Smith, 1991; Johnson et al., 2013). It could

be that HPs may have greater fears about melanoma spreading or not being completely eradicated through various treatment options. Also, HPs may worry about the possible reoccurrence of melanoma in the future.

This mismatched appraisal of skin cancer-related stressors is noteworthy. I speculate that HPs may view the skin cancer-related stressors as being important while the PwSC may be in denial about the diagnosis, or may be putting on a brave face. This incongruence in appraisal may come at a cost to the couples. For example, the HP may amplify their support if they feel they are the only one in the couple concerned about the skin cancer, but this attention may be perceived as overprotection by the PwSC. On the other hand, partners who have similar stressor appraisals may benefit from more active engagement support to each other. In fact, congruence in how partners view the appraisal of the severity of a stressor has been found to be associated with better adaptation and outcomes in previous studies (McCubbin, Thompson, Thompson, & McCubbin (1993). For example, partners who report similar levels of stress may report higher levels of marital adjustment, compared to partners who appraise the stress of a stressor differently (Peterson, Newton, & Rosen, 2003). These findings reflect a need to further explore greater congruence in illness appraisal, which may result in better coping strategies couples use and better outcomes for both partners.

Body Image of the Partner with Skin Cancer

Research has found that many older adults experience body image concerns or dissatisfaction (Tiggemann, 2004), highlighting that body image remains an important concern in later years. Changes due to skin cancer treatment including scarring may be less obvious, but still relevant as outward indicators of loss of youthfulness, beauty and perhaps an unexpressed future illness. Similar to previous studies in younger couples, findings from this study highlight

the importance of receiving encouragement and comfort from HPs that made PwSCs feel less insecure about the changes in their body (Fang, Lin, Chen, & Lin, 2015).

Important gender differences, however, were also found in perceptions of one's body after the skin cancer diagnosis. Specifically, men with skin cancer had better perceptions of their body than women with skin cancer. Interestingly, these sex differences were also found to be associated with their coping style. For instance, men with skin cancer in this study engaged in more conversations about the skin cancer with their HPs, talking about their fears and worries and working together to cope with the diagnosis. Women with skin cancer, on the other hand, did not engage in active conversations about the disease with their partner. These findings contradict some other views of sex differences in coping and support. According to the socialization hypothesis, males are socialized to use more active and instrumental coping strategies while females are socialized to use more emotion-focused strategies and to seek more social support (Ptacek, Smith, & Zanas, 1992). This view of sex role socialization would predict that males would be more likely to deny or avoid the problem to conceal their emotions while females would be more likely to express their emotions. However, the current study did not find sex differences in line with these stereotypical views.

I speculate that it may be then men in this study were taking on a problem-solving approach, perhaps out of perceived notions of masculinity, emphasizing the need to tackle the skin cancer head-on or striving to be a rock for their partner and planning for their future (Thomeer, Reczek, & Umberson, 2014). On the other hand, women may be avoiding the skin cancer diagnosis, hiding their fears from their male partners and pretending not to notice worries in their partners (Aguirre-Camacho et al., 2017). Another explanation may be that women with skin cancer may wish to protect their HPs from fears about the treatment process or prognosis

following the skin cancer or alleviate any stress their HPs may be feeling (Goldsmith et al., 2007). For example, in this study, PwSCs with skin cancer in middle stages, provided more protective buffering to their HP than those in earlier stages.

Finally, as emphasized in the SAVI model, couples may have been using previously-established patterns of support with their partners, using styles of support that worked in the past for them, rather than gender-prescribed ways of coping. For example, in this study, a delicate dance of a sort could be seen in couples, as evidenced by the interaction effect, wherein HP's use of active engagement was beneficial for body image perception, only when the PwSC did not show high active engagement too. Future research should explore differences in coping and support based on the couples' shared relationship history instead of gender/sex expectations.

Quality of Life of both Partners

The current study also examined associations between perceived support and QOL of both partners, expanding upon previous research that has solely focused on QOL of the PwSC (Gaulin et al., 2015). In line with the DCM, my dissertation study found that skin cancer affects both partners and that support perceived by each partner appears to impact themselves but also impacts their partner. Perceived use of protective buffering by PwSCs was associated with poorer QOL for both partners. This was especially the case in couples who were coping with a melanoma. Avoiding discussions about skin cancer may increase individual anxiety about the diagnosis (Hinnen, Ranchor, Baas, Sanderman, & Hagedoorn, 2009). Partners may be hesitant to share negative emotions surrounding the skin cancer diagnosis following instances where they pretend not to notice one another's concerns (Kornblith et al., 2006). If the HP expresses worries or fears that the PwSC then ignores, the HP may feel as if his or her support is not wanted or

needed (Boehmer & Clark, 2001). These may contribute to distance or upheaval within a couple, potentially negatively impacting partner QOL.

Additionally, overprotection support perceived by PwSCs was associated with poorer PwSC QOL. Behaviors characterizing overprotection likely contribute to feelings of sadness or poor self-worth, which can contribute to anxiety or depression (Joeke, Van Elderen, & Schreurs, 2007; Kuijer et al., 2000). Feeling like one's partner does not think he or she knows what is right or being continuously monitored likely affect PwSC's sense of autonomy or personhood (Jansen et al., 2014). Perceived overprotection may have been especially damaging to PwSCs in this study because all had skin cancers were diagnosed in early or mid-stage, where treatment approaches are less invasive, and the prognosis overall is positive. Thus, their need for excessive support was likely non-existent. It is also possible that PwSCs who felt capable to follow doctor's orders and make treatment decisions eventually begin to doubt themselves if they receive more overprotection (Blundell Jones, Walsh, & Isaac, 2017). It may also be that HPs use more overprotection support when they do not feel confident in the PwSC's ability to cope effectively (Kuijer et al., 2000). While additional inquiry into how perceived overprotection support might negatively impact PwSCs was not possible in the current study, future research should examine overprotection in more detail. Overprotection may be associated with long-term negative impacts on partners and on the couple relationship. It may affect treatment decisions or health outcomes, both for couples facing skin cancer and for older couples facing other stressors.

It is clear from this study's findings that protective buffering and overprotection support perceived by both partners has a strong association with partners' QOL, especially PwSC QOL. However, partners' active engagement support was not associated with QOL of either partner. There are several possible reasons why no association was found. One potential explanation is

that active engagement support may be an assumed coping resource that couples in long-term relationships already provide (Carstensen, Gottman, & Levenson, 1995), which may be why no strong associations with QOL were found in this study. Another possibility is that active engagement may only be related to QOL when both partners use high levels of active engagement (Beveridge & Berg, 2007). It is also possible that couples were using *both* active engagement and protective buffering support, and an association between active engagement support and QOL would only be revealed when examining the interaction between the two styles of support. For example, higher use of active engagement support might be associated with better QOL only when the use of protective buffering support is low (Schokker et al., 2010). Interactions between active engagement and protective buffering support were not examined in this dissertation study, but provide an important avenue for future research. Couples might also use more active engagement support during later stages of skin cancer or during different times across the diagnosis and treatment process, underscoring the importance of collecting longitudinal data on couples coping with skin cancer. Finally, partner's active engagement support may be highly correlated with relationship satisfaction (Hagedoorn et al., 2011), and because this study was a convenience sampling design, I may have captured couples that had higher relationship satisfaction.

Study Limitations

In previous sections (Chapter IV: Results - Paper 1 and Paper 2), I have discussed the limitations of each of the papers. In this section, I discuss the advantages and disadvantages of the recruitment strategies and data collection methods used in this dissertation.

Recruitment Advantages and Disadvantages. The original plan of recruitment was to enroll participants from doctor's offices and skin cancer centers. Although this method would

have enabled me to talk about my study directly to professionals who could provide a connection to families coping with skin cancer, and build direct connections with individuals who were eligible for the study, there were challenges I faced with this recruitment strategy. Some doctor's offices and clinics that I visited were not interested in allowing me to advertise my study. At others, I was able to leave an introduction to the study and fliers with front desk staff to share with doctors or others who could make decisions about sharing the study but was not able to share my study face-to-face with them. For the four clinics and offices that were willing to let me advertise my study, all were only willing to let me place stacks of fliers in waiting rooms or post fliers on the back of exam room doors. While I contacted several clinics to actively distribute fliers to individuals who were seeking services for skin cancer, no locations were willing to do this. I did not gather information on why locations were not willing to distribute fliers directly to individuals who met the study criteria, but this could have been due to policy restrictions or the increased effort it would have taken staff to identify potential participants and hand out fliers.

Recruiting couples through word of mouth was the most effective strategy. The main advantage of this approach was the personal connection. Family members and friends were able to introduce my study to couples they know, which paved the way for me to contact couples and may have made couples more likely to participate. However, the demographic characteristics of my sample may be skewed as the majority of couples recruited through family and friends were upper-middle-class families with more years of formal education. Finally, recruitment efforts at my church, extended family member's churches, and churches around Temple were also fruitful in finding couples to participate in my study. While religious affiliation or beliefs were not examined in the current study, there may be unknown implications for the study sample. For

example, couples who are more religious or spiritual may report higher QOL overall or may have appraised the skin cancer as less stressful due to their beliefs. As I did not gather any data on such possible relationships, there is no way to know if there are unique characteristics of couples recruited from faith-based communities that impacted responses on the study measures, but this possibility is still important to note.

Methods Advantages and Disadvantages. I used two distinct methods of data collection: online and pen-and-paper. Gathering data through an online survey had both advantages and disadvantages. This approach enabled me to recruit couples from a wider geographic area than would have been possible if I had only gathered data face-to-face. Another advantage to using an online-survey approach is that it may have been more convenient for participants, allowing them to complete the survey when and where was best for them. Additionally, using an online survey eliminated the possibility of data entry error by the researcher.

There are, however, distinct disadvantages to using an online data collection approach. It is possible that some couples completed the measures together or that one partner may have completed the survey for both. To address this potential issue, I used several different techniques to deter couples from responding to the survey together or for one another. First, I used interspersed reminders to participants in *Qualtrics* that each partner should be completing the survey separately from one another, to help ensure the integrity of the data. Lastly, I built data quality checks, such as "attention filter" blocks in the *Qualtrics* survey to check whether the person responding to the question was indeed the correct partner (i.e., "Please confirm the type of skin cancer you have been diagnosed with" to ensure the responding participant was the PwSC). Another disadvantage of an online data collection approach is that participants may have

developed questions as they took the survey. To address this possibility, I included my telephone number on the bottom of each survey page, encouraging participants to contact me with any questions as they completed the measures. However, no participants contacted me with questions while completing the online surveys. An additional limitation of using an online survey is that the collected data may have come from couples with higher economic resources, who have access to personal or work computers. These disadvantages may have impacted the collected data, but the benefits of online data collection outweighed the disadvantages for this dissertation study.

Gathering data through pen-and-paper surveys had several advantages. As some participants may not have access to a computer or the internet, pen-and-paper surveys enabled these participants to participate. When given the choice of how to complete the surveys, most couples chose to complete the measures via the paper surveys. Paper surveys may have been easier to use. One couple specifically requested the paper surveys as they were not comfortable putting personal information online, although the online survey would not have collected any identifiable information except in the compensation survey.

There were also disadvantages to gathering data via paper surveys. Because I mailed packets with instructions, surveys for each partner, and self-addressed envelopes for returning the surveys, I had no means of checking with couples as they completed the surveys to see if they had any questions. Even though I included my phone number and email address, no couples contacted me with questions. Following completion of the paper surveys, participant data had to be hand entered into an electronic database. To reduce the likelihood of human error when entering the data, I double checked all data.

Significance and Implications

Despite the limitations of the study, this research extends the examination of perceived relationship-focused support in older couples when facing stress associated with skin cancer. As summarized previously, while researchers have examined the impact that relationship-focused support has on outcomes for couples coping with various cancer diagnoses, a gap remains in the study of skin cancer specifically. The current study is a starting point for addressing this gap. How both partners support one another can help reduce negative outcomes and improve positive outcomes. This finding is significant for older couples facing skin cancer, highlighting avenues for couples to engage more with the stress of skin cancer and reduce the use of protective buffering and overprotection support.

The study results also provided support that receiving more protective buffering and overprotection styles of relationship-focused support is associated with poorer QOL for both partners. While increasing use of active engagement support may be beneficial for couples and emphasized by loved ones or human services providers (i.e., *You need to be positive and encouraging to your partner*), the current study findings indicate that receiving less protective buffering and overprotection support may be even more important. Receiving such support, even though it may be out of love for one's partner, may lead to lower QOL, higher anxiety, and even greater depression.

Findings from this study can also be relevant for couples facing a variety of other chronic illnesses or stressors. For example, there are other instances where body image of older adults may be negatively impacted, for example, a hip surgery. An older adult who has to use a walker when recovering from hip surgery may feel negative about the image of their body. Active

engagement support, such as engaging in conversations and providing encouragement to one's partner, may help buffer the negative body image perceptions.

Although older couples likely have established communication patterns and ways of dealing with stressors that they may not want to change or may be resistant to change, mental health professionals can work with older couples to create therapeutic alliances and mutual dedication to change (Lloyd-Hazlett, Honderich, & Heyward, 2016). Joining with the couple can help break-down resistance to change and create opportunities for older couples to learn new support patterns to positively benefit one another. Clinicians can work with older couples to enhance any coping efforts they are making. Treatment plans can focus on learning and practicing active engagement styles of support, helping couples work together as a team to face the skin cancer. As older couples increase active engagement support and decrease protective buffering and overprotection support, they can model successful coping to other family members through intergenerational transmission of coping mechanisms.

Future Directions

There are several avenues for future inquiry. My dissertation research provided initial insight into relationships between perceived partner support and two outcomes. Through the process of analyzing the data and reflecting on potential reasons why certain results were or were not found and what implications my findings have for older couples and literature on aging, I often thought about the experiences and stories that these couples could tell about navigating a skin cancer diagnosis. A future qualitative research study could shed additional light on how couples view their experiences and their perceptions of the support they both *give* and *receive*, giving voice to what couples would want to be known about their experiences with skin cancer. Additionally, longitudinal research is needed to examine how support might change or stay the

same in couples who experience skin cancer reoccurrence. Couples may support one another differently based on what has worked previously or may use new styles of support if their appraisal of the skin cancer-related stressor changes with recurrent cancer. Finally, additional research should include couples facing stage IV skin cancer, which is classified based on the skin cancer having spread to other, distant parts of the body. Stage IV skin cancer involves more rigorous treatment and has lower survival rates. Thus, couples may support one another in very different ways when facing late-stage skin cancer compared to couples in the current study.

Conclusion

In conclusion, facing a skin cancer diagnosis in one partner requires various types of support from older couples. Partners appear to use combinations of active engagement, protective buffering, and overprotection support, which may serve different purposes and be beneficial to varying degrees. Perceiving more active engagement support was associated with a better partner with skin cancer body image while perceived protective buffering and overprotection support did not appear to be associated with body image. Protective buffering support perceived by HPs and overprotection support perceived by PwSCs were associated with poorer QOL of both partners. Thus, as a chronic illness that affects couples as a whole, partners can adjust the support they provide one another to best alleviate skin cancer-related stressors.

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Appendix A

Study recruitment flier

**Are you and your partner 60 years or older?
Have one of you been diagnosed with
melanoma skin cancer?**



Research Study on Couple Support in Couples Coping with Melanoma

Researchers from Virginia Tech (IRB # 17-570) are seeking older couples aged 60 and above for a study on how couples cope with melanoma, body image of partners with melanoma, and couple quality of life. To learn more about this study, please contact couplesandskincancer@gmail.com or (254) 654-7594.

Couples Coping with Melanoma
Please contact
couplesandskincancer@gmail.com

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Appendix B

List of group sites contacted for online recruitment

Facebook Groups:

Skin Cancer Support System

Emotional Support for Skin Cancer/Melanoma

Skin Cancer

Skin Cancer/Melanoma Awareness

Skin Cancer Awareness

The Skin Cancer Foundation

National Council on Skin Cancer Prevention

Virginia Dermatology & Skin Cancer Center

Skin cancer awareness (community)

Skin Cancer Team

Skin Cancer Awareness Project

Melanoma & Skin Cancer Awareness

Skin Cancer Stinks

Skin Cancer Awareness (community)

Surviving Skin Cancer (community)

Fight Skin Cancer Foundation (community)

I am skin cancer (community)

Skin Cancer Awareness (organization)

Melanoma: It's Not "Just skin cancer"

Appendix C

Study Measures

Demographics

1. What is your 5-digit zip code? _ _ _ _ _
2. Please indicate your sex:
 - ☐ Male
 - ☐ Female
3. Which of the following best describes your ethnic background?
 - ☐ Hispanic or Latino (includes persons of Cuban, Mexican, Puerto Rican, South American, Central American, or Spanish culture)
 - ☐ Not Hispanic or Latino
4. Which of the following best describes your race? [mark all that apply]
 - ☐ White/Caucasian
 - ☐ Black or African American
 - ☐ Native Hawaiian or other Pacific Islander
 - ☐ American Indian or Alaska Native
 - ☐ Asian
 - ☐ Other (specify)_____
5. How old are you?
_____years
6. How many years of school did you complete?
 - ☐ Less than 8 years of education
 - ☐ 8 to 10 years of education
 - ☐ 11 to 15 years of education
 - ☐ 16 to 18 years of education
 - ☐ 18 or more years of education
7. What is your current marital status?
 - ☐ Not married
 - ☐ Married or partnered
8. [If currently partnered] How many years have you been together? _____

9. Do you live with your partner?
- ☐ Yes, in the same home or apartment building
 - ☐ No, not in the same home or apartment building

10. Are you currently...
- ☐ Employed
 - ☐ Not employed
 - ☐ Never employed outside of home

13. Do you have any of the following health conditions?

1. cancer, a malignant tumor or leukemia?	☐ Yes	☐ No
2. chronic lung disease such as chronic bronchitis, emphysema, or asthma?	☐ Yes	☐ No
3. depression?	☐ Yes	☐ No
4. diabetes or high blood sugar?	☐ Yes	☐ No
5. heart attack, by-pass/valve surgery, stroke, etc?	☐ Yes	☐ No
6. high blood pressure or hypertension?	☐ Yes	☐ No
7. memory problems?	☐ Yes	☐ No
8. osteoporosis?	☐ Yes	☐ No
9. stomach or intestinal disorders?	☐ Yes	☐ No
10. arthritis?	☐ Yes	☐ No
11. Do you have any other health problems? _____	☐ Yes	☐ No

14. If you answered yes to any of the above health conditions, is the condition **currently** successfully controlled by medication or another form of medical treatment?
- ☐ Yes; what methods of treatment? _____
 - ☐ No
15. How would you rate your overall health at the present time?
- ☐ Poor
 - ☐ Fair
 - ☐ Good
 - ☐ Excellent
16. How did you hear about this study? _____

Skin Cancer Diagnosis

The next questions are about your skin cancer diagnosis.

1. What type of skin cancer have you been diagnosed with?

- ☐ Melanoma
- ☐ Basal cell carcinoma (BCC)
- ☐ Squamous cell carcinoma (SCC)
- ☐ Other _____

2. What stage is your skin cancer in?

- ☐ Stage I
- ☐ Stage II
- ☐ Stage III
- ☐ Stage IV

3. How long has it been since you received your initial diagnosis? _____ months

4. What treatment are you currently undergoing or will you be undergoing?

- ☐ Not currently receiving treatment
- ☐ Surgical removal
- ☐ Chemotherapy
- ☐ Radiotherapy (laser treatment)
- ☐ Cryotherapy (freeze treatment)
- ☐ Topical ointment
- ☐ Other _____

Stressor Appraisal

Below are several statements that describe ways people think about their (their partner's) health problem. Please read each item and circle the number that best describes how much you agree or disagree with the statement according to what is happening to you right now.

The answers range from strongly agree (5) to strongly disagree (1). Please be sure to answer all statements. There are no right or wrong answers.

	Strongly Agree	Agree	Undecided	Disagree	Strongly disagree
1. I can control what will happen to me.	5	4	3	2	1
2. This skin cancer diagnosis won't get me down.	5	4	3	2	1
3. I have not been able to do what I want because of this skin cancer diagnosis.	5	4	3	2	1
4. This skin cancer diagnosis is frightening to me.	5	4	3	2	1
5. This skin cancer diagnosis isn't stressful to me.	5	4	3	2	1
6. Things will only get worse because of this skin cancer diagnosis.	5	4	3	2	1
7. This skin cancer diagnosis will not go well.	5	4	3	2	1
8. This skin cancer diagnosis has damaged my life.	5	4	3	2	1
9. I have lost interest in the things around me.	5	4	3	2	1
10. I have had to give up a great deal because of this skin cancer diagnosis.	5	4	3	2	1
11. I can beat this skin cancer diagnosis despite the difficulties.	5	4	3	2	1
12. This skin cancer diagnosis is one that I can change or do something about.	5	4	3	2	1
13. I have a sense of loss over the things I can no longer do.	5	4	3	2	1
14. I feel I can handle this skin cancer diagnosis.	5	4	3	2	1

15. I have nothing to lose because of this skin cancer diagnosis.	5	4	3	2	1
16. During this skin cancer diagnosis, I have to hold myself back from doing what I want to do.	5	4	3	2	1
17. I have a lot to lose because of this skin cancer diagnosis.	5	4	3	2	1
18. I worry about what will happen to me.	5	4	3	2	1
19. Relationships with my family and friends have suffered.	5	4	3	2	1
20. There is nothing I need to do for this condition.	5	4	3	2	1
21. I have been harmed in some ways by this skin cancer diagnosis.	5	4	3	2	1
22. I need to know more before I can do anything about this skin cancer diagnosis.	5	4	3	2	1
23. I don't think much about this skin cancer diagnosis.	5	4	3	2	1
24. This skin cancer diagnosis has caused me to learn more about myself.	5	4	3	2	1
25. I have been hurt by this skin cancer diagnosis.	5	4	3	2	1
26. There is a lot I can do to overcome this skin cancer diagnosis.	5	4	3	2	1
27. I have to accept this skin cancer diagnosis.	5	4	3	2	1
28. This skin cancer diagnosis doesn't affect my life.	5	4	3	2	1

Dyadic Stressor Appraisal

Next, we would like you to think specifically about your (your partner's) skin cancer diagnosis. Focus on how your partner has been involved in this event, and choose one of the following phrases that best describes the skin cancer diagnosis:

- (a) The stress of the skin cancer diagnosis is mine; my partner does not think about the stress and isn't affected by it
- (b) My stress of the skin cancer diagnosis affects my partner; it is my stress but I know that it affects my partner.
- (c) The stress of the skin cancer diagnosis is ours; it is something that is shared with my partner.

Relationship-Focused Support

Partner with skin cancer version

The following statements focus on the way your partner deals with the fact that you have received a skin cancer diagnosis. Please indicate to what extent your partner does or does not act in the ways described.

	Never	Seldom	Now and Then	Quite Often	Very Often
1. My partner tries to discuss it with me openly	1	2	3	4	5
2. With the best intentions, my partner makes up excuses to persuade me to follow the clinician's instructions.	1	2	3	4	5
3. My partner asks me how I feel.	1	2	3	4	5
4. When something bothers me, my partner tries to discuss the problem.	1	2	3	4	5
5. My partner tries to hide his or her worries about me.	1	2	3	4	5
6. My partner tries to act as if nothing is the matter.	1	2	3	4	5
7. My partner gives in when I make an issue of something.	1	2	3	4	5
8. My partner just waves my worries aside.	1	2	3	4	5
9. My partner does everything to prevent me from thinking about my skin cancer diagnosis.	1	2	3	4	5
10. My partner can't endure me being concerned and acts as if he or she doesn't notice my worries.	1	2	3	4	5
11. My partner takes over as much of my work as possible.	1	2	3	4	5
12. My partner treats me like a baby.	1	2	3	4	5
13. My partner continuously keeps an eye on me.	1	2	3	4	5
14. My partner takes care that I follow the clinician's instructions.	1	2	3	4	5
15. My partner is full of understanding towards me.	1	2	3	4	5
16. My partner makes me feel that I'm not alone in this.	1	2	3	4	5

17. When it comes down to it, my partner seems to think that he or she can't leave my recovery to me.	1	2	3	4	5
18. When it comes down to it, my partner seems to think that when he or she is not constantly around, I will not follow the clinician's instructions.	1	2	3	4	5
19. When it comes down to it, my partner seems to think that I don't know what's right for me.	1	2	3	4	5

Healthy partner version:

The following statements focus on the way your partner deals with the fact that he or she has a skin cancer diagnosis. Please indicate to what extent your partner does or does not act in the ways described.

	Never	Seldom	Now and Then	Quite Often	Very Often
1. My partner try to discuss it openly with me.	1	2	3	4	5
2. My partner asks me how I feel.	1	2	3	4	5
3. My partner tries to talk with me when something bothers him or her.	1	2	3	4	5
4. My partner tries to keep his or her worries to him or herself.	1	2	3	4	5
5. My partner tries to act as if nothing is the matter.	1	2	3	4	5
6. My partner gives in when I makes an issue of something.	1	2	3	4	5
7. My partner waves my worries aside.	1	2	3	4	5
8. My partner does everything to prevent me from thinking about his or her skin cancer diagnosis.	1	2	3	4	5
9. My partner can't endure me being concerned and acts as if he or she doesn't notice my worries.	1	2	3	4	5
10. My partner is full of understanding towards me.	1	2	3	4	5
11. My partner feels that he or she is not alone in this.	1	2	3	4	5

Body Image Scale

In this questionnaire, you will be asked how you feel about your appearance, and about any changes that may have resulted from your skin cancer diagnosis or treatment. Please read each item carefully, and select the response which comes closest to the way you have been feeling about yourself, during the past week.

	Not at all	A little	Quite a bit	Very much	
Have you been feeling self-conscious about your appearance?	0	1	2	3	
Have you felt <u>less</u> physically attractive as a result of your disease or treatment?	0	1	2	3	
Have you been <u>dissatisfied</u> with your appearance when dressed?	0	1	2	3	
Have you been feeling <u>less</u> feminine/masculine as a result of your disease or treatment?	0	1	2	3	
Did you find it difficult to look at yourself naked?	0	1	2	3	
Have you been feeling <u>less</u> sexually attractive as a result of your disease or treatment?	0	1	2	3	
Did you avoid people because of the way you felt about your appearance?	0	1	2	3	
Have you been feeling the treatment has left your body less whole?	0	1	2	3	
Have you felt <u>dissatisfied</u> with your body?	0	1	2	3	
Have you been <u>dissatisfied</u> with the appearance of your scar?	0	1	2	3	You can also select Not applicable

Quality of Life- World Health Organization Quality of Life-Brief

This assessment asks how you feel about your quality of life, health, or other areas of your life. Please answer all the questions. If you are unsure about which response to give to a question, please choose the one that appears most appropriate. This can often be your first response.

Please keep in mind your standards, hopes, pleasures and concerns. We ask that you think about your life **in the last two weeks**. For example, thinking about the last two weeks, a question might ask:

	Not at all	Not much	Moderately	A great deal	Completely
Do you get the kind of support from others that you need?	1	2	3	4	5

You should circle the number that best fits how much support you got from others over the last two weeks. So you would circle the number 4 if you got a great deal of support from others. You would circle the number 1 if you did not get any of the support that you needed from others in the last two weeks.

Please read each question, assess your feelings, and circle the number on the scale for each question that gives the best answer for you.

	Very poor	Poor	Neither poor nor good	Good	Very good
How would you rate your quality of life?	1	2	3	4	5

	Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
How satisfied are you with your health?	1	2	3	4	5

The following questions asks about **how much** you have experienced certain things in the last two weeks.

	Not at all	A little	A moderate amount	Very much	An extreme amount
To what extent do you feel that physical pain prevents you from doing what you need to do?	1	2	3	4	5
How much do you need any medical treatments to function in your daily life?	1	2	3	4	5
How much do you enjoy life?	1	2	3	4	5
To what extent do you feel your life to be meaningful?	1	2	3	4	5

	Not at all	A little	A moderate amount	Very much	Extremely
How well are you able to concentrate?	1	2	3	4	5
How safe do you feel in your daily life?	1	2	3	4	5
How healthy is your physical environment?	1	2	3	4	5

The following questions ask about **how completely** you experience or were able to do certain things in the last two weeks.

	Not at all	A little	Moderately	Mostly	Completely
Do you have enough energy for everyday life?	1	2	3	4	5
Are you able to accept your bodily appearance?	1	2	3	4	5
Have you enough money to meet your needs?	1	2	3	4	5
How available to you is the information that you need in your day-to-day life?	1	2	3	4	5
To what extent do you have the opportunity for leisure activities?	1	2	3	4	5

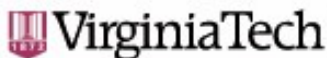
	Very poor	Poor	Neither poor nor good	Good	Very good
How well are you able to get around?	1	2	3	4	5

The following questions ask you to say how **good or satisfied** you have felt about various aspects of your life over the last two weeks.

	Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
How satisfied are you with your sleep?	1	2	3	4	5
How satisfied are you with your ability to perform your daily living activities?	1	2	3	4	5
How satisfied are you with your capacity for work?	1	2	3	4	5
How satisfied are you with yourself?	1	2	3	4	5
How satisfied are you with your personal relationships?	1	2	3	4	5
How satisfied are you with your sex life?	1	2	3	4	5
How satisfied are you with the support you get from your friends?	1	2	3	4	5
How satisfied are you with the conditions of your living place?	1	2	3	4	5
How satisfied are you with your access to health services?	1	2	3	4	5
How satisfied are you with your transport?	1	2	3	4	5

The following question refers to **how often** you have felt or experienced certain things in the last two weeks.

	Never	Seldom	Quite often	Very often	Always
How often do you have negative feelings, such as blue mood, despair, anxiety, or depression?	1	2	3	4	5

Appendix D**IRB Approval Letter**

Office of Research Compliance
Institutional Review Board
North End Center, Suite 4120, Virginia Tech
300 Turner Street NW
Blacksburg, Virginia 24061
540/231-4606 Fax 540/231-0959
email irb@vt.edu website
<http://www.irb.vt.edu>

MEMORANDUM

DATE: June 6, 2017 
TO: Tina Savla, Laura Michelle Butner
FROM: Virginia Tech Institutional Review Board (FWA00000572, expires January 29, 2021)
PROTOCOL TITLE: Relationship-focused coping, body image, and quality of life in older couples coping with skin cancer
IRB NUMBER: 17-570

Effective June 5, 2017, the Virginia Tech Institutional Review Board (IRB) Chair, David M Moore, approved the New Application request for the above-mentioned research protocol.

This approval provides permission to begin the human subject activities outlined in the IRB-approved protocol and supporting documents.

Plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report within 5 business days to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

All investigators (listed above) are required to comply with the researcher requirements outlined at:

<http://www.irb.vt.edu/pages/responsibilities.htm>

(Please review responsibilities before the commencement of your research.)

PROTOCOL INFORMATION:

Approved As: **Expedited, under 45 CFR 46.110 category(ies) 7**
Protocol Approval Date: **June 5, 2017**
Protocol Expiration Date: **June 4, 2018**
Continuing Review Due Date*: **May 21, 2018**

*Date a Continuing Review application is due to the IRB office if human subject activities covered under this protocol, including data analysis, are to continue beyond the Protocol Expiration Date.

FEDERALLY FUNDED RESEARCH REQUIREMENTS:

Per federal regulations, 45 CFR 46.103(f), the IRB is required to compare all federally funded grant proposals/work statements to the IRB protocol(s) which cover the human research activities included in the proposal / work statement before funds are released. Note that this requirement does not apply to Exempt and Interim IRB protocols, or grants for which VT is not the primary awardee.

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