Embodied Reminders and Well-being Among Breast Cancer Survivors: Examining the Influence of Feminine Gender Role Orientation, Biographical Disruption, and Body Image

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Embodied Reminders and Well-being Among Breast Cancer Survivors:
Examining the Influence of Feminine Gender Role Orientation, Biographical Disruption, and Body Image

A Dissertation
Presented to the Faculty of the
Department of Psychology
West Chester University
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In Partial Fulfillment of the Requirements for the
Degree of Clinical Psychology (Psy.D.)

By
Andriana Frost
May 2021

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Dedication

This dissertation is dedicated to my mother, from whom I learned strength and perseverance; qualities without which I would not have succeeded in completing this manuscript. Mom, you have been an integral component of who I am as a person, provider, and researcher—Thank you!
Acknowledgments

I would like to take this opportunity to extend my gratitude to all those who have helped and supported me throughout my graduate training and over the course of the development, implementation, and writing related to my dissertation.

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Last, though certainly not least, I cannot communicate enough thanks via writing to fully encompass the gratitude I have towards my family and friends. I am indebted to my husband and biggest supporter, Conor, who has graciously focused his energy on helping me stay sane throughout all of my graduate training and who has also never shied away from telling me to “stop procrastinating.” He is inextricably linked to my success and has lovingly listened as I discussed the details of my research and complained about the growing pains associated with this project. Journey before destination, baby—I love you more than I can say.

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Abstract

Breast cancer is the leading cause of cancer-related mortality for women around the world, but despite the significant prevalence of the disease, research has shown that survival rates continue to improve globally. The present study utilized a cross-sectional design involving 108 women who were diagnosed with and completed treatment for breast cancer. Participants completed questionnaires that assessed their embodied reminders of their cancer treatment (e.g., scars, burns, hair loss), gender role orientation, self-narrative, mental health, and general well-being. Eight moderated mediation models were applied to test the hypothesis that women who identified as more feminine would experience greater biographical disruption and poorer body image as a result of their embodied reminders, which would, in turn, contribute to poorer mental health symptoms and reduced quality of life. Three total models were significant (Models 1, 2 & 4). In two models (Model 1 and 2), biographical disruption mediated the relationship between intensity of embodied reminders and both outcomes. Body image mediated the relationship between intensity of embodied reminders and quality of life (Model 4). For all three models, feminine gender role orientation moderated the relationship between intensity of embodied reminders and the mediators. The outcomes of this study indicate that biographical disruption and feminine gender role orientation are important clinical considerations in understanding and possibly addressing well-being among women diagnosed with breast cancer. As more women enter survivorship following treatment for breast cancer, offering support that focuses on women’s gender role orientation and personal narrative may be beneficial in promoting well-being.
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1.1. Breast Cancer: Prevalence and Treatment

Breast cancer is the most prevalent type of cancer diagnosed among women (having recently surpassed lung cancer) around the world and has the highest mortality rate globally (GLOBOCAN, 2020). Between 2013 and 2020, the breast cancer diagnosis increased from 2 million to 2.2 million (GLOBOCON, 2020), with half of newly diagnosed cases and 58% of breast cancer-related deaths occurring in developing countries (Global Burden of Disease Cancer et al., 2015). These outcomes highlight the global burden of breast cancer and emphasize the need for continued efforts to treat this disease.

As breast cancer continues to plague women around the world, and modern treatments become more widely available, reflecting on and supporting women during their period of survivorship is imperative. The survival rate of breast cancer is an indicator utilized to understand the effectiveness of treatment and represents the percentage of women who are still alive for specific periods of time following diagnosis and treatment (Maajani et al., 2019). While specific treatment that women receive for their breast cancer diagnosis is important in understanding the factors contributing to survivorship, additional patient-level factors that contribute to survivorship rates include age, race, type of breast cancer, tumor size, socioeconomic status, and stage at diagnosis (Coughlin, 2019; Plichta et al., 2016).

Survival rates for women diagnosed with breast cancer have slowly and consistently continued to improve worldwide, though there continues to be disparities across countries related to the percentage of women who survive at 1, 3, 5, and 10 years after diagnosis and treatment (Maajani et al., 2019). More specific 5–year survival rates around the world include the United States at almost 90% (Centers for Disease Control, 2019), 85.2% in Spain (Chirlaque et al.,
2018), 69.2% in the Middle East (Hassanipour et al., 2019), and between 74–93% across 28 countries within the European Union (Dafni et al., 2019). In a metanalytic analysis, Maajani and colleagues (2019) found the global 5–year survival rate for women diagnosed with breast cancer to be 73%.

With the increased survival rates of women diagnosed with breast cancer, understanding the long-term experiences of women post-treatment is necessary. Previous research has noted that following treatment for breast cancer, challenges such as the fear of recurrence (Cheng et al., 2016), loss of support from medical providers (Allen et al., 2009), reduced social support (Leung et al., 2016), and increased mental health concerns impact women’s daily lives (Hammoudeh et al., 2017; Liamputtong & Suwankhong, 2015). More recently, research has begun to focus on the long-term impact that treatment of breast cancer has on women’s lives to provide better support throughout survivorship (Leung et al., 2016; Manderson & Stirling, 2007; Trusson et al., 2016).

While treatment for breast cancer is necessary to manage and combat the disease, it also comes with great personal costs. Treatment often involves various types of interventions including surgery, chemotherapy, radiation, and hormonal treatments (Centers for Disease Control, 2019). Surgical procedures such as mastectomy and lumpectomy may involve removal of all or part of one or both breasts. This can leave the breasts misaligned, asymmetrical and may result in scarring on the chest and armpit area. The effects of chemotherapy can contribute to hair loss and unwanted changes in weight, while radiation often involves the placement of small but permanent tattoos (McCann et al., 2010; Perz et al., 2014) and can cause skin redness, discoloration, and burns marks. Further, for women who receive adjuvant hormonal therapy (treatment provided after primary treatment to maximize overall effectiveness) to reduce the risk of recurrence, weight gain and pre-menopausal symptoms are commonly reported (Cheng et al., 2016).
1.2. Embodied Reminders

Although treatment for breast cancer is lifesaving, it also comes with a cost—lasting physical alterations to one’s body. Even after women have completed treatment for breast cancer, they may have multiple physical reminders of their breast cancer journey such as scars, tattoos, skin discoloration, hair loss, changes in weight, menopausal symptoms, and changes in their sexual functioning (Torre et al., 2017). These lasting physical changes are termed embodied reminders and have been shown to contribute to poorer quality of life and poorer mental health outcomes for women during the survivorship period (Cheng et al., 2016; Hammoudeh et al., 2017; Loaring et al., 2015). Embodied reminders are an important consideration in the well-being of breast cancer survivors, as it has been shown to impact women across a multitude of domains.

While the literature is sparse in relation to women’s subjective experiences with their embodied reminders of breast cancer, there is substantial research documenting a significant negative relationship between the impact of breast cancer surgery on women’s body image (Kwait et al., 2016). Specifically, research from various countries has found that women who had more than 20% of their breast tissue removed were at an increased risk of dissatisfaction with their post-surgical scaring (Dahlback et al., 2016). One study conducted in Ireland found that women preferred a less visible scar and their male counterparts reported that scarring post-surgery was an important consideration for overall aesthetics post-surgery (Joyce et al., 2015). Further, a recent study conducted within the United States found that women often reported feeling uncomfortable being seen naked due to their surgical scarring, avoided certain pieces of clothing in order to hide their scars, and generally disliked the location of their scars (Gass et al., 2016).

In addition to surgical scars, many women who receive chemotherapy also experiencing scarring as a result of their port placement (a medical device used for administration of
chemotherapy that is placed under the skin). Among women who had the port placed in their arm or on their chest, an overwhelming majority reported that their scar was noticeable to themselves (92%) and others (69%), while half of the women additionally reported that they made attempts to hide their scars (Voci et al., 2018).

Another lasting physical reminder of one’s breast cancer experience is lymphedema. Lymphedema is a chronic condition in which lymphatic fluid accumulates in the body due to poor drainage and is most often associated with women who received an axillary (armpit) lymph node dissection as part of their treatment regimen (Ridner et al., 2012). While not every woman who is treated for breast cancer or who has lymph nodes removed will experience this side effect, lymphedema was found to occur 1 in 5 women (Bell, 2012). In two systematic reviews, lymphedema was associated with increased pain, poorer physical functioning, decreased quality of life, and poorer mental health outcomes (Fu & Rosedale, 2009; Taghian et al., 2014). On top of psychosocial challenges associated with lymphedema, this chronic condition during survivorship has also been found to carry an economic burden due to women’s accumulated medical costs to address the condition, and losses in productivity (Dean et al., 2019).

Further, due to chemotherapy and hormonal or biological treatments, frequently women must navigate early menopause to reduce their chances of cancer recurrence. As a result of this medical intervention, women report increased hot flashes, changes in libido, and sexual dysfunction (Emilee et al., 2010). These lasting symptoms as a direct result of their treatment have been associated with poorer sexual satisfaction (Didier et al., 2009), increased depression and anxiety, negative body image, and alterations in women’s sense of self (Emilee et al., 2010).

While much of the quantitative research that has been conducted on embodied reminders to date has provided some objective evidence for the negative impact of these lasting physical
changes, the evidence that speaks to the subjective experience of breast cancer survivors has been gathered through narrative reports (Parton et al., 2016; Trusson et al., 2016). In these narratives, women often described their bodies following treatment using adjectives such as “odd,” “bizarre,” or “weird,” or state that their body “does not look right” (Parton et al., 2016). In the qualitative analysis conducted by Parton and colleagues (2016), one participant noted how unsettling it was to lose her hair. The authors discussed themes of breast cancer survivors contrasting their current bodies with their pre-cancer bodies, frequently noting changes in symmetry and balance, and emphasizing an experience of “dis-embodiment.” Further, while women with embodied reminders reported feeling mutilated as a result of their treatment, many women also reported sadness and anger due to the limitations associated with their physical reminders. In a study conducted by Everaars et al. (2021), one participant noted that even though it had been a long time since her diagnosis and treatment, she still felt sadness, both about the loss of her breast and associated scaring but also due to secondary physical reminders such as the associated pain and decreased mobility.

The narrative reports provide a unique description of women’s experiences following treatment for breast cancer. However, the qualitative nature of the research limits our ability to examine the strength of the relationship between embodied reminders and well-being and further limits our ability to identify factors that may explain the relationship between these constructs. Additionally, the quantitative research that has been conducted has been limited in scope, such that only a single embodied reminder is examined at a time, instead of examining the totality of embodied reminders (both number and intensity).
1.3. Mental Health Outcomes

As mentioned, women diagnosed with breast cancer go through a multitude of experiences as a result of their diagnosis and treatment regimen. While many women are understandably distressed following their diagnosis and treatment, a proportion of women may experience more prolonged and clinically significant mental health symptoms. While the reported prevalence rates of mental health outcomes such as depressive symptoms among survivors have varied, studies have described rates of depressive symptoms ranging from 10% to 45.6% (Brandao et al., 2017; Loi et al., 2013; Zainal et al., 2013). A recent meta-analysis indicating that the global prevalence of depressive symptoms among women diagnosed with breast cancer falling at 32.2%, with the largest proportion of women reporting depressive symptoms in the mild to moderate range (28.9%; Pilevarzadeh et al., 2019). As the prevalence of breast cancer continues to increase worldwide (Global Burden of Disease Cancer et al., 2018), understanding factors that contribute to increased depressive symptoms and the associated outcomes of poorer mental health following treatment for breast cancer are especially important.

One factor that appears to be associated with increased depressive symptoms among women diagnosed with breast cancer is the type of treatment received. A review conducted by Fann et al. (2008) found that women who received adjuvant chemotherapy (chemotherapy given after surgery reduce the risk of recurrence) experienced higher levels of depressive symptoms. Additionally, the authors noted that while there are conflicting results, some studies have also shown a significant relationship between women who have received hormone therapy (e.g., tamoxifen) and negative impacts on mood. An additional meta-analysis found a possible relationship between mastectomy and breast reconstructive surgery, such that at one–year follow-
up, women who had received these interventions reported higher levels of depression (Padmalatha et al., 2021).

Extending the findings on the relationship between type of breast cancer treatment received and depressive symptoms, various studies have found that more specific symptoms associated with the diagnosis and its treatment may also contribute to increased symptoms of depression. The systematic review by Fann and colleagues (2008) found that across 36 studies, symptoms such as fatigue, pain, menopausal symptoms (e.g., hot flashes), and cognitive dysfunction were strongly correlated with increased symptoms of depression. Further, the results of the meta-analysis note that sexual dysfunction as a result of treatment for breast cancer may act as both a precipitant and an unwanted outcome in relation to depression. A significant theme that emerged from the studies included in the meta-analytic review noted that between 15–33% of women treated for breast cancer report changes in their cognitive functioning. Cognitive impairment was found to be related to actively receiving chemotherapy although many of the studies found that women reported changes in cognition for years after treatment ended.

Lastly, cognitive, social, and demographic factors that may contribute to increased depressive symptoms should also be considered. Following treatment, most women are faced with the secondary challenge of coping with various physical changes to their appearance. Alterations in women’s body image, especially with feelings of loss around their body’s physical integrity, perceived femininity (Boquiren et al., 2016), and changes in women’s self-esteem have been reported (Boing et al., 2019). Each of these cognitive shifts has been associated with significant increases in depressive symptoms (Brandao et al., 2017). After receiving their primary treatment for breast cancer, many patients also report experiencing an increased loss of social supports in addition to less frequent medical appointments. Across these studies, the data show that reductions
in support significantly contributed to increased fear of recurrence, anxiety, and depressive symptoms (Fann et al., 2008). These studies also found that women who lived in rural areas were less educated, younger in age, uncoupled, or who did not identify as religious were at a greater risk for developing symptoms of depression following treatment (Tsaras et al., 2018; Zainal et al., 2013).

While understanding factors that contribute to increased depressive symptoms among women diagnosed with breast cancer, we must also acknowledge the serious negative outcomes associated with depression among these women. In a meta-analysis conducted by Pinquart and Duberstein (2010), the results from 76 prospective studies indicated that depressive symptoms significantly predicted increased risk of mortality following diagnosis and treatment for cancer. These results held true both for depression that was diagnosed prior to the participant's cancer diagnosis, as well in studies in which depression was assessed after diagnosis. Similar findings have been found in more recent studies as well. Shim et al. (2020) found that among women diagnosed with depression while completing treatment for breast cancer in Korea, depression was significantly associated with an increased risk of mortality. Furthermore, in an 11–year follow-up study, Antoni et al. (2017) found that women who did not endorse symptoms of depression had longer overall survival rates compared to women with mild to moderate depressive symptoms.

The proposed mechanisms by which depression is associated with increased mortality within the context of breast cancer include physiological and behavioral factors. Physiologically, it has been suggested that depression disrupts neuroendocrine and immune functioning, contributing to alterations in circadian rhythms (Eismann et al., 2010), changes in cortisol levels (Cohen et al., 2012), and suppression of the immune system—specifically natural killer (NK) cells (Vissoci Reiche et al., 2004). Behaviorally, depression was found to be associated with poorer
social support (Epstein & Street Jr., 2007), utilization of more maladaptive coping strategies (Tojal & Costa, 2015), and difficulty with treatment adherence (Mausbach et al., 2015).

1.4. Quality of Life

Changes in quality of life have also been reported as a result of treatment for breast cancer and is an important consideration due to the number of women entering the survivorship period. Quality of life has been defined in a multitude of ways, but for the purpose of this study and in alignment with the concept of health-related quality of life, quality of life is being defined as a multidimensional construct that encompasses a variety of domains including physical, social and relational, emotional, and functional well-being (Bowling & Windsor, 2001). While research over the last decade has found that overall quality of life has improved for breast cancer survivors due to improvements in medical treatments and effective implementation of gentle physical activity and psychosocial support (Mokhatri-Hesari & Montazeri, 2020), various aspects of quality of life, including persistent diagnosis and treatment-related side effects, still need to be addressed.

Examining each quality of life domain to understand specific functioning among breast cancer survivors can help shed light on areas in which our field has improved, and areas where breast cancer survivors need continued support. The present study utilized the Functional Assessment of Cancer Treatment- Breast (FACT–B) to explore quality of life outcomes for women during their survivorship period. The FACT–B is a well-validated and widely used measure within the psycho-oncology literature (Brady et al., 1997; Mokhatri-Hesari & Montazeri, 2020) and associations between individual scales and the experiences of women treated for breast cancer are discussed below (the FACT–B is the focus of this section to allow for comparisons to be drawn between previous research and the outcomes of the present study).
The physical well-being subscale of the FACT–B focuses on understanding the extent to which physical symptoms (e.g., fatigue, pain, feeling ill, and experiencing illness and treatment-related side effects) impact women’s quality of life (Brady et al., 1997). While some women report reductions in the number and intensity of physical symptoms two–years after completing treatment, many women continue to report persistent fatigue, neuropathy in the hands and feet, pain, and disrupted sleep (Cheng et al., 2016). Further, pain associated with lymphedema has been strongly associated with poorer quality of life (Engle et al., 2003; Hormes et al., 2010). Lastly, at five–year follow-ups, women also report poorer quality of life due to the side effects of their treatment such as hot flashes due to medically induced menopause, changes in cognitive functioning, and changes in weight (Schmidt et al., 2018).

In addition to changes in physical quality of life due to ongoing physical symptoms, women also report decreases in their social and emotional quality of life. The social quality of life subscale of the FACT-B is related to one’s ability to connect with others, receive social support, engage in effective and meaningful communication, and satisfaction with one’s sex life (Brady et al., 1997). Emotional quality of life within the FACT-B relates to women’s experiences with strong emotions such as sadness and intense worry, in addition to the extent to which women are able to cope with these emotional experiences (Brady et al., 1997). Both of these constructs are subscales included within the FACT-B.

Regarding social quality of life, it has been documented within the literature that following treatment for breast cancer, women report two levels of changes within their social support structure. First, women report that as their treatment ends and the number of medical appointments decreases, they feel a loss of support from their medical team, which they were accustomed to during their treatment period (Cheng et al., 2016). Additionally, as a result of
women’s diagnosis and treatment regimens, many breast cancer survivors have reported poorer interpersonal relationships with friends, family, and colleagues, thus contributing to poorer social well-being (Fong et al., 2017; Schmidt & Andrykowski, 2004). Further, a vast amount of research has demonstrated that during survivorship, women report significant decreases in their desire for and interest in sex and note significant decreases in their overall satisfaction with their sexual intimacy (Emilee et al., 2010).

Emotionally, women in the survivorship period are faced with learning to cope with a variety of emotional experiences. While mental health is described in more detail above, this section will focus on quality of life outcomes associated with fear of cancer recurrence, intolerance of uncertainty, and women’s coping styles. Fear of recurrence can be an appropriate response following treatment for breast cancer and encompasses an underlying worry that one’s cancer may return (Simard et al., 2010). Although this concern can be considered a normative experience, fear of recurrence has been found to be significantly related to decreases in emotional well-being (Koch et al., 2013). Similarly, since it is difficult to predict whether a woman will experience a recurrence of their disease, many women find it difficult to tolerate the unknown aspects of their disease and/or survivorship trajectory (Carleton, 2016). Learning to cope with the associated uncertainty and work toward improving a sense of internal locus of control has been found to improve women’s emotional well-being (Sharif, 2017).

Finally, functional well-being refers to the extent to which women are able to navigate and engage with their physical environment (Brady et al., 1997) and is the final subscale within the FACT-B. Evidence suggests that breast cancer diagnosis and treatment contributes to a significant change in women’s ability to work (de Boer et al., 2009) and that women’s employment status significantly contributes to their quality of life (Mahar et al., 2008). Women who worked a few
hours during treatment, and during survivorship were found to have improved functional well-being, compared to women who stopped working (Timperi et al., 2013). Additionally, while women who are actively receiving chemotherapy as part of their treatment regimen report poorer sleep (Ancoli-Israel et al., 2006), changes in sleep have been reported to persist into survivorship (Alfano et al., 2011). Specifically, poorer overall sleep has been significantly related to poorer functional well-being, and the amount of time that a woman spends asleep (sleep efficiency) was significantly predictive of functional well-being (Vargas et al., 2010).

Overall, reductions in quality of life among breast cancer survivors have been reported as an outcome of the type of treatment that the women received (Wu & Harden, 2015), side effects of adjuvant therapy (Brandao et al., 2017), and lasting physical symptoms resulting from the disease and its treatment (e.g., pain, fatigue, cognitive difficulties; Janz et al., 2007). The implications of poorer quality of life due to treatment for breast cancer are vast, with women reporting changes in their physical functioning (Schmidt et al., 2018) and alterations to participation in family activities (Radina, 2009). Overall reductions in quality of life have been associated with an increased risk of mortality (Park et al., 2020).

1.5. Potential Mediators and Moderators

The relationship between embodied reminders, depressive symptoms, and quality of life necessitates a better understanding of factors that may impact the relationship. Three factors that may be of importance are biographical disruption, body image, and gender role orientation. Each of these variables is described in detail below.

1.5.1. Biographical Disruption

One construct that may play a mediating role in the relationship between embodied reminders and well-being is biographical disruption. As noted in the narrative reports by women
who have been treated for breast cancer, the meaning that they make from their experience impacts their self-concept and beliefs about how others see them. This experience was first highlighted by Bury (1982) when he described the experiences of individuals with rheumatoid arthritis. In his paper, he identifies chronic illness as being a force that disrupts the continuity of an individual’s emotional and perceived self. He labeled this experience as biographical disruption, reflecting the nature of the change occurring within one’s self.

Further, Bury (1982) positions chronic illness as a major disruptive event that occurs within a person’s life. Specifically, Bury emphasizes that the disruption occurs as a result of threats to an individual’s understanding and structure for their everyday life. This disruption can occur on an experiential level, such that a person must consider concepts that are typically considered to be more distant occurrences, such as death, pain, and suffering. Disruption is also found to occur within a person’s understanding and navigation of social norms such as mutual support and reciprocity with friends, family, and colleagues. Finally, disruption occurs due to the necessity for the individual to reevaluate their plans for the future.

According to Bury (1982), biographical disruption contributes to an increased awareness or focus on one’s body, often in a manner by which the individual is not used to being aware of their body. Additionally, biographical disruption causes a person to have to rethink their biography and self-concept, due to the person often not having had to navigate a chronic illness before. Lastly, biographical disruption includes the response that the individual has to the chronic condition, and how they can or cannot mobilize the internal and social resources to cope with the changes.

In the context of breast cancer, diagnosis can be experienced as a major threat to a woman’s life and may very quickly contribute to a woman’s acute awareness and consideration for her own
vulnerability and mortality (Koutri & Avdi, 2016). While the research in this area is limited, studies have shown that biographical disruption impacts women across the cancer continuum (Karamba, 2009; Pranka, 2018; Thomas-Maclean, 2004).

Among women diagnosed and treated for breast cancer, biographical disruption has been shown to contribute to changes in the meanings that women make about themselves and their daily lives, the future, and the world around them (Liamputtong & Suwankhong, 2015; Trusson et al., 2016). For some women during the survivorship period, successfully accommodating their cancer experience with their previously held personal narrative has been associated with lower levels of depression and better quality of life (Romanoff & Thompson, 2006). While for other women, biographical adjustment that stalls during the survivorship periods may thrust the woman into a biographical “limbo” (Sibbet, 2005). The concept of being in limbo is pulled from the social anthropological framework by van Gennep (1960), and his study on rites of passage.

In line with the rites of passage framework, a woman’s cancer experience is often demarcated by several transitional periods, which includes the period of time after treatment, in which recurrence risk is high to long-term survivorship (Sleight, 2015). Liminality occurs within the cancer context when a woman is stuck between their identity prior to their cancer diagnosis and their identity after cancer. To fully understand the biographical disruption that women diagnosed with breast cancer go through, we must take into account the challenges they face with incorporating their new identity and narrative, during a time in which there may be a significant gap due to liminality.

A vast majority of the literature on biographical disruption in the context of breast cancer is narrative (qualitative) in nature. In the narrative reports, women often describe that the disruption that occurs regarding their self-concept reflects feelings of anxiety, sadness, and a loss
of a sense of control over their body (Parton et al., 2016; Przedzbiecki et al., 2013; Sun et al., 2018). Further, within these narratives, women frequently report mental health concerns such as depressive symptoms due to hair loss, weight gain, and the loss of the breast(s) (McCann et al., 2010; Parton et al., 2016; Przedzbiecki et al., 2013). Additionally, many women report changes to their quality of life due to trying to manage their altered bodies through concealment (Przedzbiecki et al., 2013) and changes in sexual activity (Parton et al., 2017; Parton et al., 2016; Rubin & Tanenbaum, 2011).

In a narrative study conducted by Trusson et al. (2016), women report increased difficulty moving on from their cancer experience due to the constant reminders that are physically manifested on their bodies (e.g., tattoos, burn marks, weight gain, scars). Women in this study noted that their bodies were irrevocably changed and that even daily acts such as getting dressed carried new meaning.

Narrative reports offer a unique glimpse into the biographical story that women diagnosed with breast cancer carry; however, this form of data makes it difficult to quantify and further explore factors associated with biographical disruption. The present study seeks to uniquely contribute to the literature by quantitatively examining biographical disruption in relation to embodied reminders, depressive symptoms, and quality of life. Since no current quantitative measure of biographical disruption exists, a comparable measure focused on sense of self will also be included, since biographical disruption is directly related to a women’s self-concept.

Sense of self is considered to be a multi-dimensional construct that encompasses an individual’s perceptions of themselves, including beliefs about one’s abilities, behaviors, and appearance (Shavelson & Bolus, 1982). Within this construct, concepts such as self-esteem, body image or mental body representation, and self-efficacy are important components (Pintado, 2017).
As women are diagnosed with and treated for breast cancer, research has shown that women experience alterations in their sense of self, specifically with regard to beliefs about the safety of one’s body (Harris et al., 2017), identity as a patient (McGannon et al., 2016; Sebri et al., 2020) versus that of a healthy woman (Gibson et al., 2015) relationships with others (Marzorati et al., 2017), and disruptions in body image (Triberti et al., 2019). Thus, the self-concept that women carry with them during and after treatment changes (Nieto et al., 2019). Pintado (2017) found that the components of one’s sense of self mediated the relationship between body image and symptoms of anxiety and depression among women diagnosed with breast cancer.

1.5.2. Body Image

Body image is also important to consider in the relationship between embodied reminders and well-being. Body image is a multidimensional construct that encompasses emotional, behavioral, and cognitive perceptions that a person holds related to their physical bodies (Hopwood et al., 2001). This concept goes beyond simply the evaluation that one makes about their physical appearance, and includes factors that are related to the perceptions that a person holds about their body and the way in which it functions (Fingeret et al., 2013). As noted, treatment for breast cancer is lifesaving but comes with a cost. Being that women who receive treatment often end up with embodied reminders such as the loss of one or both breasts, scarring, physical changes related to adjuvant treatment such as weight gain, hair loss, and early menopause (Torre et al., 2017), all of which can impact body image, it is imperative that we examine this factor within the present study.

Following treatment for breast cancer, close to 77% of women report distress related to their altered body (Begovic-Juhant et al., 2012). Two systematic reviews examining body image among younger (>54 years old; Paterson et al., 2016) and older women (50 < years old; Davis et
al., 2020), found that across both populations, body image was a significant concern that impacted mental health and quality of life. Across both populations of women within both systematic reviews, type of treatment had a significant impact on women’s body image. Namely, mastectomy contributed to poorer body image among both younger and older women, with the systematic review of the younger women noting the associated factors of changes in functioning in terms of sexual role and performance as contributing variables. Additionally, radiation and chemotherapy contributed to poorer body image among younger women, while among older women, general dissatisfaction following treatment for breast cancer contributed to increased disappointment and discomfort with the women’s bodies.

One aspect of treatment that is elective is breast reconstruction, which is important because women are able to decide if they want to undergo the procedure. The literature on the impact of breast reconstruction is mixed, with some studies finding body dissatisfaction following breast reconstruction and other studies finding improved body image. In a study conducted by Teo et al. (2018), lack of breast symmetry following reconstructive surgery and increased investment in one’s physical appearance was associated with poorer body image. Another factor associated with body image and breast reconstruction is the timing of reconstructive surgery. Compared to women who delayed breast reconstruction, women who elected to have immediate breast construction experienced improved body image (Al-Ghazal et al., 2000). This finding was supported in a more recent study, demonstrating that women who received breast construction following mastectomy and women who received a lumpectomy had better body image compared to women who elected to only have a mastectomy (Olfatbakhsh et al., 2018).
Interestingly, while the research on age-related differences in body image among breast cancer survivors is mixed, it appears that menopausal status before diagnosis plays a role in body image satisfaction following treatment (Davis et al., 2020; Patterson et al., 2016). Specifically, women who were premenopausal prior to treatment experienced worse body image outcomes compared to women who were post-menopause at the time of diagnosis. The research suggests that adjustment to immediate symptoms of menopause, which can contribute to increased sexual dysfunction, may contribute to the differences in body image (Patterson et al., 2016).

In addition to the studies that examined body image objectively, narrative reports reflect a deeply changed body image for the women who have undergone treatment. Specifically, in these studies, women describe their bodies as “nasty” (Prates et al., 2017), “odd” or “not normal” (Parton et al., 2016), and feel that they are “disfigured” (Slatman et al., 2016; Sun et al., 2018). These descriptions reflect a feeling that the body is abnormal, and women seem to express concern about how their altered bodies will be perceived by others, particularly those closest to them (Loaring et al., 2015; Parton et al., 2016).

Factors that influence women’s body image following treatment for breast cancer are important, as results indicate the poorer body image is associated with increased mental health symptoms including depression and anxiety, and poorer quality of life (Davis et al., 2020; Patterson et al., 2016). The predictive nature of poorer body image on depression and reductions in quality of life (Lam et al., 2012; Teo et al., 2018) is crucial as these factors have been associated with increased mortality and morbidity among breast cancer survivors (see mental health and quality of life sections above).
1.5.3. Gender Role Orientation

Despite the noted difficulties with coping and adjusting to the physical reminders of breast cancer, the current literature does not provide support in the identification of women who may be at an increased risk of distress following treatment due to physical changes to their body following breast cancer treatment. It is possible that one way to identify women who are at an increased risk is through their gender role orientation, or the extent to which an individual identifies as being more feminine.

Gender role orientation is the concept by which women internalize societal standards of physical beauty and behavior, and in this case, those standards that are most associated with femininity (Boquiren et al., 2016; Toner et al., 2012). The implicit and explicit messages that women receive about societal expectations of femininity ultimately serve to reinforce the cultural norms that dictate ideals associated with attractiveness and gender roles. Importantly, research has found that it is the internalization of the cultural ideals that become part of a woman’s biographical narrative (Bessenoff & Snow, 2006).

It is undeniable that women go through copious amounts of physical and emotional changes in relation to their breast cancer experience. Thus, it is unsurprising that previous research has found that women report changes to their feelings of femininity and sexuality following treatment (McCann et al., 2010; Parton et al., 2016; Rubin & Tanenbaum, 2011). In line with feminist theory, the breast is considered to be a representation of women’s femininity and thus has been closely tied to feminine identity and feminine gender roles (Marshall, 1996). Further, objectification theory links the degree to which a woman’s body matches (or does not align with) the societal standards with a women’s self-worth (Fredrickson & Roberts, 1997; Moradi & Huang, 2008).
When applying the concept of internalized feminine gender role orientation within the context of breast cancer, femininity is examined as both a factor contributing to adjustment during survivorship, and as an outcome of treatment. Further, the concept is broken down more in the literature, by which we can better understand two aspects of this gender role orientation—femininity and sexuality. Moreover, research has found that feminine gender role orientation plays a significant role in women’s body image and sense of self following treatment (Abdel-Ghany et al., 2019; Boquiren et al., 2016; Martinez-Ramos, 2009).

In a meta-analysis conducted by Sun et al. (2018), the theme of changes to a woman’s identity following treatment for breast cancer was noted. Specifically, women reported feeling disfigured, like a “monster,” and that they were different from other women due to missing a breast and/or having scarring from treatment. Additionally, it was found that as a result of treatment, women reported that the removal of their breast(s) via unilateral or bilateral mastectomy also resulted in removal of part of their identity. One study, in particular, was highlighted within the review, in which one participant noted feeling like “half a woman” and that her “femininity disappeared” (Lindwall & Bergbom, 2009).

Similar to changes in identity as a result of losing one or both breasts, hair is also an aspect of feminine identity that can change due to treatment for breast cancer. The loss of hair (not just on the head but also eye lashes, eyebrows, pubic hair, and hair on your arms) resulted in increased distress among women, due to hair loss indicating illness and violating the feminine norms for youth and health (Trusson et al., 2016). These findings built upon a review of the literature conducted by Lemieux et al. (2008), which found that hair loss was consistently rated as one of the most difficult side effects that women had to cope with after treatment.
Closely tied to participants’ femininity was the role that their body played in activities such as breastfeeding, which women felt was part of what defined them as a woman. No longer having a breast(s) felt like a significant loss and contributed to further disruption in women’s female gender identity (Sun et al., 2018). Further, among an Egyptian cohort of women, a qualitative analysis found that following treatment women reported changes in their roles as housewives and mothers (Abdel-Ghany et al., 2019). Specifically, women noted that they were not able to keep up with their household duties (e.g., chores, cooking), felt they neglected their husbands and children, and felt they could not fulfill their role as caretaker and instead had to be taken care of by others.

On top of the role changes that contribute to changes in women’s perceptions of and experiences with their feminine identity, women also report changes in their sexuality due to treatment-related side effects. Through a review of the literature, Emilee et al. (2010) found that women frequently reported vaginal dryness, decreased libido, decreased arousal, difficulty achieving orgasm, and lack of sexual pleasure possibly as a result of changes in sensitivity levels of breast and other body parts. The analysis found that these changes in sexual functioning were consistently endorsed by women globally. In line with feminine gender role orientation, changes in women’s sexuality have been found to impact women’s intimate relationships. Women expressed feelings related to being less attractive due to loss of body hair, loss of menstruation (for those who were premenopausal), and generally feeling “old before their time.”

These changes in women’s perceptions of their femininity and sexuality may be the result of internalized prescriptive norms regarding how a woman “should look.” Women treated for breast cancer who report a greater internalization of societal gender stereotypes for women also demonstrated a significant increase in mental health symptoms (Li et al., 2017), poorer body
image, and increased self-surveillance (Boquiren et al., 2013) because of their disease and treatment. That is, women who identify as feminine appear to experience greater distress, poorer body image, and increased biographical disruption due to the strong relationship between their gender role orientation and sense of self. The present study explored the influence of gender role orientation, biographical disruption, and body image in quality of life and symptoms of depression. Gender role orientation was included in the present study due to the strong societal influence that the female figure (e.g., breasts, hair, body) has on perceptions and experiences of femininity.
CHAPTER 2. The Present Study

Due to the disconnect between women’s subjective reports of their experience following treatment for breast cancer and quantitative data, the present study examined models to better understand the relationship between embodied reminders and well-being. The models proposed an association between embodied reminders and well-being (defined as depressive symptoms and quality of life in this study). Biographical disruption and body image were included in the models as two potential intermediary variables that may help to explain the association between embodied reminders and decreased well-being. Gender role orientation was tested as a conditional variable in the relationships between embodied reminder and the mediators, biographical disruption and body image. It was hypothesized that women who identified as highly feminine would report a greater increase in biographical disruption and poorer body image as a result of embodied reminders, which, in turn, would be associated with increased symptoms of depression and poorer quality of life. These models were anticipated to provide information that may help support the identification of women who are at an increased risk for distress related to embodied reminders following primary treatment for breast cancer. The models that were tested in the present study are presented graphically below in Figure 1.
Theoretical Model — Embodied Reminders: Examining a Moderated Mediation Involving Feminine Gender Role Orientation, Biographical Disruption, and Body Image

Notes. a = mediators, b = independent variables, c = dependent variables, feminine gender role orientation = moderator

2.1. Method

2.1.1. Participants

Convenience sampling was utilized, and a range of organizations were contacted from social media sites (e.g., Facebook, Twitter, Reddit), and from local, national, and international breast cancer organizations. Data collection took place between November 2019 and June 2020. During this timeframe, 19 out of the 108 participants completed the survey prior to March 2020 (reference point for the COVID-19 pandemic); thus, the majority of participants (82%) completed the survey starting in April 2020, a month after the pandemic began in the United States.
Participants were eligible to complete the survey if they were at least 18 years of age and had completed their primary treatment for breast cancer (e.g., lumpectomy, mastectomy, radiation, and/or chemotherapy). This allowed for the inclusion of individuals who had not fully completed treatment but may be on maintenance therapy (e.g., hormonal treatments such as Tamoxifen). Women with all stages of cancer and those who could read and write in English were eligible for participation in the study. Women who had been diagnosed with breast cancer but had not yet undergone treatment were not eligible for the study since they had not yet experienced lasting physical bodily changes because of cancer.

2.1.2. Procedure

The study design was correlational. All assessments were self-report, and no follow-up measures were given. Recruitment of participants was conducted online via a link to a Qualtrics questionnaire. Facebook administrators, directors, and service managers of local and national breast cancer organizations were contacted and asked if they were willing to have the researcher post a short recruitment script, which introduced the study and provided a link to the confidential survey. A similar recruitment method has been effectively utilized in previous studies (see Hill et al., 2021; Hill & Hamm, 2019; Hill & Watkins, 2017; Mundy et al., 2018; Zhuo, 2021). The recruitment script stated that the study was being conducted with a focus on the experiences of women who had been diagnosed with breast cancer and who had completed their primary treatment (Appendix A). Interested individuals were then able to click on the attached link. The present study was approved by the West Chester University IRB, and the IRB approval forms are provided in Appendix A.

Once participants clicked on the Qualtrics website link, they were taken to the consent form (see Appendix A). Participants were presented with an option to either consent or not consent to...
participate in the study. Once they selected “I consent,” they were asked to complete the questionnaires in Qualtrics which included demographic and medical information (see Appendix B), and questions related to their mental and physical health, biographical disruption, body image, feminine gender role orientation, and quality of life. At the end of the questionnaire, participants were thanked for completing the study and were asked whether their contact information could be kept on file for contact for future studies on cancer and well-being. Additionally, participants were provided with a debriefing statement (see Appendix A) which included resources with information regarding mental and physical health. The questionnaire took approximately 30 minutes to complete. In March 2020, funds were obtained to provide a raffle to participants who completed the study and six $50 Amazon gift cards were made available. Six women who opted in for the raffle were selected using a random number generator and sent a gift card at the conclusion of the study.

2.1.3. Measures

2.1.3.1. Demographics and Medical Information. In addition to the validated and researcher-created questionnaires, the survey included items regarding age, race, level of education, yearly income, and marital status. Further, women were asked questions specific to their breast cancer diagnosis such as date of diagnosis (year and month), disease staging, number of recurrences, type(s) of treatment received, whether they have received breast reconstruction, and their level of satisfaction with the reconstruction (if they answered affirmative to the previous question), and their current medical status (e.g., presence of disease or in remission). Additionally, general health questions were included that focused on presence of comorbid or concurrent medical illnesses or diagnoses (e.g., hypertension, diabetes, other cancer diagnoses), current
height and weight, and smoking status. Refer to Appendix B for the questions from the demographics and medical section.

2.1.3.2. Depressive Symptoms. Participants were asked to complete the Depression Anxiety and Stress Scales (DASS-21; see Appendix C). The DASS–21 is a short form of the DASS (Lovibond & Lovibond, 1995), consisting of 21 items instead of 42 (Henry & Crawford, 2005). The DASS–21 is used to measure participant levels of anxiety, depressive symptoms, and stress; however, to reduce participant burden, only two of the subscales, depressive symptoms and anxiety symptoms, were evaluated. Respondents’ scores on both the depressive and anxiety subscales were included in a zero-order correlational matrix to understand the relationship between these constructs and other variables in the study; however, only the depressive symptoms subscale was included in the moderated mediation analyses. When looking at the full scale, each of the three constructs comprises seven of the 21 items within the scale. In the present study, only 14 questions were included since the stress subscale was removed. Scores for the subscales are summed and then multiplied by two to get a score that is comparable with the full DASS (Henry & Crawford, 2005). Higher scores indicate higher levels of depressive symptoms and anxiety. The instructions for the scale are as follows: “please read each statement and select the answer that indicates how much the statement applied to you over the last week.” Responses are provided using a 0–3–point scale (0 = did not apply to me at all, and 3 = applied to me very much, or most of the time). Cronbach alphas for the DASS–21 depressive symptoms (α = .87) and anxiety (α = .67) subscales were adequate.

2.1.3.3. Gender Role Orientation. The Gender Role Socialization Scale (GRSS; Toner et al., 2012) was used to assess the degree to which participants have internalized a feminine gender role orientation (see Appendix D). Questions on this scale were derived to assess cross-
cultural feminine gender roles (Toner et al., 2012), and provide data on three factors related to feminine gender role orientation, the theme of being a “good woman,” sexuality and self-blame, and the theme of being unselfish and of service to others, in addition to an overall score. This scale is negatively associated with the masculinity subscale of the brief Bem Sex Role Inventory (Bem, 1981) and was significantly correlated with the Bem femininity subscale. The GRSS is comprised of 30 items total, with each item being rated on a 7-point Likert type scale; 1 representing “strongly disagree,” 7 indicating that a participant “strongly agrees” with the proposed statement. Examples of items on the scale include, “If I ever feel overwhelmed, it must mean that I am incompetent,” “I feel I must look good on the outside even if I don’t feel good on the inside,” and “I feel that I must always make room in my life to take care of others.” Items are summed to receive a total score; the total score was used for the purposes of the present study. An error occurred with this scale in Qualtrics and item 1 was presented twice instead of items 1 and 2. Thus, item 2 was not included in the presented scale and scale consisted of 29 questions total. The internal consistency of the GRSS in this study was adequate (α = .93).

2.1.3.4. Biographical Disruption. An original questionnaire was used to measure biographical disruption (see Appendix E). This questionnaire was developed because, to the best of my knowledge, there is no quantitative method for measuring biographical disruption. Past research has focused on using interviews to gather qualitative data (Liamputtong & Suwankhong, 2015; Trusson et al., 2016; Ussher et al., 2018), making it difficult to fully understand the magnitude of distress that biographical disruption causes. This questionnaire consists of 12 questions that inquire to what extent a participant has experienced changes in their perceptions about themselves, changes in their perceptions of how others see them, and changes in their behaviors as a result of their cancer experience. Items were developed based on themes and results
identified from the qualitative literature that assessed biographical disruption among breast cancer survivors (Habermas & Kober, 2015; Heggenstaller et al., 2017; Liamputtong & Suwankhong, 2015; Trusson et al., 2016). Responses were rated on a 5-point Likert scale with 1 = “never” to 5 = “all of the time.” Scores were summed to get a total score that represents the magnitude of biographical disruption. The internal consistency of this measure was good (α = .89). Additional information is presented in the appendices (Appendix J) that show Cronbach’s alphas if-item-deleted for this scale (indicating the extent to which each item contributed to the overall internal consistency of the scale), in addition to a factor analysis demonstrating the unidimensional nature of the scale.

2.1.3.5. Quality of Life. The Functional Assessment of Cancer Therapy-Breast (FACT–B; see Appendix F) was utilized to assess overall quality of life and includes questions specific to the breast cancer experience. Permission and licensing to utilize this scale was granted by FACIT (https://www.facit.org/). The FACT–B is composed of the original FACT–G (Functional Assessment of Cancer Therapy-General) and a Breast Cancer Subscale (BCS) (Brady et al., 1997). The present study utilized the FACT–B version 4, which consists of 37 self-report questions and includes four subscales: Physical Well-being (PWB — 7 items), Emotional Well-being (EWB — 6 items), Social Well-being (SWB — 7 items), Functional Well-being (FWB — 7 items), and the Breast Cancer subscale (BSC — 10 items). The FACT–B yields three separate total scores including: the FACT–G (PWB + SWB + FWB + EWB), Treatment Outcome Index (PWB + FWB + BCS) and the FACT–B (all of the subscales).

All items are rated on a 5-point Likert scale with responses ranging from 0 (not at all) to 4 (very much). To obtain the subscales scores, the items within each subscale are added up, then multiplied by the number of items within the scale. This value is then divided by the number of
items answered. The total scores are derived by adding the required subscale scores together. Higher scores reflect better quality of life. In the present study, the total FACT–B score was used in the full model analyses. Individual subscales and the other total scores (FACT–G and TOI) were explored as part of a correlation matrix. Reliability scores for the subscales and total outcomes were all adequate: PWB (α = .87), EWB (α = .78), SWB (α = .83), FWB (α = .85), BCS (α = .73), TOI (α = .90), FACT–G (α = .91), FACT–B (α = .92).

2.1.3.6. Embodied Reminders. An original questionnaire was used to measure the extent to which participants have physical reminders of their cancer experience and the severity of these reminders (see Appendix G). Being that this scale consists of both the number and intensity of impact of women’s embodied reminders, a total score was derived specifically for the number of embodied reminders and a total score was derived for the intensity of embodied reminders. The number of embodied reminders scale included a list of 12 embodied reminders and was categorical in nature (participants either selected “yes” or “no”); thus a total score was derived by adding up the total number of embodied reminders endorsed by the participants. The intensity of embodied reminders scale included a list of the same 12 embodied reminders that participants could then rate the extent of impact that the embodied reminder had on them. Items for the intensity of embodied reminders scale were rated on a 4-point Likert scale with 0 being “Not at all” and 3 being “Very Much.” A score for the intensity of embodied reminders is derived by summing the items.

Given the scoring system used, it is noteworthy that it was possible that women who rated only two embodied reminders as a “3” and the rest as a zero received the same score that a woman who rated three embodied reminders as a “2” and the rest as a zero. Therefore, the scale took a synergistic approach by recognizing that a person may have a single embodied reminder that
impacts them to a high degree, while another woman may have many embodied reminders that only impact her to a moderate degree. By taking the summation for this scale, a fuller range of experiences associated with embodied reminders was able to be captured. The reliability coefficient for the embodied reminders intensity subscale was adequate ($\alpha = .60$).

2.1.3.7. Body Image. The Body Image Scale (BIS; see Appendix H) was used to assess the impact of treatment for cancer on participants’ satisfaction with their body image, body integrity, perceived attractiveness, and avoidance behaviors (Hopwood et al., 2001). This measure was designed to be used with patients who have been diagnosed with any type of cancer and who have received any type of treatment for their illness. The BIS was developed utilizing a patient-centered approach due to the lack of consensus on a definition of body image disturbance in the literature (Hopwood et al., 2001). The BIS consists of 10 items and includes questions regarding affect, behavior, and cognitions, which are rated on a 4–point Likert scale and range from 1 (not at all) to 4 (very much). To score the BIS, item responses are summed across all questions with possible total scores ranging from 0–30. Higher scores indicate more significant distress related to body image and body dissatisfaction. Cronbach’s alpha for the BIS was adequate ($\alpha = .93$).

2.1.3.8. Sense of Self. The Sense of Self Scale (SOSS; see Appendix I) is a 12–item measure that examines four components that represent a weak sense of self. These four dimensions include a lack of understanding of oneself, sudden shifts in feelings/opinions/values, a tendency to confuse one’s feelings, thoughts, and perspectives with those of others, and finally feeling that one’s existence is tenuous (Flury & Ickes, 2007). Item-responses are rated on a 4–point Likert scale with 1 being “very uncharacteristic of me” and 4 being “very characteristic of me.” Although the necessity for the creation of the SOSS was derived from a need to evaluate the strength of sense of self in individuals with Borderline Personality Disorder (BPD, the actual
creation of the scale focused not on BPD but instead on exploring the psychology of individuals who overall have a weak sense of self. Sample items on the SOSS include: “I’m not sure I can put much trust in my thoughts and feelings” and “Who am I? is a question that I ask myself a lot.” Sense of self is closely related, but conceptually distinct, to the concept of biographical disruption (Barel-Shoshani & Kreitler, 2017; Bell, 2012; Bertero & Wilmoth, 2007), and was included in the present study in case the original questionnaire for biographical disruption did not function as well as expected psychometrically. The SOSS had good internal consistency (α = .71).
Chapter 3: Results

3.1. Data Screening

Before conducting the analyses, all data were screened for missing values, regression assumptions, and outliers. Analyses were conducted in SPSS (Statistical Package for the Social Sciences) version 26.0. Cases in which participants did not complete the full survey were removed. Additionally, cases that had missing values of more than 30% for a questionnaire were deleted for that scale. For the remaining cases, missing value analysis (MVA; Schlomer et al., 2010) was conducted, and Little’s MCAR was used to identify values that were missing at random. Values that were not missing at random were not replaced, and those cases were not included in the total scale score. For values that were missing at random, Expectation Maximization (EM) was used to estimate and impute the values. A total of 10 cases had EM applied for data that were missing at random per Little’s MCAR—two cases for the FACT–B, six cases for the SOSS, one case for the DASS–21, and one case for the GRSS. Outliers were then examined and a total of 12 outliers were identified—two outliers were identified for the depressive symptoms subscale of the DASS–21, one for the Biographical Disruption Scale, four for the physical well-being subscale of the FACT–B, two for the emotional well-being subscale of the FACT–B, 2 for the breast cancer subscale of the FACT–B, and one for the Body Image scale. The models did not change with the outliers included versus when the outliers were not included, thus no cases were removed to help preserve power. After the data were screened, the final sample size for analyses was 108.
3.2. Descriptive Statistics

A total of 108 cases were included in the final sample and the results for the descriptive statistics are presented below in Table 1 (social and medical demographics) and Table 2 (descriptive statistics).

3.2.1. Demographic Characteristics.

Participants ranged in age from 30 to 85 years ($M = 56.94$, $SD = 10.33$). The majority of participants identified as Caucasian ($n = 96, 88.9\%$), resided in North American (e.g., USA, Canada; $n = 68, 62.9\%$), and were college graduates ($n = 69, 63.9\%$). Individuals across 14 countries and 5 continents completed the survey. Further, a majority of participants had a household income of at least $70,000 ($n = 65, 60.2\%$), with the largest percentage of the participants having an income of over $100,000 ($n = 35, 32.4\%$). Additionally, the majority of participants reported that they were currently married ($n = 66, 61.6\%$).

3.2.2. Medical Information.

Time since initial diagnosis for participants ranged from 7 months to 31 years, with the largest percentage of the women’s disease stage being diagnosed as Stage I ($n = 43, 39.8\%$) followed by Stage II ($n = 33, 30.6\%$). The majority of participants did not elect to receive reconstruction ($n = 63, 58.3\%$), though, for the women that did elect for reconstruction, 33% percent reported satisfaction with the procedure. As per the inclusion criteria, all the women had completed their primary treatment for breast cancer. Most women had received combination treatment ($n = 97, 89.2\%$), meaning that they received more than one type of treatment for their breast cancer. These treatment approaches included surgery, radiation, chemotherapy, hormonal or biological treatment, and prophylactic treatments (e.g., oophorectomy, hysterectomy). The largest percentage of participants had received four separate types of treatment ($n = 38, 35.2\%$),
and an overwhelming majority of participants received surgery (n = 105, 97.2%). Most of the participants were considered to be in remission (n = 104, 96%), while four women reported that they are still in active treatment. Lastly, a small percentage of participants (n = 12, 11.1%) reported having experienced a recurrence of their breast cancer, ranging from 1 recurrence (n = 7, 6.5%) to 3 recurrences (n = 2, 1.9%).

Additional medical information included smoking status, with the majority of the sample (n = 83, 76.8%) identifying as a life-long non-smoker. Most of the sample also reported no presence of a comorbid medical condition (n = 63, 58.3%). For the women who did report comorbid medical conditions (n = 45, 41.7%), four women reported a secondary type of cancer (e.g., ovarian cancer, melanoma, lymphoma), while others reported conditions such as high blood pressure, Diabetes Mellitus, arthritis, thyroid conditions, and mental health disorders such as depression and anxiety.
### Table 1

Participant Sociodemographic and Medical Information (n = 108)

#### Demographics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Category</th>
<th>n</th>
<th>(%)</th>
<th>Marital Status</th>
<th>Married</th>
<th>n</th>
<th>(%)</th>
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<td>Ethnicity</td>
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<td>(88.9)</td>
<td>Marital Status</td>
<td>Married</td>
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<td>(61.6)</td>
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<td></td>
<td>Widowed</td>
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<td>Single</td>
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<td></td>
<td>Other</td>
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<td>(3.7)</td>
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<td>Residence</td>
<td>USA</td>
<td>52</td>
<td>(48.1)</td>
<td>Current medical status</td>
<td>Presence of disease, active treatment</td>
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<td>(3.7)</td>
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<td>UK</td>
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<td></td>
<td>In remission, on maintenance therapy</td>
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<td>Canada</td>
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<td>In remission, not on maintenance therapy</td>
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#### Education (completed)

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<th>(%)</th>
<th>Treatments received</th>
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<th>n</th>
<th>(%)</th>
<th>Chemotherapy</th>
<th>n</th>
<th>(%)</th>
<th>Radiotherapy</th>
<th>n</th>
<th>(%)</th>
<th>Hormonal therapy</th>
<th>n</th>
<th>(%)</th>
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<td>Family income</td>
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<td>Cancer recurrence</td>
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<td>$100,001 or more</td>
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</table>

Note. USA = United States of America; UK = United Kingdom; United AE = United Arab Emirates
Table 2

Descriptive Statistics for all Measures Used

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<tr>
<th>Measure</th>
<th>Mean (SD)</th>
<th>Range</th>
<th>Possible Range</th>
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<tr>
<td>Depressive symptoms</td>
<td>5.36 (6.03)</td>
<td>0.00-28.00</td>
<td>0.00-42.00</td>
</tr>
<tr>
<td>Anxiety symptoms</td>
<td>3.22 (4.26)</td>
<td>0.00-22.00</td>
<td>0.00-42.00</td>
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<td>Biographical Disruption</td>
<td>22.25 (7.35)</td>
<td>12.00-53.00</td>
<td>12.00-60.00</td>
</tr>
<tr>
<td>Physical Well-being</td>
<td>23.21 (4.67)</td>
<td>7.00-28.00</td>
<td>0.00-28.00</td>
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<tr>
<td>Social Well-being</td>
<td>19.09 (5.72)</td>
<td>3.00-28.00</td>
<td>0.00-28.00</td>
</tr>
<tr>
<td>Emotional Well-being</td>
<td>18.78 (3.77)</td>
<td>7.00-24.00</td>
<td>0.00-24.00</td>
</tr>
<tr>
<td>Functional Well-being</td>
<td>20.83 (5.32)</td>
<td>5.00-28.00</td>
<td>0.00-28.00</td>
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<td>Breast Cancer Well-being</td>
<td>25.93 (6.69)</td>
<td>4.00-40.00</td>
<td>0.00-40.00</td>
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<tr>
<td>FACT-G Total</td>
<td>82.01 (15.17)</td>
<td>40.00-108.00</td>
<td>0.00-108.00</td>
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<tr>
<td>FACT-B Total</td>
<td>107.94 (20.12)</td>
<td>53.00-148.00</td>
<td>0.00-148.00</td>
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<td>Treatment Outcome Index</td>
<td>70.07 (14.96)</td>
<td>18.00-96.00</td>
<td>0.00-96.00</td>
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<tr>
<td>Body Image</td>
<td>17.32 (6.47)</td>
<td>10.00-38.00</td>
<td>10.00-40.00</td>
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<td>Sense of Self</td>
<td>24.44 (5.78)</td>
<td>13.00-47.00</td>
<td>12.00-48.00</td>
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<td>Gender Role Socialization</td>
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<td>32.00-162.00</td>
<td>30.00-210.00</td>
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<td>Intensity of ER</td>
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<td>0.00-36.00</td>
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<tr>
<td>Number of ER</td>
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<td>1.00-8.00</td>
<td>0.00-12.00</td>
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</tbody>
</table>
3.3. Qualitative Data

As part of the Embodied Reminders scale, participants were provided with space to list additional embodied reminders that either were not included on the scale, or that they wanted to highlight. Table 3, below, examines themes across various of the women’s responses, including the frequency of each response. It should be noted that participants were not required to provide qualitative information, but a total of 69 women (64%) described some of their embodied reminders. Further, Table 4 provides a visual of the frequency of each of the reported embodied reminders from the first 12 questions in the Embodied Reminders scale (specifically looking at number of embodied reminders).

Women most frequently reported experiencing joint pain (n = 9) and scar(s) (n = 7) for embodied reminders. Specifically, related to joint pain, women reported that,

Participant 1: “Medication makes my joints hurt and causes stiffness.”

Participant 2: “I believe I have chemo-induced arthritis.”

Additionally, women who reported having one or multiple scars noted that scars were located on their chest and stomach. Further, the women noted that the scars were frequently a result of their medical port placement, from single or bilateral mastectomy, and/or from their breast reconstruction. One woman noted,

Participant 3: “I have scars from fat removal [used] to replace empty pockets around my implants. My front-side has a lot of scars from reconstruction.”

The embodied reminder theme that most women endorsed experiencing was associated with ‘aesthetic changes’ (n = 23). Within this theme, women noted changes in their hair, nails, skin discoloration, and obvious (perceived) changes to their appearance. Some of the women’s responses are included below.
Participant 4: “I am athletic. My abs are now bigger than my chest. When I do wear prosthetics, I look fat.”

Participant 5: “My eyelashes have not grown back fully. The top lashes are mostly fine (albeit short) but I have very few lower lashes. Given the length of time since treatment it is unlikely, they will ever grow back.”


Participant 7: “Toenails are marked and bruised, eyebrows are sparse…”

Lastly, women reported persistent symptoms and physiological changes associated with the treatments they received. These include “chemo brain,” breathlessness, and headaches, in addition to noticeable changes in vision, sun sensitivity, and vascular issues including deep vein thrombosis (DVT; a.k.a., a blood clot).

Participant 8: “With the medication that I have to take makes me sweat. The chemistry in my body has change. I sweat a lot. It makes me feel dirty and smelly. I very self-conscious of body odor. Makeup running. It’s embarrassing.”

Participant 9: “I was radiated on left side and my lungs and heart appear to have been impacted.”

Participant 10: “…Head always hurts on one side from medication. Eyesight has been affected from medication. Despite being 9 years no evidence of disease, I still feel I have a bit of chemo brain. Sometimes words come out wrong, and my brain is slower.”

The collection of responses gathered from the women represent a wide range of embodied reminders that are experienced even years after treatment for breast cancer has
subsided. While not all of the women elected to provide qualitative information, our data shows that all 108 women who participated in this study have at least one embodied reminder.

As shown in Table 4, almost all of the women (93.5%) indicated that they had a least one scar as a result of their breast cancer treatment. Further, most of the women noted that they have permanent tattoos due to receiving radiation (52.8%), and just over half (50.9%) of the women reported unwanted weight gain related to their treatment. In addition to the embodied reminders that we most frequently reported, most of the women have had at least one breast removed (51.9%), and a large percentage of women reported having breasts that were asymmetrical or misaligned (76.9%).

The combination of these outcomes indicates that embodied reminders are a common experience among the participants in the present study, and range widely in type and impact. Below are some additional responses provided by the participants, in which they discuss the impact that their treatment and embodied reminders has had on them.

Participant 11: “My original mastectomy and re-construction were horrendous. It took me almost 10 years to agree to have diep flap surgery [a type of breast reconstruction that uses women’s own skin and body fat to reconstruct a breast] and it's the one thing that made me feel like I did before cancer. That was only about 18 months ago so it's going to take time for the prior 10 years to fade away and let the new me shine. The surgery and scars were difficult to deal with but so much better than the implants that I had earlier.”

Participant 12: “I feel blessed that a lumpectomy and radiation was all I needed. God is good. I have a nasty scar on my left breast, and it is very deformed and much smaller. I was in the middle of a divorce at the time of my diagnosis so there was no physical contact and it has
been 3 years since I have been in a relationship. I wonder how my deformity will be accepted if I should enter into a relationship. I hope I will be able to find out…”

Participant 13: “One of the main residual things I experience is a reduction in memory capacity to retain important information and to remember the names of things. This is frustrating and I feel the need to explain this sometimes at work.”

Participant 14: “I am 12 years post diagnosis and there is not a day that goes by that I am not affected somehow by it. But, with time, both the physical pain and the emotional pain subsides just enough and a new normal arises. There is always the question of why. There is always a reminder. It never goes away.”
Table 3

Embodied Reminders Themes – Qualitative Responses Included at the end of the Embodied Reminders Scale

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<tr>
<th>Theme</th>
<th>Embodied Reminder</th>
<th>Frequency</th>
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<td>Pain</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Headaches</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Joint Pain</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Joint Swelling</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Muscle Pain</td>
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<tr>
<td></td>
<td>Vaginal Pain</td>
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<td></td>
<td><strong>Total</strong></td>
<td><strong>16</strong></td>
</tr>
<tr>
<td>Aesthetic Changes</td>
<td>Breast Implants</td>
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</tr>
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<td></td>
<td>Changes in physical appearance (e.g., looking flat-chested, breast reconstruction</td>
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<tr>
<td></td>
<td>not looking “real”)</td>
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</tr>
<tr>
<td></td>
<td>Changes in skin texture (e.g., ripples, bulges)</td>
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</tr>
<tr>
<td></td>
<td>Changes in weight/body fat distribution</td>
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</tr>
<tr>
<td></td>
<td>Hair loss/thinning</td>
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</tr>
<tr>
<td></td>
<td>No nipples/areola</td>
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<td></td>
<td>Skin discoloration</td>
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<td></td>
<td>Tattoos</td>
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<td></td>
<td>Changes to nails (e.g., fingers and/or toes)</td>
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<td></td>
<td>Scar(s)</td>
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<td></td>
<td><strong>Total</strong></td>
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<td>Chemobrain</td>
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<td>Hot flashes or sweats</td>
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<td>Systemic rash from medications</td>
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<td>Vaginal dryness</td>
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<td>Changes to vision</td>
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<td>Broken blood vessels</td>
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<td></td>
<td>Changes to heart and lungs</td>
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<td>Sun sensitivity</td>
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<td></td>
<td>Vascular issues</td>
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</tbody>
</table>
Table 4

Frequency of Embodied Reminders

<table>
<thead>
<tr>
<th>Embodied Reminder</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scar(s)</td>
<td>101</td>
<td>93.5</td>
</tr>
<tr>
<td>Tattoo(s) from radiation</td>
<td>57</td>
<td>52.8</td>
</tr>
<tr>
<td>Removal of 1 breast</td>
<td>26</td>
<td>24.1</td>
</tr>
<tr>
<td>Bilateral mastectomy</td>
<td>30</td>
<td>27.8</td>
</tr>
<tr>
<td>Misaligned breasts</td>
<td>33</td>
<td>30.6</td>
</tr>
<tr>
<td>Permanent hair loss</td>
<td>11</td>
<td>10.2</td>
</tr>
<tr>
<td>Weight gain</td>
<td>55</td>
<td>50.9</td>
</tr>
<tr>
<td>Weight loss</td>
<td>5</td>
<td>4.6</td>
</tr>
<tr>
<td>Skin burns</td>
<td>19</td>
<td>17.6</td>
</tr>
<tr>
<td>Asymmetrical breasts</td>
<td>50</td>
<td>46.3</td>
</tr>
<tr>
<td>Lymphedema</td>
<td>26</td>
<td>24.1</td>
</tr>
<tr>
<td>Neuropathy</td>
<td>40</td>
<td>37.0</td>
</tr>
</tbody>
</table>

n = 108

Note. Frequencies were obtained via the Embodied Reminders Scale
3.4. Correlations

Bivariate correlations were conducted among all the study variables and are presented in Table 5 and Table 6. The mental health outcomes of depressive symptoms and anxiety were significantly associated with all study variables. Biographical disruption was significantly correlated with all variables, with notably strong negative correlations with various aspects of quality of life including emotional well-being (r = -0.741, p < .001), FACT–G total (r = -0.696, p < .001), FACT–B total (r = -0.751, p < .001) and the Treatment Outcome Index (r = -0.685, p < .001). Additionally, biographical disruption was also significantly positively correlated with body image (r = 0.627, p < .001), sense of self (r = 0.517, p < .001), and feminine gender role orientation (r = 0.508, p < .001), such that higher biographical disruption is associated with poorer body image, poorer sense of self, and higher feminine gender role orientation.

The intensity of embodied reminders was significantly negatively associated with quality of life specific to breast cancer (r = -0.523, p < .001), and strongly positively correlated with body image (r = 0.692, p < .001), and the number of embodied reminders endorsed by women (r = 0.636, p < .001).
Table 5

Bivariate Correlations with Quality of Life

<table>
<thead>
<tr>
<th>Variable</th>
<th>Physical WB</th>
<th>Social WB</th>
<th>Emo WB</th>
<th>Func. WB</th>
<th>FACT-G Total</th>
<th>BCS</th>
<th>FACT-B Total</th>
<th>TOI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td>-.487**</td>
<td>-.422**</td>
<td>-.571**</td>
<td>-.623**</td>
<td>-.670**</td>
<td>-.513**</td>
<td>-.675**</td>
<td>-.624**</td>
</tr>
<tr>
<td>Anxiety</td>
<td>-.578**</td>
<td>-.204*</td>
<td>-.545**</td>
<td>-.536**</td>
<td>-.579**</td>
<td>-.559**</td>
<td>-.622**</td>
<td>-.642**</td>
</tr>
<tr>
<td>Biographical Dis.</td>
<td>-.500**</td>
<td>-.423**</td>
<td>-.741**</td>
<td>-.566**</td>
<td>-.696**</td>
<td>-.680**</td>
<td>-.751**</td>
<td>-.685**</td>
</tr>
<tr>
<td>Body Image</td>
<td>-.453**</td>
<td>-.343**</td>
<td>-.438**</td>
<td>-.410**</td>
<td>-.522**</td>
<td>-.652**</td>
<td>-.610**</td>
<td>-.599**</td>
</tr>
<tr>
<td>Gender Role</td>
<td>-.483**</td>
<td>-.218**</td>
<td>-.396**</td>
<td>-.484**</td>
<td>-.499**</td>
<td>-.387**</td>
<td>-.505**</td>
<td>-.513**</td>
</tr>
<tr>
<td>Sense of Self</td>
<td>-.355**</td>
<td>-.475**</td>
<td>-.475**</td>
<td>-.422**</td>
<td>-.548**</td>
<td>-.576**</td>
<td>-.604**</td>
<td>-.537**</td>
</tr>
<tr>
<td>ER Intensity</td>
<td>-.484**</td>
<td>-.343**</td>
<td>-.343**</td>
<td>-.345**</td>
<td>-.445**</td>
<td>-.565**</td>
<td>-.523**</td>
<td>-.545**</td>
</tr>
<tr>
<td>ER Number</td>
<td>-.338**</td>
<td>-.290**</td>
<td>-.290**</td>
<td>-.216**</td>
<td>-.280**</td>
<td>-.316**</td>
<td>-.316**</td>
<td>-.335**</td>
</tr>
</tbody>
</table>

Note. Depression = Depression Anxiety Stress Scale–21, Anxiety = Depression Anxiety Stress Scale–21, Biographical Dis. = Biographical Disruption Scale, Body Image = Body Image Scale, Gender Role = Gender Role Socialization Scale, Sense of Self = Sense of Self Scale, ER Intensity = Intensity of impact of embodied reminders, ER Number = Number of embodied reminders, Physical WB= Physical Quality of Life subscale of FACT–B, Social WB = Social Quality of Life subscale of FACT–B, Emo WB = Emotional Quality of Life subscale of FACT–B, Func. WB= Functional Quality of Life subscale of FACT–B, FACT–G Total = Total for the FACT–G embedded within the FACT–B, BCS = Breast Cancer Specific subscale of the FACT–B, FACT–B Total = Total score for the FACT–B, TOI = Treatment Outcome Index of the FACT–B.

**p < .001  **p < .05
Table 6

Bivariate Correlations Between Scales, not Including Quality of Life

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Depression</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Anxiety</td>
<td>.597**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Biographical Dis.</td>
<td>.545**</td>
<td>.511**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Body Image</td>
<td>.377**</td>
<td>.378**</td>
<td>.627**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Sense of Self</td>
<td>.379**</td>
<td>.236*</td>
<td>.517**</td>
<td>.337**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Gender Role</td>
<td>.449**</td>
<td>.432**</td>
<td>.508**</td>
<td>.490**</td>
<td>.319**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. ER Intensity</td>
<td>.384**</td>
<td>.369**</td>
<td>.394**</td>
<td>.692**</td>
<td>.317**</td>
<td>.339**</td>
<td></td>
</tr>
<tr>
<td>8. ER Number</td>
<td>.268**</td>
<td>.217*</td>
<td>.275**</td>
<td>.412**</td>
<td>.103</td>
<td>.224*</td>
<td>.636**</td>
</tr>
</tbody>
</table>

Note. Depression = Depression Anxiety Stress Scale–21, Anxiety = Depression Anxiety Stress Scale–21, Biographical Dis. = Biographical Disruption Scale, Body Image = Body Image Scale, Gender Role = Gender Role Socialization Scale, Sense of Self = Sense of Self Scale, ER Intensity = Intensity of impact of embodied reminders, ER Number = Number of embodied reminders.

**p < .001      *p < .05
3.5. Testing Models of Embodied Reminders and Well-Being

3.5.1. Statistical Approach

To test the hypothesized relationships between embodied reminders, depressive symptoms, and quality of life, a moderated mediation analysis was utilized using bootstrapping estimates for 5000 samples (Hayes, 2015). Both indirect and direct effects were considered to be statistically significant if the 95% confidence interval (CIs) did not contain zero. This method was chosen because it provides an approach in which all hypotheses can be tested using a single inferential statistic, thus reducing the risk of Type I error, and does not assume normality (Hayes, 2015).

A total of eight models were tested to examine two dependent variables (quality of life, depression), two mediator variables (biographical disruption, body image), and influence of feminine gender role orientation (moderator) in the relationship between the independent variables (number of embodied reminders, intensity of embodied reminders) and the identified mediators. Each of the eight models is described below.

The conditional indirect effect of intensity of embodied reminders on depressive symptoms through biographical disruption was tested and is presented below (Figure 2, Model 1). The conditional variable in the model was feminine gender role orientation. The conditional indirect effect of intensity embodied reminders on quality of life through biographical disruption was tested and is presented in the figure below (Figure 2, Model 2). The conditional variable in the model was feminine gender role orientation. Additionally, similar models were tested replacing the biographical disruption variable with body image. The effect of intensity of embodied reminders on depressive symptoms (Figure 2, Model 3) and quality of life (Figure 2, Model 4) through body image was analyzed. In Models 3 and 4, feminine gender role orientation
was again tested as a moderator variable. Lastly, the first four models described above were
analyzed again, but the independent variable was changed to number of embodied reminders.
Please refer to Figure 3 and Models 5–8 presented below.

The output generated by the PROCESS macro in SPSS provided statistics for the direct
and unique indirect pathways among the identified variables in the models. For each overall
model, unstandardized regression coefficients, an indirect effect index, and confidence intervals
were derived. For the direct effect (c’ pathway; that association between the independent variable
and dependent variable) coefficients and associated p values were derived. Additionally,
coefficients, indirect effects indexes, and confidence intervals were calculated for the conditional
effect of the moderator on the a–pathway (influence of the moderator on the relationship between
the independent variable and the mediators) and the b–pathway (relationship between the
mediator and the dependent variable). Outcomes were statistically significant if the confidence
intervals did not contain zero or if the p value was less than .05.

Finally, PROCESS macro for SPSS allows for examination of the strength of the
moderated mediation at -1SD (standard deviation), the mean, and +1SD. These statistics are
presented with an indirect effect index, unstandardized coefficients, and confidence intervals.

3.5.2. Power

Per Cohen (1992), the present study required at least 84 participants to be adequately
powered at the .8 level and to find a medium effect size at an alpha level of p = .05. Since this
study was able to recruit a total of 108 women, the study was sufficiently powered.
Figure 2

Hypothesized Moderated Mediation Models with Intensity of Embodied Reminders as the IV

<table>
<thead>
<tr>
<th>Model 1.</th>
<th>Model 2.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Femine Gender Role Orientation</td>
<td>Femine Gender Role Orientation</td>
</tr>
<tr>
<td>Biographical</td>
<td>Biographical</td>
</tr>
<tr>
<td>a</td>
<td>a</td>
</tr>
<tr>
<td>b</td>
<td>b</td>
</tr>
<tr>
<td>c'</td>
<td>c'</td>
</tr>
<tr>
<td>Intensity of ER</td>
<td>Intensity of ER</td>
</tr>
<tr>
<td>Depressive Symptoms</td>
<td>Quality of Life</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Femine Gender Role Orientation</td>
<td>Femine Gender Role Orientation</td>
</tr>
<tr>
<td>Body Image</td>
<td>Body Image</td>
</tr>
<tr>
<td>a</td>
<td>a</td>
</tr>
<tr>
<td>b</td>
<td>b</td>
</tr>
<tr>
<td>c'</td>
<td>c'</td>
</tr>
<tr>
<td>Intensity of ER</td>
<td>Intensity of ER</td>
</tr>
<tr>
<td>Depressive Symptoms</td>
<td>Quality of Life</td>
</tr>
<tr>
<td>Quality of Life</td>
<td>Quality of Life</td>
</tr>
</tbody>
</table>
Figure 3

Hypothesized Moderated Mediation Models with Number of Embodied Reminders as the IV

Model 5.
Feminine Gender Role Orientation

Biographical

Number of Embodied Reminders → Depressive Symptoms

Model 6.
Feminine Gender Role Orientation

Biographical

Number of Embodied Reminders → Quality of Life

Model 7.
Feminine Gender Role Orientation

Body Image

Number of Embodied Reminders → Depressive Symptoms

Model 8.
Feminine Gender Role Orientation

Body Image

Number of Embodied Reminders → Quality of Life
3.5.3. Moderated Mediation Results

Outcomes of the eight moderated mediation models are presented below in Table 7, and results for each specific model are provided under each section. Additionally, figures depicting each of the moderated mediation models are provided after each section to add clarity to the results.

3.5.3.1. Moderated mediation of biographical disruption in intensity of embodied reminders and associated outcomes with the conditional effect of feminine gender role orientation. This section of the results focuses on the relationship between intensity of embodied reminders and well-being (depressive symptoms and quality of life), with biographical disruption as the intermediary variable, and feminine gender role orientation as the moderator. Moreover, this section specifically examines the outcomes for Models 1 and 2, which are depicted in detail above in Figure 2. Additionally, Figure 4 and Figure 5 below depict the results, to provide clarity on the outcomes of the proposed relationships.

The first model (Model 1) tested the ability of biographical disruption to mediate the relationship between intensity of embodied reminders and depressive symptoms, with feminine gender role orientation moderating the link between intensity of embodied reminders and biographical disruption (Figure 4). The overall model was significant (overall model $R^2 = .33$, $F (2, 105) = 25.98, p < .001$). The index of moderated mediation was also significant (index = .0060, BootSE = .0031, 95%CI= .0003, .0122) as it did not contain zero. Further, the moderated mediation was significant at varying levels of feminine gender role orientation, with both mean levels (index=.1502, BootSE = .0715, 95%CI = .0213, .3042) and +1SD (index = .3254, BootSE = .1328, 95%CI = .0807, .5866) indicating that women with an average or above average feminine gender role orientation experienced greater biographical disruption in relation to the
intensity of their embodied reminders. The moderated mediation was not significant at -1SD (index = -.0310, BootSE = .0984, 95%CI = -.2319, .1616). Indicating that women with below average levels of feminine gender role orientation no longer experience significant biographical disruption in relation to the intensity of their embodied reminders.

Lastly, the relationship between biographical disruption and depressive symptoms (b-pathway) was significant (B (SE) = .3823 (.0712), t = 5.37, p < .001). Additionally, the direct effect of intensity of embodied reminders on depressive symptoms (c’ pathway) was also significant (B (SE) = .3173 (.1377), t = 2.30, p = .023). These outcomes indicate that when controlling for the other variables, there is a significant direct relationship between intensity of embodied reminders and depressive symptoms.
Figure 4

Model 1—Moderated Mediation Outcomes in the Relationship between Intensity of Embodied Reminders and Depressive Symptoms through Biographical Disruption

![Diagram of Model 1]

Notes. a - pathway = the interaction between intensity of embodied reminders and gender role orientation on biographical disruption (moderation); b - pathway = direct effect of biographical disruption on depressive symptoms controlling for intensity of embodied reminders and gender role orientation; c' = direct effect of intensity of embodied reminders on depressive symptoms controlling for gender role orientation and biographical disruption.

* p < .05    ** p < .001

The hypothesized model of the ability of biographical disruption to mediate the relationship between intensity of embodied reminders and quality of life (Model 2), with feminine gender role orientation moderating the link between intensity of embodied reminders and biographical disruption was also significant (overall model $R^2 = .625$, $F (2, 105) = 87.47$, $p < .001$). The outcomes are depicted below in Figure 5. The index of moderated mediation was also significant (index = -.0278, BootSE = .0115, 95% CI= -.0469, -.0009) as it did not contain zero. Further, the moderated mediation was significant at varying levels of feminine gender role orientation, with both mean levels (index= -.6931, BootSE = .2992, 95% CI = -1.313, -.1350) and
+1SD (index = -1.501, BootSE = .4667, 95%CI = -2.342, -.4807), again indicating that women with an average or above average feminine gender role orientation experience greater biographical disruption in relation to the intensity of embodied reminders. Additionally, the moderated mediation was no longer significant at -1SD (index = .1431, BootSE = .4386, 95%CI = -.8003, .9508). Again, indicating that women with below average levels of feminine gender role orientation not experiencing significant biographical disruption in relation to the intensity of their embodied reminders.

Further, the relationship between biographical disruption and quality of life (b-pathway) was significant (B (SE) = -1.764 (.1779), t = -9.912, p < .001). Additionally, the direct effect of intensity of embodied reminders on quality of life (c’ pathway) was also significant (B (SE) = -1.425 (.3442), t = -4.141, p < .001). These outcomes indicate that when controlling for the other variables, there is a significant direct relationship between biographical disruption and quality of life, and between intensity of embodied reminders and quality of life.
Figure 5

Model 2—Moderated Mediation Outcomes in the Relationship between Intensity of Embodied Reminders and Quality of Life through Biographical Disruption

![Diagram]

Notes. a-pathway = the interaction between intensity of embodied reminders and gender role orientation on biographical disruption (moderation); b-pathway = direct effect of biographical disruption on quality of life controlling for intensity of embodied reminders and gender role orientation; $c' =$ direct effect of intensity of embodied reminders on quality of life controlling for gender role orientation and biographical disruption.

* $p < .05$     ** $p < .001$

In both Models 1 and 2, the intensity of embodied reminders x feminine gender role orientation (a-pathway) was statistically significant (B (SE) = .0158 (.0053), t = 2.97, p = .0037) with just over 5% of the variance in the mediator being explained by the interaction between intensity of embodied reminders and feminine gender role orientation ($R^2$ change= .054, F (1, 104) = 8.81, p=.0037). Similar to the overall model, mean level (effect (SE) = .3930 (.1633), t = 2.41, p = .0179) and +1SD (effect (SE)= .8513 (.2025), t = 4.20, p < .001) level of feminine
gender role orientation contributed to increased biographical disruption. Further, no significant interaction was found at -1SD (index = -.0811, BootSE = .2491, 95%CI = -.5751, .4128).

3.5.3.2. Moderated mediation of body image in intensity of embodied reminders and associated outcomes with conditional effect of gender role orientation. This section of the results focuses on the relationship between intensity of embodied reminders and well-being (depressive symptoms and quality of life), with body image (rather than biographical disruption) as the intermediary variable, and feminine gender role orientation as the moderator. Specifically, this section reviews the outcomes for Models 3 and 4, which are depicted in detail above in Figure 2. Additionally, Figures 6 and 7 depict the significant results.

Model 3 tested the ability of body image to mediate the relationship between intensity of embodied reminders and depressive symptoms, with feminine gender role orientation moderating the link between intensity of embodied reminders and biographical disruption. The overall model was significant (overall model $R^2 = .312, F(2, 105) = 23.84, p < .001$), though the indirect conditional effect was not significant (index = .0018, BootSE = .0016, 95%CI= -.0006, .0056). These results indicate that while there is not a moderated mediation among the study variables, the variables are associated with one another. Additionally, there were no significant direct effects between either intensity of embodied reminders and depression or body image and depression.
Model 3—Moderated Mediation Outcomes in the Relationship between Intensity of Embodied Reminders and Depressive Symptoms through Body Image

![Diagram](image)

Notes. a-pathway = the interaction between intensity of embodied reminders and feminine gender role orientation on body image (moderation); b-pathway = direct effect of body image on depressive symptoms controlling for intensity of embodied reminders and gender role orientation; c’ = direct effect of intensity of embodied reminders on quality of life controlling for gender role orientation and body image.

* p < .05    ** p < .001

Model 4 which examined the ability of body image to mediate the relationship between intensity of embodied reminders and quality of life was statistically significant (Figure 6; overall model $R^2 = .395$, $F(2, 104) = 33.88$, $p < .001$). The index of moderated mediation was also significant (index = -.0128, BootSE = .0072, 95%CI= -.0282, -.0005) as it did not contain zero. Further, the moderated mediation was significant at all levels of feminine gender role orientation, with -1SD (index = -1.023, BootSE = .4105, 95%CI= -1.911, -.2890), mean levels (index= -1.404, BootSE = .3836, 95%CI = -2.259, -.7420) and +1SD (index = -1.772, BootSE = .4614,
95%CI = -0.2779, -0.9491) indicating that women at all levels of feminine gender role orientation experience poorer body image in relation to the intensity of their embodied reminders and thus poorer quality of life.

The relationship between body image and quality of life (b-pathway) was significant (B (SE) = -1.46 (.3295), t = -4.43, p < .001). The direct effect of intensity of embodied reminders on quality of life (c’ pathway) was hedging on significance (B (SE) = -1.09 (.5593), t = -1.95, p = .055). The significant b-pathway (from body image to quality of life) indicates that body image has a significant relationship with quality of life even after controlling for intensity of embodied reminders and feminine gender role orientation.

In both Models 3 and 4, the intensity of embodied reminders x feminine gender role orientation (a-pathway) on body image was statistically significant (B (SE) = .0088 (.0038), t = 2.29, p = .0243) with just over 2% of the variance in the mediator being explained by the interaction between intensity of embodied reminders and feminine gender role orientation (R² change = .0215, F (1, 103) = 5.23, p = .0243). Similar to the overall model, interactions between all levels of feminine gender role orientation and intensity of embodied reminders were associated with poorer body image -1SD (effect (SE) = .7013 (.1774), t = 3.95, p = .0001), mean level (effect (SE) = .9621 (.1175), t = 8.19, p < .001) and +1SD (effect (SE)= 1.214 (.146), t = 8.294, p < .001).

To better understand the observed moderating effects of feminine gender role orientation on the relationship between intensity of embodied reminders and body image in Models 3 and 4, the Johnson-Neyman (Field, 2013) technique was applied. This analysis was run within SPSS as part of the PROCESS application and provides a broader view of the interactions of the
moderator at levels beyond -1SD and +1SD. Utilization of the Johnson-Neyman method was selected since the results indicate that the indirect effect was significant at all levels tested.

The outcomes of the Johnson-Neyman analysis indicated that feminine gender role orientation was no longer a significant moderating factor on the relationship between intensity of embodied reminder and body image at extremely low levels of feminine gender role orientation (mean-centered value of the GRSS = 38.17 – approximately -2SD from the mean; \( B \) (SE) = .4751 (.2606), \( t = 1.8234, p = .0711 \)). Thus, for women who identify with very low levels of feminine gender role orientation, there is no longer a significant relationship between the intensity of their embodied reminders and body image.
Figure 7
Model 4—Moderated Mediation Outcomes in the Relationship between Intensity of Embodied Reminders and Quality of Life through Body Image

Notes. a-pathway = the interaction between intensity of embodied reminders and gender role orientation on body image (moderation); b-pathway = direct effect of body image on quality of life controlling for intensity of embodied reminders and gender role orientation; c' = direct effect of intensity of embodied reminders on quality of life controlling for gender role orientation and body image.

* p < .05     ** p < .001

3.5.3.3. Moderated mediation of biographical disruption in number of embodied reminders and depressive symptoms and quality of life with conditional effect of gender role orientation. This section of the results focuses on the relationship between number of embodied reminders and well-being (depressive symptoms and quality of life), with biographical disruption as the intermediary variable, and feminine gender role orientation as the conditional variable. Specifically, this section reviews the outcomes for Models 5 and 6, which are depicted in detail above in Figure 3.
The overall results for Model 5 (Figure 9) were significant (overall model $R^2 = .3123$, $F(2, 105) = 23.84$, $p < .001$), though the indirect conditional effect was not significant (index = .0060, BootSE = .0077, 95%CI= -.0072, .0224). Similarly, Model 6 (Figure 10) had a significant overall model (overall model $R^2 = .5767$, $F(2, 105) = 71.52$, $p < .001$), but a non-significant indirect conditional effect (index = -.0282, BootSE = .0338, 95%CI= -.0911, .0405). Further, no interaction between number of embodied reminders and feminine gender role orientation on biographical disruption was found (B (SE) = .0143 (.0117), t = 1.22, $p = .225$).

In Model 5, a significant direct effect was found between biographical disruption and depressive symptoms (b-pathway; B (SE) = .4182 (.0690), t = 6.0599, $p < .001$). A significant direct effect of the $c'$-pathway was not found (B (SE) = .475 (.3132), t = 1.516, $p = .133$). Similarly, in Model 6, a direct effect was again found for the relationship between biographical disruption and quality of life (b-pathway; B (SE) = -.1.965 (.1807), t = -10.874, $p < .001$) but not for the direct relationship between number of embodied reminders and quality of life (c'-pathway; B (SE) = -1.475 (.8202), t = -1.798, $p = .075$). These results indicate that while no moderated mediation occurs and there is not a direct effect between number of embodied reminders and depressive symptoms or quality of life, there is a significant association between biographical disruption and depressive symptoms and quality of life after controlling for the other variables.
Figure 8

Model 5—Moderated Mediation Outcomes in the Relationship between Number of Embodied Reminders and Depressive Symptoms through Biographical Disruption

![Diagram](image)

Notes. a-pathway = the interaction between number of embodied reminders and gender role orientation on biographical disruption (moderation); b-pathway = direct effect of biographical disruption on depressive symptoms controlling for number of embodied reminders and gender role orientation; \( c' = \) direct effect of number of embodied reminders on depressive symptoms controlling for gender role orientation and biographical disruption.

* \( p < .05 \)    ** \( p < .001 \)
Figure 9
Model 6—Moderated Mediation Outcomes in the Relationship between Number of Embodied Reminders and Quality of Life through Biographical Disruption

Notes. a-pathway = the interaction between number of embodied reminders and gender role orientation on biographical disruption (moderation); b-pathway = direct effect of biographical disruption on quality of life controlling for number of embodied reminders and gender role orientation; c' = direct effect of number of embodied reminders on quality of life controlling for gender role orientation and biographical disruption.

* p < .05     ** p < .001

3.5.3.4. Moderated mediation of body image in number of embodied reminders and quality of life with conditional effect of gender role orientation. This section of the results focuses on the relationship between number of embodied reminders and well-being (depressive symptoms and quality of life), with body image (rather than biographical disruption) as the intermediary variable, and gender role orientation as the moderator. Specifically, this section reviews the outcomes for Models 7 and 8, which are depicted in detail above in Figure 2.
The overall results for Model 7 (Figure 10) were significant (overall model $R^2 = .1573$, $F(2, 104) = 9.705$, $p < .001$), though the indirect conditional effect was not significant (index = .0060, BootSE = .0040, 95%CI= -.0001, .0152). Similarly, Model 8 (Figure 11) had a significant overall model (overall model $R^2 = .3777$, $F(2, 104) = 31.565$, $p < .001$), but a non-significant indirect conditional effect (index = -.0357, BootSE = .0199, 95%CI= -.0771, .0008). However, in both models, number of embodied reminders $\times$ feminine gender role orientation (a-pathway) on body image was statistically significant ($B(SE) = .0198 (.0098)$, $t = 2.014$, $p = .047$) with just over 2% of the variance in the mediator being explained by the interaction between number of embodied reminders and feminine gender role orientation ($R^2$ change= .0251, $F(1, 103) = 4.056$, $p = .047$).

At mean and high levels of feminine gender role orientation, number of embodied reminders was associated with poorer body image: mean level (effect (SE) = 1.295 (.3214), $t = 4.028$, $p < .001$) and $+1SD$ (effect (SE)= 1.8633 (.4371), $t = 4.263$, $p < .001$). These outcomes indicate that women with average to high levels feminine gender role orientation experience poorer body image in relation to their number of embodied reminders. No significant interaction was found at -$1SD$ (index = .7062, BootSE = .4247, 95%CI = -.1360, 1.5485).

Further, in Model 7, a significant direct effect between body image and depressive symptoms was found (b-pathway; $B(SE) = .3006 (.0925)$, $t = 3.2506$, $p = .0016$). Similarly, a significant direct effect between body image and quality of life in Model 8 was also found (b-pathway; $B(SE) = -1.800 (.2647)$, $t = -6.8020$, $p < .001$). These results demonstrate that body image has a unique relationship with depressive symptoms and quality of life after controlling for other variables. No significant direct effect was found between number of embodied reminders and depressive symptoms ($c'$-pathway Model 7 – $B(SE) = .5034 (.3676)$, $t = 1.3695$, $p$
= .1738) or quality of life (c'-pathway Model 8 – B(SE) = .9863 (1.10524), t = -.9372, p = .3508).

Figure 10
Model 7—Moderated Mediation Outcomes in the Relationship between Number of Embodied Reminders and Depressive Symptoms through Body Image

Notes. a-pathway = the interaction between number of embodied reminders and gender role orientation on body image (moderation); b-pathway = direct effect of body image on depressive symptoms controlling for number of embodied reminders and gender role orientation; c' = direct effect of number of embodied reminders on depressive symptoms controlling for gender role orientation and body image.

* p < .05    ** p < .001
Figure 11

Model 8—Moderated Mediation Outcomes in the Relationship between Number of Embodied Reminders and Quality of Life through Body Image

![Diagram showing the relationship between Number of Embodied Reminders, Body Image, Feminine Gender Role Orientation, and Quality of Life]

Notes. a-pathway = the interaction between number of embodied reminders and gender role orientation on body image (moderation); b-pathway = direct effect of body image on quality of life controlling for number of embodied reminders and gender role orientation; c’ = direct effect of number of embodied reminders on quality of life controlling for gender role orientation and body image.

* p < .05    ** p < .001
### Table 7

**Moderated Mediation Models with Intensity of Embodied Reminders as the IV**

#### Intensity of ER → Biographical Disruption → Depressive Symptoms (Model 1)

<table>
<thead>
<tr>
<th></th>
<th>Index</th>
<th>Boot SE</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Model</td>
<td>.0060</td>
<td>.0031</td>
<td>.0003, .0122*</td>
</tr>
</tbody>
</table>

Indirect effect at different values of Feminine Gender Role Orientation

<table>
<thead>
<tr>
<th>Effect</th>
<th>Boot SE</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1SD</td>
<td>-.0310</td>
<td>.0984, -.238, .1549</td>
</tr>
<tr>
<td>Mean</td>
<td>.1502</td>
<td>.0715, .0213, .3042*</td>
</tr>
<tr>
<td>+1SD</td>
<td>.3254</td>
<td>.1328, .0807, .5866*</td>
</tr>
</tbody>
</table>

#### Intensity of ER → Biographical Disruption → Quality of Life (Model 2)

<table>
<thead>
<tr>
<th></th>
<th>Index</th>
<th>Boot SE</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Model</td>
<td>-.0278</td>
<td>.0115</td>
<td>-.0469, -.0009*</td>
</tr>
</tbody>
</table>

Indirect effect at different values of Feminine Gender Role Orientation

<table>
<thead>
<tr>
<th>Effect</th>
<th>Boot SE</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1SD</td>
<td>.1431</td>
<td>.4373, -.8207, .9446</td>
</tr>
<tr>
<td>Mean</td>
<td>-.6931</td>
<td>.2992, -1.313, -.1350*</td>
</tr>
<tr>
<td>+1SD</td>
<td>-1.501</td>
<td>.4667, -2.342, -.4807*</td>
</tr>
</tbody>
</table>

#### Intensity of ER → Body Image → Depressive Symptoms (Model 3)

<table>
<thead>
<tr>
<th></th>
<th>Index</th>
<th>Boot SE</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Model</td>
<td>.0018</td>
<td>.0016</td>
<td>-.0005, .0055</td>
</tr>
</tbody>
</table>

#### Intensity of ER → Body Image → Quality of Life (Model 4)

<table>
<thead>
<tr>
<th></th>
<th>Index</th>
<th>Boot SE</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Model</td>
<td>-.0128</td>
<td>.0072</td>
<td>-.2802, -.0005*</td>
</tr>
</tbody>
</table>

Indirect effect at different values of Feminine Gender Role Orientation

<table>
<thead>
<tr>
<th>Effect</th>
<th>Boot SE</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>-1SD</td>
<td>-1.023</td>
<td>.4105, -1.902, -.2890*</td>
</tr>
<tr>
<td>Mean</td>
<td>-1.404</td>
<td>.3836, -2.259, -.7420*</td>
</tr>
<tr>
<td>+1SD</td>
<td>-1.772</td>
<td>.4615, -2.779, -.9491*</td>
</tr>
</tbody>
</table>

Notes. * Indicates a statistically significant result. Indirect effects are only presented for significant moderated mediation models.
Table 8
Moderated Mediation Models with Number of Reminders as the IV

<table>
<thead>
<tr>
<th></th>
<th>Number of ER → Biographical Disruption → Depressive Symptoms (Model 5)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Full Model</td>
<td>Index</td>
<td>Boot SE</td>
<td>95% CI</td>
</tr>
<tr>
<td>Number of ER → Biographical Disruption → Quality of Life (Model 6)</td>
<td>Full Model</td>
<td>Index</td>
<td>Boot SE</td>
<td>95% CI</td>
</tr>
<tr>
<td></td>
<td>Full Model</td>
<td>Index</td>
<td>Boot SE</td>
<td>95% CI</td>
</tr>
<tr>
<td>Number of ER → Body Image → Depressive Symptoms (Model 7)</td>
<td>Full Model</td>
<td>Index</td>
<td>Boot SE</td>
<td>95% CI</td>
</tr>
<tr>
<td></td>
<td>Full Model</td>
<td>Index</td>
<td>Boot SE</td>
<td>95% CI</td>
</tr>
<tr>
<td>Notes. * Indicates a statistically significant result. Indirect effects are only presented for significant moderated mediation models.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.6. Post hoc Analyses

To better understand the unique contribution of the individual predictor variables on both dependent variables (quality of life and depressive symptoms), post-hoc linear regression analyses were conducted. Standardized regression coefficients for the post-hoc analyses are presented below (Table 9).

The depressive symptoms model was significant ($F (6, 100) = 10.193, p < .001, \text{Adj. } R^2 = .342$), with biographical disruption ($\beta = .41, p = .001$) and feminine gender role orientation ($\beta = .211, p = .03$) as the only significant predictors. Outcomes indicate that higher levels of biographical disruption and stronger feminine gender role orientation predict increased depressive symptoms among women during their survivorship period.

The quality of life model was also significant ($F (6, 100) = 35.804, p < .001, \text{Adj. } R^2 = .663$), with biographical disruption being the strongest predictor of poorer quality of life ($\beta = -$
.467, p < .001), followed by feminine gender role orientation (β = -.261, p < .001), and intensity of embodied reminders (β = .239, p = .013). These outcomes indicate that biographical disruption accounts for a significant portion of the variance in quality of life, beyond that accounted for by the other variables.

Table 9

Post-hoc Linear Regression

<table>
<thead>
<tr>
<th>Depressive Symptoms</th>
<th>F (df)</th>
<th>Adj. R²</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>12.103 (5, 101)</td>
<td>.344</td>
<td>&lt; .001**</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Predictors</th>
<th>β</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biographical Disruption</td>
<td>.452</td>
<td>.001*</td>
</tr>
<tr>
<td>Body Image</td>
<td>-.192</td>
<td>.144</td>
</tr>
<tr>
<td>Gender Role Orientation</td>
<td>.216</td>
<td>.026*</td>
</tr>
<tr>
<td>Number of Embodied Reminders</td>
<td>.011</td>
<td>.911</td>
</tr>
<tr>
<td>Intensity of Embodied Reminders</td>
<td>.253</td>
<td>.053</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Quality of Life</th>
<th>F (df)</th>
<th>Adj. R²</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>41.92 (5, 101)</td>
<td>.659</td>
<td>&lt; .001**</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Predictors</th>
<th>β</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biographical Disruption</td>
<td>-.521</td>
<td>&lt; .001*</td>
</tr>
<tr>
<td>Body Image</td>
<td>-.013</td>
<td>.889</td>
</tr>
<tr>
<td>Gender Role Orientation</td>
<td>-.268</td>
<td>&lt; .001**</td>
</tr>
<tr>
<td>Number of Embodied Reminders</td>
<td>.056</td>
<td>.452</td>
</tr>
<tr>
<td>Intensity of Embodied Reminders</td>
<td>-.273</td>
<td>.004*</td>
</tr>
</tbody>
</table>

Notes. *p < .05 **p < .001
CHAPTER 4: Discussion

The present study aimed to examine factors associated with the relationship between embodied reminders and well-being among breast cancer survivors. Specifically, the study looked to fill a gap in the literature between women’s subjective reports of biographical disruption and well-being, by utilizing a quantitative method of assessing biographical disruption, and in exploring how one’s gender role orientation may moderate the level of biographical disruption. Additionally, the present study aimed to explore the relationship between women’s embodied reminders and well-being in association with their body image and gender role orientation. While many studies have examined factors that influence women’s body image following cancer treatment, this study adds to the literature by probing a moderating factor: gender role orientation.

Outcomes of the present study indicate that feminine gender role orientation serves to strengthen the relationship between intensity of embodied reminders and biographical disruption and body image, which, in turn, are linked to increased depressive symptoms and poorer quality of life. Additionally, based on the post hoc analyses, biographical disruption, intensity of embodied reminders and body image were significant predictors of quality of life, while biographical disruption and body image were significant predictors of depressive symptoms. Importantly, while multiple models (Models 3 and 5–8) did not demonstrate significant moderated mediations, the overall models were significant. These outcomes, in conjunction with the noted correlations between all the study variables, indicate that constructs such as quality of life, depressive symptoms, number of embodied reminders, and the other study variables are significantly associated, and thus may benefit from further study.
One significant finding from this study was that the relationship between intensity of embodied reminder and biographical disruption and body image was consistently moderated by feminine gender role orientation. For Models 1 and 2, which examined the interaction between intensity of embodied reminders and feminine gender role orientation on biographical disruption, it was found that women who have an average to high level of feminine gender role orientation experienced increased biographical disruption related to the intensity of their embodied reminders. These women thus may have a less cohesive self-narrative regarding their identity following their diagnosis and treatment for breast cancer.

The same result was also found in Models 3 and 4, which examined the interaction between embodied reminders and feminine gender role orientation on body image. In both of these models, the results showed that women who identify with all levels of feminine gender role orientation experienced poorer body image related to their embodied reminders. Interestingly, despite the overall moderated mediation of Model 3 not being significant, the interaction between embodied reminders and gender role on body image was significant. Again, despite both overall models not being significant, Models 7 and 8, which examined the interaction between number of embodied reminders and body image, demonstrated that at mean and higher levels of feminine gender role orientation women experience poorer body image in relation to their number of embodied reminders.

These outcomes highlight that for women who identified with moderate to high levels of feminine gender role orientation, intensity of embodied reminders had a significant impact on biographical disruption and body image—such that biographical disruption increased, and body image decreased. Thus, feminine gender role orientation appears to play a significant part in how
women cope during the survivorship period—particularly in relation to how they manage their embodied reminders.

Per Wood and Eagly (2015), gender role is developed through an individual’s understanding of themselves within their cultural context. The results of our study echo the available body of literature noting that women express changes in both their femininity and sexuality as a result of their embodied reminders (Abdel-Ghany et al., 2019; Emilee et al., 2010; Kocan & Gursoy, 2016; Martinez-Ramos, 2009; Parton et al., 2016; Ussher et al., 2018). Moreover, the relationship between the lasting physical reminders of a woman’s breast cancer treatment and her femininity and sexuality has been described as a painful identity crisis in which women must navigate reconstructing this aspect of their identity (Piot-Ziegler et al., 2010; Sun et al., 2018; Zeighami Mohammadi et al., 2018).

Our study also had similar results as that of Li et al. (2017), who also found that women who had greater internalization of cultural stereotypes for femininity also experienced increased depression and physical symptoms associated with their breast cancer treatment. Of note, in Li et al.’s study, the authors examined breast-related stereotype threat, which examines the internalization that the breast represents womanhood. Thus, the present findings add to the literature by moving beyond solely understanding femininity within the context of the breast, to include additional cultural markers of femininity such as other physical attributes (e.g., hair, weight) and sexuality.

Importantly, while some women experience difficulty adjusting to or renegotiating their [feminine] identity following treatment for breast cancer, a recent meta-analysis (Smit et al., 2019) found that some women report growth and a new appreciation for life following treatment. For women who have been able to successfully accommodate their identity as a survivor of
breast cancer and are less reactive to their post-treatment bodies, it appears that their reliance on social support (Smit et al., 2019), in conjunction with the identification of meaning and purpose after treatment (Drageset et al., 2016; Trusson et al., 2016), contributed to positive experiences following diagnosis and treatment. While the present study did not assess for positive growth experiences among participants, these studies highlight the concept of posttraumatic growth (Calhoun & Tedeschi, 2001).

The results of this study indicate that women’s feminine gender role orientation has a strong relationship with their embodied reminders and their biographical narrative within the context of breast cancer (an often emotionally and psychologically difficult diagnosis). Thus, it is possible that women who are unable to develop a meaningful narrative about themselves and their breast cancer experiences, that is unrelated to the societal standards of femininity, may experience poorer quality of life and poorer mental health. As posttraumatic growth exemplifies positive psychological change due to the experience of an adverse or traumatic experience, it is possible that women who are able to effectively find meaning and purpose that is unrelated to their gender role orientation, will also experience fewer mental health symptoms and better quality of life. This may be an area for future research to explore.

Remarkably, these results demonstrate that while a significant moderated mediation occurred in three of the models, various direct effects were significant and are of important consideration. In Models 1, 2, and 4, intensity of embodied reminders significantly predicted depressive symptoms and quality of life, even after controlling for the other variables, though this direct effect was not found for Model 3. While quantitative research on the impact of intensity of embodied reminders on women’s well-being is sparse in comparison to the narrative reports, previous research has found similar outcomes to the present study. Specifically, in two
systematic reviews, the level of pain and the extent to which women have reductions in their physical functioning was associated with decreased overall quality of life in addition to increased depressive symptoms (Fu & Rosedale, 2009; Taghian et al., 2014). Further, for women who report having been thrust into menopause as a result of treatment, their experiences with sexual dysfunction, hot flashes, and decreased libido were associated with increased depression, poorer body image, and a loss of their sense of self (Emilee et al., 2010). Importantly, Everaars and colleagues (2020) found that, even years after treatment, women report that the extent to which they continue to experience pain secondary to their embodied reminders contributed to increased sadness and feelings of loss.

In addition to the direct effects between intensity of embodied reminders and well-being, there were direct effects between biographical disruption and both outcomes across almost all models (not Model 6), while body image also demonstrated direct effects with quality of life and depressive symptoms in all models except Models 3, 7 and 8. These results are important to recognize, as they indicate that components of intensity of embodied reminders, body image, and biographical disruption have a unique relationship with depressive symptoms and quality of life in some of the models that are not accounted for by the mediators or moderator. Lastly, number of embodied reminders was not directly associated with either quality of life or depressive symptoms, after controlling for the other variables within the moderated mediation models.

As noted, Model 3 which examined the impact of body image in the relationship between intensity of embodied reminders and depressive symptoms with gender role orientation as the conditional indirect effect, had no significant direct effects. These results indicate that the intensity of embodied reminders was not directly associated with depressive symptoms and body image was not directly associated with depressive symptoms after controlling for the other
variables in the model. However, although the model results are not consistent with the hypotheses, it is noteworthy that the zero-order correlations indicated a significant correlation between body image and depressive symptoms, and intensity of embodied reminders and depressive symptoms.

While the moderated mediation models were not consistent with the proposed hypotheses, the established correlations between the variables (zero-order correlations) are consistent with previous research. Specifically, past research has demonstrated that as women experience increased difficulties related to their lasting physical reminders (Everaars et al., 2020; Parton et al., 2016) and poorer body image, they also tend to experience greater depressive symptoms (Patterson et al., 2016; Davis et al., 2020). The lack of a direct effect between body image and depressive symptoms in Model 3 is also interesting due to the significant direct effect between body image and depressive symptoms found in Model 7. Thus, in line with the past research, the results of the present study did find an association between the variables, and the study adds to the literature by providing some support for future studies to probe further into other factors that may better account for the relationship.

In Models 5–8, it was found that number of embodied reminders does not seem to have as much of a relationship on well-being compared to intensity of embodied reminders. No studies have specifically examined how purely the number of physical reminders of a women’s breast cancer treatment may relate to their well-being, and thus the results of this study add to the literature and offer a preliminary understanding of this construct. Previous research among individuals with visible alterations to their body (e.g., scars, burn marks) experience poorer well-being (Atkinson et al., 2013; Van Loey & Van Son, 2003). Thus, in addition to quantity, future studies may wish to more explicitly examine the intensity and visibility rather than solely the
quantity of embodied reminders, as research has also demonstrated increased difficulties with social interactions and increased anxiety in association with visible embodied reminders among burn victims (Martin et al., 2017).

However, although the moderated mediations were not significant for Models 5–8, number of embodied reminders was significantly associated with all study variables, except for sense of self, though the correlations were generally small. These associations provide evidence that while number of embodied reminders may not contribute significantly to well-being outcomes, there may be other factors such as visibility or impact of the embodied reminder that accounts for this relationship.

To date, no studies have explicitly examined the impact that purely the number of embodied reminders has on women treated for breast cancer. Additionally, studies that have examined embodied reminders have often done so in isolation, meaning that only one embodied reminder was examined at a time (Everaars et al., 2021; Fu & Rosedale, 2009; Lemieux et al., 2008; Voci et al., 2018). Further, these studies utilized qualitative methods for exploring the impact of embodied reminders, making it difficult to quantify the relationship between embodied reminders and other factors. Thus, the present study adds to the literature in that a method of assessing both the number of and intensity of embodied reminders was utilized.

Further, the non-significant results that were found in the present study may have significant outcomes in future studies that examine other variables. For example, number or visibility of embodied reminders may be related to other outcomes, such as fear of recurrence. A recent meta-analysis found that fear of recurrence may occur in the presence of a triggering situation, such as pain or other associated physical symptoms of breast cancer treatment.
(Almeida et al., 2019). Therefore, it is plausible that the number of embodied reminders may
serve a similar purpose as being a triggering event, which deserves future consideration.

To add further clarity and depth to the outcomes, post-hoc analyses were conducted to
examine the unique variance accounted for by each variable on depressive symptoms and quality
of life. These analyses were not originally part of the proposed analytic plan and were strictly
conducted for exploratory purposes after the proposed hypotheses were tested. The outcomes of
the post-hoc analyses demonstrated that for depressive symptoms, biographical disruption and
feminine gender role orientation were significant predictors and outperformed all of the other
variables within the study. These findings indicate that biographical disruption and feminine
gender role orientation play a significant role in women’s experiences of symptoms of
depression.

Previous studies have only examined biographical disruption through thematic analysis of
interviews and narrative reports from women during survivorship of breast cancer (Hubbard &
Forbat, 2012; Liamputtong & Suwankhong, 2015; Trusson et al., 2016). In these interviews,
women would often talk about associated sadness, depression, and loss of hope related to their
diagnosis and treatment of breast cancer, and more specifically due to needing to reevaluate and
renegotiate their understandings of themselves in relation to others and the world around them
(Trusson et al., 2016). The results enhance the narrative reports, as the results of the study
quantitively assess and examine the magnitude of the relationship between these two variables.
Furthermore, results of the present study in combination with the qualitative literature indicate
that assessment of and interventions focused on increasing the cohesive nature of women’s
biographical narrative during survivorship from breast cancer may be important to their mental
health. These interventions will be explored in further detail in the clinical implications section.
Further, as feminine gender role orientation in the context of breast cancer appears to play a significant role in depressive symptoms as well, providers may want to consider assessing women’s beliefs about their gender role within the context of their embodied reminders. In a qualitative analysis of gender construction around considerations such as fertility within the context of cancer, researchers found that while participants (both men and women) noted that parenthood was a central experience of adulthood, they also reported significant loss and grief around their compromised ability to bear children (Ussher et al., 2018). The authors note that there is a gendered experience associated with [loss of] fertility, and in particular that women experience concerns related to being a failure as a “good wife” or “good mother” perhaps due to being unable to fulfill those roles. Similar findings were highlighted among a population of women from Ghana, who noted that they felt unattractive following treatment and would often cry and feel depressed, again possibly, because they were unable to fill their prescriptive roles (Iddrisu et al., 2020). Since feminine gender role orientation is a by-product of societal standards of femininity, the present results in conjunction with previous research lend support for the many ways in which internalized feminine gender role orientation and the roles associated with women’s feminine gender is associated with symptoms of depression (e.g., sadness, grief, loss).

Also, of note, intensity of embodied reminders was on the verge of significance within the post-hoc analyses and may come out as a significant predictor in future studies with a larger sample size. Previous research has shown that embodied reminders have a significant impact on women’s symptoms of depression. As symptoms such as pain, fatigue, menopausal symptoms (e.g., hot flashes, changes in sexual functioning, changes in libido), and alterations in cognitive functioning increase, women have reported increased depressive symptoms (Fann et al., 2008). Therefore, women who experience more intense physical symptoms after treatment may also be
at risk for poorer mental health during their survivorship period. Despite the non-significant predictive value of embodied reminders on depressive symptoms, the two constructs were correlated. Therefore, in line with the previous research, embodied reminders and their association with depressive symptoms remains important, though may become less significant when factoring in other, more influential variables.

Within the quality of life post-hoc analyses, similar results were found where biographical disruption was the most significant predictor of quality of life, followed by intensity of embodied reminders and then feminine gender role orientation. These findings indicate that biographical disruption, gender role socialization, and intensity of embodied reminders individually contribute to poorer overall quality of life.

Previous research has found that biographical disruption due to treatment for breast cancer was associated with alterations in women’s conceptualizations of their sexual selves (Parton et al., 2017; Sun et al., 2018). As sexual identity is a part of one’s overall understanding of one’s self, and due to the common experience of sexual dysfunction as a result of breast cancer treatment (Fobair et al., 2006), it possible that biographical disruption in this area may then contribute to poorer quality of life (Dizon, 2009). Thus, the present findings are consistent with past research demonstrating that as a woman’s biographical narrative becomes less unified as a result of their breast cancer experiences, their quality of life suffers in many ways.

Additionally, the present findings are also consistent with previous research that noted that changes in gender role identity are linked with poorer quality of life. For women who endorsed changes in feelings of femininity, sexuality, (Iddrisu et al., 2020; Liamputtong & Suwankhong, 2015; Martinez-Ramos, 2009) and their ability to carry out traditional feminine
gender roles (Abdel-Ghany et al., 2019; Gardino et al., 2011; Ulrich & Weatherall, 2000), they also reported poorer general quality of life.

Lastly, our research is also consistent with the broader literature, in that the intensity of embodied reminders was associated with poorer quality of life. Previous research has shown that women who experience pain, lymphedema, scarring, hair loss, and changes in sexual functioning report that they are more isolated, less able to be physically active, and were less sexually satisfied (Eaton et al., 2020; Everaars et al., 2021). These experiences are highly related to quality of life domains such as social, function, emotional, and physical well-being.

Finally, some research has demonstrated that women’s well-being improves over time—after treatment concludes (Lelorain et al., 2010; Liu et al., 2020; Silva, Crespo, et al., 2012). While this may be the case for some women, our study, in conjunction with the mixed literature (Cheng et al., 2016; Gass et al., 2016; Smit et al., 2019) serves to further highlight the necessity for recognizing that adjustment may stall for some women during the survivorship period and should be assessed and addressed by providers to support long-term health and well-being.

4.1. Future Directions.

The present study helps to provide more information on the ways in which embodied reminders, biographical disruption, and body image relate to depressive symptoms and quality of life among women diagnosed and treated for breast cancer. Additionally, the results demonstrate that feminine gender role orientation plays a significant role in well-being during the survivorship period. As these outcomes add to the present literature, they also provide an excellent foundation for further exploration into the experiences of women throughout their breast cancer journey, and most specifically during survivorship. Further— and while not a main
goal of the study—the present study also introduces a quantitative method for assessing for biographical disruption among women during the survivorship period.

To continue to make progress within psycho-oncology and support the adjustment of women following treatment for breast cancer, future studies should expand upon the present findings through consideration of other outcomes. For example, while the present study did not focus on anxiety or examine factors such as relationship satisfaction and fear of recurrence, these remain important factors associated with outcomes for women diagnosed and treated for breast cancer.

Anxiety is an important outcome consideration, as it has been reported that between 18–33% of breast cancer survivors experience anxiety (Maass et al., 2015) and anxiety has serious implications for women’s health following treatment including increased risk of recurrence and mortality (Wang et al., 2020). Further, studies have found a relationship between anxiety and extended symptom burden (Tsaras et al., 2018), self-esteem (Enache, 2012), increased body image related stigma (Tripathi et al., 2017), and alterations in women’s self-concept (Pintado, 2017). Thus, it is possible that expanding upon this past research, we can further elucidate the relationship between anxiety and factors that may serve to increase or exacerbate symptoms such as femininity, women’s biographical narrative, and the influence of their embodied reminders.

Another outcome variable that future research could explore to expand upon the present study is relationship satisfaction. Many report significant changes to their sexuality and sexual functioning as a result of their breast cancer treatment, with outcomes noting that women who experience body image disturbance also experience increased sexual dysfunction (Boquiren et al., 2016). Women’s body image is partially formed within the context of their intimate relationships (Scott et al., 2004), and research has demonstrated a protective effect of
relationship satisfaction on women’s body image acceptance (Notari et al., 2017; Paterson et al., 2016). While these studies have examined relationship satisfaction as an intermediary variable, it is possible that women’s beliefs about themselves, their body image and ways of coping, and level of femininity may impact women’s partnered relationships, and deserves more exploration.

A third outcome variable that warrants further exploration is health-related distress in the form of fear of recurrence. Fear of recurrence (FCR) is defined as the worry or fear that a person may experience cancer again or that their cancer will have progressed (Lebel et al., 2016). It is estimated that almost 75% of cancer survivors experience FCR (Simard et al., 2013), reflecting the ubiquitous nature of this cancer-related worry. While many factors such as less education, age (younger), being unpartnered, and having children have been associated with FCR (Koch-Gallenkamp et al., 2016; Koch et al., 2013; Simard et al., 2013), some studies have found that FCR is associated with preoccupation, rumination or intrusive thoughts (Lebel et al., 2016) about cancer. As FCR has been found to be a long-standing issue (Koch et al., 2013), and having recurrent or long-lasting cancer-related images or thoughts increases FCR (Mutsaers et al., 2016), future studies could look at the impact of the relationship between embodied reminders and intrusive thoughts on FCR.

Additionally, the present study examined two mediators and only one moderator, thus examining other factors that may impact or be related to gender role orientation, body image, and biographical disruption would help to create a fuller picture. Specifically, examining factors such as posttraumatic growth, coping style(s), and social support would be important in expanding the understanding of factors involved in the relationship between embodied reminders and well-being.
As discussed above, posttraumatic growth is defined as positive psychological adjustment despite the experience of adverse or traumatic events (Calhoun & Tedeschi, 2001). Previously, posttraumatic growth has been found to act as a buffer between negative perceptions about the impact of breast cancer and depression and quality of life (Silva, Crespo, et al., 2012; Silva, Moreira, et al., 2012). This results in women who experience greater posttraumatic growth to also experience less psychological distress (Lelorain et al., 2010; Silva, Crespo, et al., 2012; Silva, Moreira, et al., 2012) and improved quality of life (Liu et al., 2020). Furthermore, and in relation to the present findings, a recent integrative review found that new self-perceptions or beliefs about the self-facilitated posttraumatic growth (Zhai et al., 2019), indicating that a synergistic effect may take place wherein the relationship between a woman’s biographical narrative and posttraumatic growth may promote improve psychological functioning and quality of life. Future research is needed to better explore this possibility.

In a similar vein, coping style and social support have also played a role in the psychological adjustment and quality of life of women during survivorship. Among women treated for breast cancer, women who utilized approach-oriented coping strategies (e.g., acceptance, positive reframing, self-efficacy) and engaged in physical activity experienced decreases in depressive symptoms (Lashbrook et al., 2018). Additionally, women who used a problem-focused coping strategy (e.g., using a planner, writing things down, resting) in the face of persistent symptoms such as cognitive changes experienced improved quality of life and overall well-being (Lashbrook et al., 2018). Furthermore, women who report adequate social support have also been found to report lower levels of distress during survivorship (Syrowatka et al., 2017). One longitudinal study found that at six months post-treatment, women who actively sought social support reported better quality of life and few depressive symptoms (Silva, Crespo,
et al., 2012). Thus, social support may be an important intermediary factor that could influence the relationship between embodied reminders and well-being.

Additionally, the trend across the models within the study was that feminine gender role orientation consistently moderated the relationship between intensity and number of embodied reminders with body image and biographical disruption. Thus, future studies would benefit from examining other variables that may be related to a person’s feminine gender role orientation. These factors may include decisions around breast reconstruction and the utilization of prosthetics such as wigs to cover up treatment-induced hair-loss.

A recent study by La et al. (2019) explored women’s decisions related to breast reconstruction refusal and renegotiation of femininity after breast cancer treatment. The study noted that breast reconstruction and the utilization of other prosthetics were often a way in which women could more easily recover some of their feminine identity following treatment for breast cancer. The study conducted a thematic review of women’s posts in a breast cancer forum and found that some women report positive experiences with having declined reconstruction following mastectomy, specifically noting that their decision supported other aspects of their identity such as recovering faster so that they could play with their children. Additionally, some of the women noted that instead of reconstruction, they elected to utilize prosthetics such as padded bras to disguise their “flat bodies” and avoid the stigma associated with a “deviant” feminine body. Since not all studies have found that women cope effectively with their altered bodies following treatment for breast cancer (Abdel-Ghany et al., 2019; Boquiren et al., 2016; Martinez-Ramos, 2009), the present study offers support for looking more objectively at the differences within this population that may lead to varying levels of adaption and coping.
Another area for consideration is that future studies could aim to fully validate the researcher-developed biographical disruption measure. This area of focus would serve to strengthen our ability to quantify the impact of this variable on women’s experiences. In line with Boateng et al. (2018), best practices for scale development and validation of measures for health, social, and behavioral research, the present study has addressed phase 1 (identification of construct and domain(s) and item generation) and has preliminarily started to address phase 2 (sampling and survey distribution and pre-testing). Future studies can fine-tune the scale through focus groups with the target population (e.g., women diagnosed and treated for breast cancer), quality assessment by content area experts, and can validate the scale through survey administration with a sufficient sample size (at least 10 respondents per survey question; Boateng et al., 2018) and through examination of convergent and discriminatory validity.

Additionally, future research should focus on inclusivity of underrepresented populations through direct recruitment of individuals from diverse racial backgrounds and individuals who do not identify with the prescribed gender binary, are transgender, or do not identify as heterosexual—referred to as sexual and gender minority individuals (SGM) in the literature. Inclusivity within studies is necessary as beauty standards and gender roles differ across racial/ethnic groups and among non-gender conforming individuals. Research has shown that SGM individuals are at a greater risk for breast cancer (Brandenburg et al., 2007), experience more lymphedema (including pain and limited range of motion), and must manage systemic side effects (Boehmer et al., 2013). Further, many SGM breast cancer patients report having a mastectomy without reconstruction and also report that their breast cancer treatment has had negative impacts on their intimate relationships (Brown & McElroy, 2018a). While the literature shows that SGM breast cancer patients experience more side effects related to their treatments
and may be more likely to reject reconstruction compared to their heterosexual counterparts, to
the best of my knowledge, there has been no research to date that examined SGM breast cancer
patients experiences with embodied reminders during survivorship. Thus, future research should
work to fill this neglected area to better understand SGM breast cancer patients’ experiences and
identify areas or support.

Lastly, the present study sought only to examine the experiences of women within the
context of breast cancer survivorship, and it should be noted that breast cancer is not a unique
experience for women. Men are also diagnosed with breast cancer, though at a much lower rate
than women (Centers for Disease Control, 2019). Future studies should consider examining the
influence of male gender identity and male gender role on men’s biography, body image, and
well-being, especially since breast cancer is often considered a female disease (Sledge, 2020).

4.2. Clinical Implications

The clinical implications of the present research are twofold. The first is evaluative in
nature in that we must continue to assess and monitor women’s well-being during the
survivorship period. With less frequent contact with health providers during this stage of
women’s breast cancer trajectory, survivorship has only recently started to gain more attention as
an area of consideration and specialty within the field. Further, our results emphasize previous
findings demonstrating that some women continue to experience challenges adjusting during
their survivorship period (Brandão et al., 2017). In accordance with the American College of
Surgeons Commission on Cancer (Zebrack et al., 2015), which requires patients to be screened
and triaged for distress, the present study indicates that inclusion of questions related to women’s
beliefs about themselves, others, and the future may serve to identify women who are
experiencing challenges with adjustment post-treatment.
Furthermore, since the intensity of embodied reminders appears to play a significant role in mental health and quality of life, evaluating if women are experiencing prolonged reminders of their diagnosis and/or treatment during survivorship and assessing the impact of these symptoms may be an integral component to providing focused treatment throughout survivorship.

Additionally, we can use the present study to make a case that evaluating women’s gender role orientation prior to treatment may allow us to identify women who may be at an increased risk for maladjustment during survivorship due to the observed role that feminine gender role orientation played in the relationship between embodied reminders, body image, and biographical disruption. Being that our role as providers is not only to implement interventions but also to identify individuals who may be struggling and make appropriate referrals, the present study supports assessment throughout the breast cancer continuum to promote better well-being during survivorship.

The second area in which this study can inform clinical practice is through identifying areas in which providers may want to focus their clinical interventions. In a recent meta-analysis (Matthews et al., 2017), Cognitive Behavioral Therapy (CBT) was found to be the most efficacious intervention for improving symptoms of depression and anxiety and improving quality of life among breast cancer survivors. This is a structured therapeutic approach that addresses a patient’s concerns through techniques that support the modification of behavior and maladaptive thinking patterns (Hollon & Beck, 2013). Importantly, this approach utilizes multiple components to address patients’ concerns, including stress management, relaxation training skills, cognitive restructuring, and behavioral activation. Studies that have examined the implementation of CBT within the breast cancer population have found that women report
benefits ranging from reductions in physical symptoms such as fatigue and menopausal symptoms, to psychosocial improvements in social functioning, sense of growth, and ability to cope with and find benefits in one’s cancer experience (Gudenkauf & Ehlers, 2018). Additionally, the literature review by Gudenkauf and Ehlers (2018) found CBT to impact biological processes associated with a reduced risk of mortality and recurrence.

Being that biographical disruption, embodied reminders, feminine gender role orientation, and body image were all significantly associated with and predictive of depressive symptoms and quality of life in the present study, CBT may be an effective intervention that can target women’s beliefs about themselves and their bodies, and address any behavioral changes that have occurred as a result of these experiences. This intervention also appears to have long-term benefits that can also improve biological factors associated with women’s risk of mortality and cancer recurrence.

Additional interventions that have been found to be effective for women coping with breast cancer and during survivorship were Supportive Expressive Therapy (SET) and Meaning-Centered Psychotherapy (MCT; Gudenkauf & Ehlers, 2018). While SET is a group-based intervention that capitalizes on peer support and encourages participants to express their concerns, it also promotes the focus of discussing and grieving the many losses associated with treatment for breast cancer. This approach has been shown to support reductions in depressive symptoms, hopelessness, and improve social functioning. Meaning-Centered Psychotherapy (MCT) can be implemented in either an individual or group format, and targets existential distress by supporting patients in finding meaning and purpose despite their suffering (Brietbart et al., 2010). Both of these interventions may serve to help women express their beliefs about
themselves, their cancer experience, and survivorship, and may facilitate a more cohesive narrative between women’s past and current selves.

Finally, across the models within the study, feminine gender role orientation played a significant role in the relationship between embodied reminders and the mediators. Thus, utilizing a culturally sensitive approach that can address cultural and societal factors that serve to maintain or break down the beliefs that we hold about femininity could be useful. One such approach is Feminist Therapy which integrates feminist principles into therapeutic interventions and houses psychological distress with a social and cultural context instead of placing blame on the individual (Evans & Miller, 2015).

A Feminist Therapy approach acknowledges that women’s negative psychological experiences are the result of their embeddedness within a society that disempowers and marginalizes them. Additionally, this approach emphasizes the experiences and perspectives of all women, particularly those who are more extensively marginalized and oppressed due to their intersectional or non-conforming identities (Holmes et al., 2021). Incorporating explicit discussion within therapy serves to contextualize women’s experiences and expands the impetus for women’s negative experiences following breast cancer treatment from an individualistic view to a person-in-context view that can relieve personal responsibility. A culturally sensitive approach such as Feminist Therapy can serve to acknowledge and validate the intersectional experiences of women throughout their breast cancer journey and promote growth through challenging cultural factors that serve to continue to promote oppression.

More specifically with regard to the present findings, Feminist Therapy can help to directly address the internalized cultural stereotypes that women hold that may be contributing to psychological distress related to their body image, role as a woman or mother, and decisions
around breast reconstruction (Holmes et al., 2021). Further, as feminist approaches explicitly recognize and focus on health disparities and intersectionality within breast cancer, this approach can also serve to support the unique needs of Black, Latina, Asian/Pacific Islander, lesbian, and non-gender-conforming individuals throughout their cancer continuum (Holmes et al., 2021).

4.3. Limitations

While the results of the present study add value to the psycho-oncology literature, they should be taken into consideration alongside the study's limitations. First, the study was cross-sectional in nature and utilized a correlational design. Thus, our outcomes only represent a single snapshot in time and limit our ability to draw conclusive remarks about the direction of the relationships among all the study variables. Further, the study utilized self-report measures to assess the study variables. While this method of data collection provides a fast way to gather information, self-report measures also inherently come with considerations for potential bias. With regards to design and data collection, the study utilized an online collection method and convenience sample to recruit participants. While this method has been used in other studies and is becoming more commonplace in the field (see Hill et al., 2021; Hill & Hamm, 2019; Hill & Watkins, 2017; Mundy et al., 2018; Zhuo, 2021), we cannot rule out selection bias and disparities associated with technology (Cantrell & Lupinacci, 2007; Loomis & Paterson, 2018) as factors that may have contributed to the studies outcomes.

Additionally, the present study is limited in its ability to generalize the findings to more diverse populations of individuals. Our sample overrepresented Caucasian women who were predominantly from countries with significant Eastern European influences. Further, the majority of participants were highly educated, coupled, and fell into higher family income levels ($70,000+). While statistics from the World Health Organization (WHO) show that Caucasian
women are diagnosed with breast cancer more frequently, the demographic breakdown of the participants in our study does not reflect the international prevalence rate of breast cancer across all racial and ethnic identities (Global Burden of Disease Cancer et al., 2018). Additionally, research has consistently shown that socioeconomic and personal factors can contribute significantly to cancer-related outcomes. Specifically, women who are more educated, wealthier, live in industrialized nations, and have a social support system report better outcomes (both physical and emotional) following diagnosis and treatment for breast cancer (Coughlin, 2019; Ellis et al., 2018; Surbone & Halpern, 2016).

Furthermore, the present study did not assess women’s explicit gender identity and did not evaluate differences among participants who were female at birth or who had transitioned to female to align with their gender identity. Past research has shown that individuals who identify outside of the gender binary or for women who transitioned have unique experiences during their breast cancer journey (Brown & McElroy, 2018b; Cathcart-Rake, 2018). The present study is limited in our ability to examine if and how those factors may have played a role in our outcomes. Further, the present study did not assess women’s menopausal status prior to diagnosis and treatment, thus there is a possibility that menopausal status prior to breast cancer treatment may have impacted women’s body image. In a systematic review by Davis et al. (2020), the researchers noted an association between women who were premenopausal at the time of diagnosis and poorer body image. The studies included in the review found that women who were thrust into menopause during treatment experienced more significant and long-term physical and psychological symptoms.

An additional limitation of the study is the use of unvalidated, researcher-created questionnaires. While this practice is not uncommon within psycho-oncology (Bellizzi & Blank,
2007; Boquiren et al., 2016; Habermas & Kober, 2015; Ussher et al., 2018), the use of such measures come with inherent considerations for whether the questionnaires measured what they proposed to measure and whether the results are reliable. Despite this being a limitation of the study, it should be noted that the reliability score for the biographical disruption scale was excellent (α = .89), reflecting that the scale had excellent internal consistency within the present study. Additionally, to demonstrate the utility of the biographical disruption measure further initially, a factor analysis and item-deletion analyses were conducted. These results provide further information that indicates that the scale functioned well, contained items that contributed to the overall reliability and that deleting an item would not significantly improve the reliability, and finally that the scale was indeed unidimensional in nature. As noted in the future directions section, full validation of this scale would be an important area for further study.

Another limitation to the study, and one that is inherent to most research, is that not all factors that contribute to quality of life and depressive symptoms were included. As noted above, the present study only provides a snapshot of women’s experiences, and it is possible that additional factors such as resilience, post-traumatic growth, and social support may act as buffers for better well-being (see discussion section). Further, factors such as anxiety, additional health concerns, relationship satisfaction, and cultural factors were not examined but may also contribute to poorer quality of life and increased depressive symptoms. Though it is not possible to examine all factors within a single study, our limitation in our ability to definitively say that our studies variables are responsible for well-being during survivorship should be noted.

The final limitation that should be recognized is the timeframe in which data were collected for the study. Data collection began in November 2019 and concluded in June 2020. Thus, for more than half of the duration of the study, participants were living in the midst of the
global COVID-19 pandemic (lockdowns began in the United States in March 2020). Research that has come out examining the impact of women’s experiences during the pandemic demonstrate that women treated for breast cancer had increased levels of mental health distress (Swainston et al., 2020) and worries related to their immunocompromised state and treatment status (Papautsky & Hamlish, 2021). It is possible that levels of distress were not only significantly different prior to the pandemic, but also that the reports of depressive symptoms and quality of life may have been influenced by the pandemic itself.

However, recent research on women with ovarian cancer did not indicate significantly higher levels of distress in relation to the COVID-19 pandemic (Hill et al., 2021)—and this research similarly focused on women who were primarily in the survivorship period/a period of remission. Unfortunately, due to the small sample size and design of the present study, the present study was not able to compare participants before and after the pandemic ensued, and consideration should be made for the possible influence of the pandemic on the outcomes.

4.4. Conclusions

The present study provides useful information regarding women’s experiences during the survivorship period. The results demonstrate a strong influence of women’s gender role orientation on their experiences of embodied reminders, biographical disruption, and body image in relation to their overall well-being. Specifically, we see that for women who identify with greater feminine gender role orientation, the intensity of their embodied reminders was associated with poorer body image, increased biographical disruption, poorer quality of life, and increased depressive symptoms. Further, although the models with number of embodied reminders were not significant, the results indicate that number of embodied reminders was associated with the present study’s variables, and thus future research may be able to explore
other factors that could help to explain mechanisms underlying the relationship between number of embodied reminders and well-being.

Importantly, when working with women during the survivorship period, we must acknowledge and understand the extent to which a women’s feminine gender role orientation plays a part in their ability to adapt to the physical bodily changes they experience as a result of their medical treatment for breast cancer. Focused care that supports women in creating a cohesive self-narrative and positive relationship with their body post-treatment may serve to enhance these women’s well-being.


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Appendices
Appendix A

Recruitment Scripts, IRB Approval Forms, Consent Form, and Closing and Debriefing

Recruitment using Email and Facebook to site Administrators:

Hello (insert recipient name),

I hope this email/message finds you well!

My name is Andriana Frost, and I am a doctoral candidate at West Chester University of Pennsylvania. I am currently working under Dr. Erin Hill, associate professor with the department of psychology at West Chester University, and am in the process of collecting data for my dissertation titled “Breast Cancer and Well-Being”.

The purpose of this email/message is to see if you would be willing to post a short summary (attached below) regarding my study with a confidential link to the survey on your website/in your newsletter, on your social media page, and/or would distribute this information to others. The present study is aimed at recruiting women who are at least 18 years of age, and have completed their primary treatment (e.g., surgery, chemotherapy, and/or radiation) for breast cancer.

Upon completion of the questionnaires, participants can opt-in to provide their email address to be entered into a drawing to win 1 of 6 $50 Amazon gift cards.

As always, I appreciate your openness and support and look forward to working with you.

Thank you sincerely for your time,

Andriana Frost, M.S.
Doctoral Candidate
West Chester University of Pennsylvania
Ah722030@wcupa.edu

Recruitment Notice to be Posted for Participants via Email, Newsletter, Facebook:

Research participants needed!

Hello! My name is Andriana Frost and I am a doctoral candidate in the department of psychology at West Chester University of Pennsylvania. I am currently conducting my dissertation research focused on the experiences of women diagnosed and treated for breast cancer. Attached to this post is a link to a confidential survey that I am inviting women who have completed their primary treatment for breast cancer (e.g., surgery, chemotherapy, radiation) to participate in. The questionnaire should take approximately 30 minutes to complete and participants much be at least 18 years of age.
All responses and information will be held strictly confidential and only viewed by myself and my research advisor Dr. Erin Hill, associate professor with the department of psychology at West Chester University.

Upon completion of the questionnaires, participants can opt-in to provide their email address to be entered into a drawing to win 1 of 6 $50 Amazon gift cards.

(link will be inserted here)

Please help spread the word about this research- hit ‘share’ to let others know about this study!

Thank you for your support and interest in my research!

Sincerely,
Andriana Frost, Doctoral Candidate, Department of Psychology, West Chester University, ah722030@wcupa.edu
TO: Andriana Frost
FROM: Nicole M. Cattano, Ph.D.
Co-Chair, WCU Institutional Review Board (IRB)
DATE: 11/1/2019

Project Title: Breast Cancer and Well Being
Date of Approval: 11/1/2019

☑ Expedited Approval
This protocol has been approved under the new updated 45 CFR 46 common rule that went in to effect January 21, 2019. As a result, this project will not require continuing review. Any revisions to this protocol that are needed will require approval by the WCU IRB. Upon completion of the project, you are expected to submit appropriate closure documentation. Please see www.wcupa.edu/research/irb.aspx for more information.

Any adverse reaction by a research subject is to be reported immediately through the Office of Research and Sponsored Programs via email at irb@wcupa.edu.

Signature:

Co-Chair of WCU IRB

Protocol ID # 20191105A
This Protocol ID number must be used in all communications about this project with the IRB.

WCU Institutional Review Board (IRB)
IORG#: IORG0004242
IRB#: IRB00005030
FWA#: FWA00014155
TO: Andriana Frost and Erin Hill  
FROM: Nicole M. Cattano, Ph.D.  
Co-Chair, WCU Institutional Review Board (IRB)  
DATE: 3/4/2020  

**Protocol ID # 20191105A-R1**

Project Title: Breast Cancer and Well Being  
Date of Approval for Revision**: 3/4/2020  
**Please note that the original end date of your approved protocol still applies**

☑ Expeditied Approval  
This protocol has been approved under the new updated 45 CFR 46 common rule that went into effect January 21, 2019. As a result, this project will not require continuing review. Any revisions to this protocol that are needed will require approval by the WCU IRB. Upon completion of the project, you are expected to submit appropriate closure documentation. Please see www.wcupa.edu/research/irb.aspx for more information.

*Any adverse reaction by a research subject is to be reported immediately through the Office of Research and Sponsored Programs via email at irb@wcupa.edu.*

Signature:

Co-Chair of WCU IRB

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WCU Institutional Review Board (IRB)  
IORG#: IORG0004242  
IRB#: IRB000005030  
FWA#: FWA0014155
Consent Form and Debriefing

Welcome and thank you for your interest in my study titled "Breast Cancer and Well-being".

There is a consent form included below, which details the research study. If you click "I consent", you will be taken to a questionnaire that should take approximately 30 minutes to complete. Please note that all responses will be kept strictly confidential.

If you have any questions about my research, please do not hesitate to get in touch with the principal investigator, Andriana Hamm, doctoral candidate, at the Department of Psychology, West Chester University of Pennsylvania (ah722030@wcupa.edu).

Thank you in advance for your participation!

Consent Form:

Project Title: Breast Cancer and Well-being.

Investigator: Andriana Frost, MS, Doctoral Candidate, Department of Psychology, West Chester University of Pennsylvania. Contact: ah722030@wcupa.edu

Faculty Advisor and Dissertation Chair: Erin Hill, Ph.D., West Chester University of Pennsylvania. Contact: 610-436-2482, ehill@wcupa.edu

Project Overview:

Participation in this research project is voluntary and is being done by Andriana Frost as part of her Doctoral Dissertation. The purpose of this study is to better understand well-being among women who have been diagnosed with breast cancer and have completed their primary treatment. Your participation will take about 30 minutes and will involve completing questionnaires. There is a minimal risk in participating in this study. This study contains some sensitive material. You will be asked personal information about your health and well-being. Please note that all responses will remain confidential and will be used for research purposes only. If you experience discomfort, you have the right to withdrawal at any time. You may also wish to discuss it with your family doctor. The benefit of participating in this study is that you might gain insight into their own perceptions of your illness and well-being. This research will help provide information to medical and psychological professionals who work to support women with breast cancer, thus informing the services that they provide.

The research project is being conducted by Andriana Frost as part of her Doctoral Dissertation. The purpose of this study is to understand the well-being among women who have been diagnosed with breast cancer and have completed their primary treatment. If you would like to take part, West Chester University requires that you agree and sign this consent form.

You may ask Andriana Frost any questions to help you understand this study. If you do not want to be a part of this study, it will not affect any current or future services you may receive from
West Chester University. If you choose to be a part of this study, you have the right to change your mind and stop being a part of the study at any time.

What is the purpose of this study? The purpose of this study is to understand well-being among women who have been diagnosed with breast cancer and have completed primary treatment for their illness.

If you decide to be a part of this study, you will be asked to do the following: You will complete an online survey that will take approximately 30 minutes. The survey includes questions about your demographics, medical background, mental health, and well-being.

Are there any experimental medical treatments? No.

Location and Time Involved? Online - 30 minutes.

Is there any risk to me? This study contains some sensitive information. It will ask you personal information about your health and well-being. Please note that all responses will remain confidential and will be used for research purposes only. If you experience discomfort, you have the right to withdraw at any time. You may also wish to discuss any distress you experience with your family doctor or oncologist.

If you become upset and wish to speak with someone, you may speak with the primary investigator, Andriana Frost, at ah722030@wcupa.edu. You are also welcome to contact the Chair of the Institutional Review Board through the Office of Research and Sponsored Programs at 610-436-3557.

Is there any benefit to me? This study will provide important information to medical and psychological professionals who support women throughout their journey with breast cancer, thus informing the services they provide. Participants might also gain insight into their own perceptions of their illness and well-being.

How will you protect my privacy? Sessions will not be recorded, and all records will be kept private and remain confidential. Only Andriana Frost, Erin Hill (faculty advisor), and the IRB will have access to your name and responses. Additionally, your name will not be used in any reports. All records will be stored in Wayne Hall Room 431, which will be kept locked at all times. An encrypted file will be saved on a password protected thumb drive and computer. Records will be destroyed after 10 years following completion of the study.

Do I get paid to take part in this study? There is no compensation for taking part in this study.

Who do I contact in case of research related injury?
For any questions or concerns related to this study, please contact:
The primary investigator: Andriana Frost, ah722030@wcupa.edu
Faculty Sponsor: Erin Hill, Ph.D., 610-436-2482 or ehill@wcupa.edu
What will you do with my Identifiable Information? All of your information will be deidentified and kept private and confidential. Your information will only be retained should you provide consent following the end of the study. If you provide consent, you are agreeing to allowing the primary investigator to keep your email address in order to contact you about opportunities to participate in future studies.

If you have questions about your rights as a participant in this research, or if you feel you have been placed at risk, you can contact the Chair of the Institutional Review Board through the Office of Research and Sponsored Programs, 610-436-3557.

Consent
I have read this form and I understand the statements in this form. I know that if I am uncomfortable with this study, I can stop at any time. I know that it is not possible to know all possible risks in a study, and I think that reasonable safety measures have been taken to decrease any risk.

Participant Signature ________________________________
Date ____________
Closing and Debriefing

If you would like, you are welcome to provide any additional comments related to the survey in the space below.
_____________________________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________

Our research team conducts ongoing research on women with cancer and the experience of loved ones with cancer. Would it be alright if we kept your email on file to possibly contact you in the future about our studies?
☐ Yes, please keep my e-mail on file for future studies
☐ No, please do not keep my e-mail on file for future studies

Debriefing:
Thank you for your participation in this study. The research questions we are investigating in this study are discussed below to provide you with a more detailed understanding of our research design and purpose.

What are we trying to learn in this research?
This study seeks to understand how lasting physical reminders of an individual’s cancer experience impacts their well-being.

Why is this research important?
This research is important because past research has demonstrated that women who have been treated for breast cancer report difficulties as a result of their bodies being altered during the course of treatment.

If you have developed specific questions about your health or wish to talk to a physician, we strongly recommend that you contact your primary care doctor and/or oncologist.

You may also obtain more information regarding breast cancer and well-being at:
Centers for Disease Control (CDC): https://www.cdc.gov/cancer/breast/index.htm
https://www.cdc.gov/mentalhealth/index.htm

Furthermore, the following organizations are dedicated to support individuals who have been diagnosed with breast cancer. Please feel free to contact them should you want more information about this disease.

National Breast Cancer Foundation, Inc.: https://www.nationalbreastcancer.org/
American Breast Cancer Foundation: http://www.abcf.org/

What if I have questions about this study later?
Should you have any questions about this study, you can contact: Andriana Frost (ah722030@wcupa.edu).

Should you have any ethical concerns about this study, please contact the Chair of the Institutional Review Board through OSR at 610-436-3557.

Thank you for your participation in our study. Your time and effort are greatly appreciated.
Appendix B

Social and Medical Demographic Questions

Social Demographics
1. What is your age?
2. What country do you live in? (e.g., USA, Canada, UK)
3. What ethnic group do you belong to?
   □ Caucasian
   □ Native American/Alaskan Native
   □ Native Hawaiian or Pacific Islander
   □ Hispanic/Latino
   □ Black/African
   □ Asian
   □ Other, please specify: _____________________
4. What is the highest level of education that you have completed?
   □ Less than high school graduate
   □ High school graduate
   □ Trade school/some college
   □ Associates degree
   □ College graduate
   □ Postgraduate degree (e.g., Master’s, Ph.D.)
5. What is your marital status?
   □ Married
   □ Living with a partner
   □ Divorced/separated
   □ Widowed
   □ Single
6. What is your family income?
   □ $20,000 or less
   □ $20,001-$30,000
   □ $30,001-$50,000
   □ $50,001-$70,000
   □ $70,001-$100,000
   □ $100,001 or more
7. What is your current height? (Please write out in feet and inches- e.g., 5 feet 5 inches)
8. What is your current weight? (Please write out in pounds- e.g., 165 pounds)
9. What is your smoking status?
   □ Non-smoker
If you are a smoker, how many cigarettes do you smoke per day?

Medical Demographics

What was your date of diagnosis with breast cancer? (Month and Year- e.g., November 2012)

What was the disease stage at diagnosis?
- Stage 0
- Stage I
- Stage II
- Stage III
- Stage IV

As of today, have you completed your primary treatment for breast cancer (e.g., chemotherapy, radiation, surgery)?
- Yes
- No (if no is selected, participant will be taken to the end of the survey due to meeting exclusion criteria)

What treatment(s) have you received? Please check all that apply.
- Surgery
- Chemotherapy
- Radiation
- Hormonal treatment
- Other, please specify:__________________

Have you received breast reconstruction as a result of your illness and treatment?
- Yes
- No (if no is selected, participant will be taken to question 17 and will skip question 16)

Do you feel satisfied with your breast reconstruction?
- Yes
- No

Have you experienced recurrence of the cancer (disease returning after a period of remission)?
- Yes
- No
18. If yes, how many times have you experienced a recurrence (i.e., how many times after a period of remission has the cancer returned)?

- 1 time
- 2 times
- 3 times
- 4 times
- Other, please specify: ____________________

19. What is your current medical status?

- Presence of disease, active treatment
- Presence of disease, no treatment
- Presence of disease, palliative treatment
- In remission, on maintenance therapy
- In remission, not on maintenance therapy

20. Do you currently have any other medical condition(s)?

- Yes
- No

21. If you responded yes to having another medical condition, please specify the medical condition(s) that you have.
Appendix C

Depression Anxiety and Stress Scale-21 (DASS-21)

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

The rating scale is as follows:
0 Did not apply to me at all
1 Applied to me to some degree, or some of the time
2 Applied to me to a considerable degree, or a good part of the time
3 Applied to me very much, or most of the time

1. I was aware of dryness in my mouth
   □ 0
   □ 1
   □ 2
   □ 3

2. I couldn’t seem to experience any positive feeling at all
   □ 0
   □ 1
   □ 2
   □ 3

3. I experienced breathing difficulty (e.g., excessively rapid breathing, breathlessness in the absence of exertion)
   □ 0
   □ 1
   □ 2
   □ 3

4. I found it difficult to work up the initiative to do things
   □ 0
   □ 1
   □ 2
   □ 3

5. I experienced trembling (e.g., in the hands)
   □ 0
   □ 1
   □ 2
   □ 3

6. I was worried about situations in which I might panic and make a fool of myself
   □ 0
   □ 1
   □ 2
   □ 3
7. I felt that I had nothing to look forward to
   □ 0
   □ 1
   □ 2
   □ 3

8. I felt downhearted and blue
   □ 0
   □ 1
   □ 2
   □ 3

9. I felt I was close to panic
   □ 0
   □ 1
   □ 2
   □ 3

10. I was unable to become enthusiastic about anything
    □ 0
    □ 1
    □ 2
    □ 3

11. I felt I wasn’t worth much as a person
    □ 0
    □ 1
    □ 2
    □ 3

12. I was aware of the action of my heart in the absence of physical exertion (e.g., sense of heart rate increase, heart missing a beat)
    □ 0
    □ 1
    □ 2
    □ 3

13. I felt scared without any good reason
    □ 0
    □ 1
    □ 2
    □ 3

14. I felt life was meaningless
    □ 0
    □ 1
    □ 2
    □ 3
Appendix D
Gender Role Socialization Scale for Women (GRSS)

Please read the following statements and indicate how each one applies to you at this time in your life. There are no right or wrong answers to these statements so please answer them as honestly as possible.

1. If I do not accomplish everything I should, then I must be a failure
   - Strongly disagree
   - Disagree
   - Slightly disagree
   - Neutral
   - Slightly agree
   - Agree
   - Strongly agree

2. I am to blame if I have low self-esteem
   - Strongly disagree
   - Disagree
   - Slightly disagree
   - Neutral
   - Slightly agree
   - Agree
   - Strongly agree

3. If I do not get what I need, it is because I ask for too much
   - Strongly disagree
   - Disagree
   - Slightly disagree
   - Neutral
   - Slightly agree
   - Agree
   - Strongly agree

4. What I look like is more important than how I feel
   - Strongly disagree
   - Disagree
   - Slightly disagree
   - Neutral
   - Slightly agree
   - Agree
   - Strongly agree
5. I feel embarrassed by my own sexual desires
   - Strongly disagree
   - Disagree
   - Slightly disagree
   - Neutral
   - Slightly agree
   - Agree
   - Strongly agree

6. I feel that I must always make room in my life to take care of others
   - Strongly disagree
   - Disagree
   - Slightly disagree
   - Neutral
   - Slightly agree
   - Agree
   - Strongly agree

7. I will never be happy if I am not in a romantic relationship
   - Strongly disagree
   - Disagree
   - Slightly disagree
   - Neutral
   - Slightly agree
   - Agree
   - Strongly agree

8. Compared to men, I am less able to handle stress
   - Strongly disagree
   - Disagree
   - Slightly disagree
   - Neutral
   - Slightly agree
   - Agree
   - Strongly agree

9. If I am unhappy, it is because I am too hard to please
   - Strongly disagree
   - Disagree
   - Slightly disagree
   - Neutral
   - Slightly agree
   - Agree
10. If I take time for myself, I feel selfish
   □ Strongly disagree
   □ Disagree
   □ Slightly disagree
   □ Neutral
   □ Slightly agree
   □ Agree
   □ Strongly agree

11. If I do not like my body, I am to blame
   □ Strongly disagree
   □ Disagree
   □ Slightly disagree
   □ Neutral
   □ Slightly agree
   □ Agree
   □ Strongly agree

12. If other people let me down, it is because I expect too much
   □ Strongly disagree
   □ Disagree
   □ Slightly disagree
   □ Neutral
   □ Slightly agree
   □ Agree
   □ Strongly agree

13. I have only myself to blame for my problems
   □ Strongly disagree
   □ Disagree
   □ Slightly disagree
   □ Neutral
   □ Slightly agree
   □ Agree
   □ Strongly agree

14. I can not feel good about myself unless I feel physical attractive
   □ Strongly disagree
   □ Disagree
   □ Slightly disagree
   □ Neutral
15. If I ever feel overwhelmed, it must mean that I am incompetent
   - Slightly disagree
   - Disagree
   - Slightly disagree
   - Neutral
   - Slightly agree
   - Agree
   - Strongly agree

16. I feel that I must look good on the outside even if I do not feel good on the inside
   - Slightly disagree
   - Disagree
   - Slightly disagree
   - Neutral
   - Slightly agree
   - Agree
   - Strongly agree

17. I feel that the needs of others are more important than my own needs
   - Slightly disagree
   - Disagree
   - Slightly disagree
   - Neutral
   - Slightly agree
   - Agree
   - Strongly agree

18. No matter how I feel I must always try to look my best
   - Slightly disagree
   - Disagree
   - Slightly disagree
   - Neutral
   - Slightly agree
   - Agree
   - Strongly agree

19. I do not feel that I can leave a relationship even when I know that it is not satisfying
   - Slightly disagree
   - Disagree
20. I feel that I am not allowed to ask that my own needs be met
   □ Strongly disagree
   □ Disagree
   □ Slightly disagree
   □ Neutral
   □ Slightly agree
   □ Agree
   □ Strongly agree

21. I do not like to say nice things about myself
   □ Strongly disagree
   □ Disagree
   □ Slightly disagree
   □ Neutral
   □ Slightly agree
   □ Agree
   □ Strongly agree

22. Whenever I see media images of women, I feel dissatisfied with my own body
   □ Strongly disagree
   □ Disagree
   □ Slightly disagree
   □ Neutral
   □ Slightly agree
   □ Agree
   □ Strongly agree

23. I feel that I must always put my family’s emotional needs before my own
   □ Strongly disagree
   □ Disagree
   □ Slightly disagree
   □ Neutral
   □ Slightly agree
   □ Agree
   □ Strongly agree

24. I feel as though I should be less sexually forward with men
25. If a relationship fails, I usually feel that it is my fault
   - Strongly disagree
   - Disagree
   - Slightly disagree
   - Neutral
   - Slightly agree
   - Agree
   - Strongly agree

26. If I take time for myself, I feel guilty
   - Strongly disagree
   - Disagree
   - Slightly disagree
   - Neutral
   - Slightly agree
   - Agree
   - Strongly agree

27. Whenever I am eating, I am always thinking about how it will affect my body size
   - Strongly disagree
   - Disagree
   - Slightly disagree
   - Neutral
   - Slightly agree
   - Agree
   - Strongly agree

28. I often give up my own wishes in order to make other people happy
   - Strongly disagree
   - Disagree
   - Slightly disagree
   - Neutral
   - Slightly agree
   - Agree
   - Strongly agree
29. I feel as though I can not reveal the struggles in my life

- [ ] Strongly disagree
- [ ] Disagree
- [ ] Slightly disagree
- [ ] Neutral
- [ ] Slightly agree
- [ ] Agree
- [ ] Strongly agree

30. In a relationship, I feel I must always put my partner’s needs before my own

- [ ] Strongly disagree
- [ ] Disagree
- [ ] Slightly disagree
- [ ] Neutral
- [ ] Slightly agree
- [ ] Agree
- [ ] Strongly agree
Appendix E

Biographical Disruption Scale

Being diagnosed with breast cancer and going through cancer treatment can impact the way that we view and think about ourselves in the context of others.

Please indicate how often you experience the following thoughts about yourself and others in relation to your breast cancer experience.

1. As a result of my breast cancer, I have felt that I need to reconsider how I think about myself
   - □ Never
   - □ Sometimes
   - □ Somewhat often
   - □ Most of the time
   - □ Always

2. As a result of my breast cancer, I am now more preoccupied with my health
   - □ Never
   - □ Sometimes
   - □ Somewhat often
   - □ Most of the time
   - □ Always

3. As a result of my breast cancer, I feel more negatively about myself
   - □ Never
   - □ Sometimes
   - □ Somewhat often
   - □ Most of the time
   - □ Always

4. As a result of my breast cancer, my daily life has changed for the worse
   - □ Never
   - □ Sometimes
   - □ Somewhat often
   - □ Most of the time
   - □ Always

5. As a result of my breast cancer, I have had to change my plans for the future in ways that are not ideal
   - □ Never
   - □ Sometimes
   - □ Somewhat often
   - □ Most of the time
6. As a result of my breast cancer, my relationship with others has become more strained
   - □ Never
   - □ Sometimes
   - □ Somewhat often
   - □ Most of the time
   - □ Always

7. As a result of my breast cancer, I feel that others now see me as weak or defective in some way
   - □ Never
   - □ Sometimes
   - □ Somewhat often
   - □ Most of the time
   - □ Always

8. As a result of my breast cancer, I feel that it is difficult to connect with people that I used to think I had much in common with
   - □ Never
   - □ Sometimes
   - □ Somewhat often
   - □ Most of the time
   - □ Always

9. As a result of my breast cancer, I feel that I can no longer rely on the things that I used to know
   - □ Never
   - □ Sometimes
   - □ Somewhat often
   - □ Most of the time
   - □ Always

10. As a result of my breast cancer, I feel uncertain about who I am as a person
    - □ Never
    - □ Sometimes
    - □ Somewhat often
    - □ Most of the time
    - □ Always

11. As a result of my breast cancer, I have felt uncertain about my future
Never  
Sometimes  
Somewhat often  
Most of the time  
Always

12. As a result of my breast cancer, I isolate myself more often  
Never  
Sometimes  
Somewhat often  
Most of the time  
Always
Appendix F

Functional Assessment of Cancer Treatment–Breast (FACT–B)

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

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

Social Well-Being Subscale
8. I feel close to my friends
□ Not at all
□ A little bit
□ Somewhat
□ Quite a bit
□ Very much

9. I get emotional support from my family
□ Not at all
□ A little bit
□ Somewhat
□ Quite a bit
□ Very much

10. I get support from my friends
□ Not at all
□ A little bit
□ Somewhat
□ Quite a bit
□ Very much

11. My family has accepted my illness
□ Not at all
□ A little bit
□ Somewhat
□ Quite a bit
□ Very much

12. I am satisfied with family communication about my illness
□ Not at all
□ A little bit
□ Somewhat
□ Quite a bit
□ Very much

13. I feel close to my partner (or person who is my main support)
□ Not at all
□ A little bit
□ Somewhat
□ Quite a bit
□ Very much

14. Regardless of your current level of sexual activity, please answer the following question. If you prefer not to answer it, please mark the no box and go to the next section.
a. Yes
b. No

15. I am satisfied with my sex life
☐ Not at all
☐ A little bit
☐ Somewhat
☐ Quite a bit
☐ Very much

16. I feel sad
☐ Not at all
☐ A little bit
☐ Somewhat
☐ Quite a bit
☐ Very much

17. I am satisfied with how I am coping with my illness
☐ Not at all
☐ A little bit
☐ Somewhat
☐ Quite a bit
☐ Very much

18. I am losing hope in the fight against my illness
☐ Not at all
☐ A little bit
☐ Somewhat
☐ Quite a bit
☐ Very much

19. I feel nervous
☐ Not at all
☐ A little bit
☐ Somewhat
☐ Quite a bit
☐ Very much

20. I worry about dying
☐ Not at all
☐ A little bit
☐ Somewhat
☐ Quite a bit
☐ Very much

21. I worry that my condition will get worse
☐ Not at all
☐ A little bit
☐ Somewhat
☐ Quite a bit
□ Very much

Functional Well-Being Subscale
22. I am able to work (include work at home)
   □ Not at all
   □ A little bit
   □ Somewhat
   □ Quite a bit
   □ Very Much
23. My work (include work at home) is fulfilling
   □ Not at all
   □ A little bit
   □ Somewhat
   □ Quite a bit
   □ Very much
24. I am able to enjoy life
   □ Not at all
   □ A little bit
   □ Somewhat
   □ Quite a bit
   □ Very much
25. I have accepted my illness
   □ Not at all
   □ A little bit
   □ Somewhat
   □ Quite a bit
   □ Very much
26. I am sleeping well
   □ Not at all
   □ A little bit
   □ Somewhat
   □ Quite a bit
   □ Very much
27. I am enjoying the things I usually do for fun
   □ Not at all
   □ A little bit
   □ Somewhat
   □ Quite a bit
   □ Very much
28. I am content with the quality of life my right onw
   □ Not at all
   □ A little bit
   □ Somewhat
   □ Quite a bit
   □ Very much
Breast Cancer Subscale
29. I have been short of breath
   □ Not at all
   □ A little bit
   □ Somewhat
   □ Quite a bit
   □ Very much
30. I am self-conscious about the way I dress
   □ Not at all
   □ A little bit
   □ Somewhat
   □ Quite a bit
   □ Very much
31. One or both of my arms are swollen or tender
   □ Not at all
   □ A little bit
   □ Somewhat
   □ Quite a bit
   □ Very much
32. I feel sexually attractive
   □ Not at all
   □ A little bit
   □ Somewhat
   □ Quite a bit
   □ Very much
33. I am bothered by hair loss
   □ Not at all
   □ A little bit
   □ Somewhat
   □ Quite a bit
   □ Very much
34. I worry that other members of my family might someday get the same illness I have
   □ Not at all
   □ A little bit
   □ Somewhat
   □ Quite a bit
   □ Very Much
35. I worry about the effect of stress on my illness
   □ Not at all
   □ A little bit
   □ Somewhat
   □ Quite a bit
   □ Very much
36. I am bothered by a change in weight
   □ Not at all
☐ A little bit
☐ Somewhat
☐ Quite a bit
☐ Very much

37. I am able to feel like a woman
☐ Not at all
☐ A little bit
☐ Somewhat
☐ Quite a bit
☐ Very much

Pain Subscale
38. I have certain parts of my body where I experience pain
☐ Not at all
☐ A little bit
☐ Somewhat
☐ Quite a bit
☐ Very much
Appendix G

Embodied Reminders Scale

Treatment(s) for breast cancer can leave lasting physical reminders of the cancer experience on our body. Please select as many of the following physical reminders that you have from your cancer experience.

☐ Scar(s) (on arms, chest, etc.)
☐ Tattoo(s) from radiation
☐ Removal of one breast
☐ Removal of both breasts
☐ Misaligned breasts
☐ Permanent hair loss
☐ Weight gain
☐ Weight loss
☐ Skin burns
☐ Asymmetrical breasts as a result of treatment
☐ Lymphedema (e.g., swelling in arms, legs, etc.)
☐ Neuropathy (pain, weakness, or numbness in the arms or legs)

Please rate how much each of the following physical reminders impacts you on a daily basis.

1. My scar(s) impact me
   ☐ Not at all
   ☐ A little
   ☐ Quite a lot
   ☐ Very much

2. My tattoo(s) from radiation impact me
   ☐ Not at all
   ☐ A little
   ☐ Quite a lot
   ☐ Very much

3. Removal of one of my breasts impacts me
   ☐ Not at all
   ☐ A little
   ☐ Quite a lot
   ☐ Very much

4. Removal of both of my breasts impacts me
   ☐ Not at all
   ☐ A little
   ☐ Quite a lot
   ☐ Very much

5. My misaligned breasts impact me
   ☐ Not at all
   ☐ A little
6. My permanent hair loss impacts me
   - Not at all
   - A little
   - Quite a lot
   - Very much

7. My weight gain impacts me
   - Not at all
   - A little
   - Quite a lot
   - Very much

8. My weight loss impacts me
   - Not at all
   - A little
   - Quite a lot
   - Very much

9. Burns on my skin impact me
   - Not at all
   - A little
   - Quite a lot
   - Very much

10. My asymmetrical breast caused by my treatment impact me
    - Not at all
    - A little
    - Quite a lot
    - Very much

11. Lymphedema (e.g., swelling in the arms, legs, etc.) impacts me
    - Not at all
    - A little
    - Quite a lot
    - Very much

12. Neuropathy (pain, weakness, or numbness in the arms or legs) impacts me
    - Not at all
    - A little
    - Quite a lot
    - Very much

In addition to the physical reminders listed in the previous question, are there any other physical reminders that you have on your body?
If so, please list the additional physical reminders below:

1. ________________________________
Appendix H

Body Image Scale (BIS)

In this questionnaire you will be asked how you feel about your appearance, and about any changes that may have resulted from your diagnosis and treatment of breast cancer. Please read each item carefully and check the box next to the reply which comes closest to the way you have been feeling about yourself over the past week.

1. Have you been feeling self-conscious about your appearance due to your treatment for breast cancer?
   - Not at all
   - A little
   - Quite a bit
   - Very much

2. Have you felt less physically attractive as a result of your treatment for breast cancer?
   - Not at all
   - A little
   - Quite a bit
   - Very much

3. Have you been dissatisfied with your appearance when dressed due to your treatment for breast cancer?
   - Not at all
   - A little
   - Quite a bit
   - Very much

4. Have you been feeling less feminine as a result of your treatment for breast cancer?
   - Not at all
   - A little
   - Quite a bit
   - Very much

5. Do you find it difficult to look at yourself naked due to your treatment for breast cancer?
   - Not at all
   - A little
   - Quite a bit
   - Very much

6. Have you been feeling less sexually attractive as a result of your treatment for breast cancer?
   - Not at all
   - A little
   - Quite a bit
7. Did you avoid people because of the way you feel about your appearance related to breast cancer?
   - Not at all
   - A little
   - Quite a bit
   - Very much

8. Have you been feeling that your treatment for breast cancer has left your body less whole?
   - Not at all
   - A little
   - Quite a bit
   - Very much

9. Have you felt dissatisfied with your body as a result of your treatment for breast cancer?
   - Not at all
   - A little
   - Quite a bit
   - Very much

10. Have you been dissatisfied with your appearance of the scar(s) caused by your treatment for breast cancer?
    - Not at all
    - A little
    - Quite a bit
    - Very much
    - N/A
Appendix I

Sense of Self Scale (SOSS)

Below are a number of statements concerning your personal attitudes and characteristics regarding your diagnosis and treatment of breast cancer. Please read each statement and consider the extent to which you agree or disagree with the statement in relation to your treatment of breast cancer. Respond to the statement as accurately as possible by using the following scale to indicate how much you agree with it.

1. Within the context of my breast cancer, I wish I were more consistent in my feelings
   □ 1 (Very uncharacteristic of me)
   □ 2
   □ 3
   □ 4 (Very characteristic of me)

2. Within the context of my breast cancer, it is hard for me to figure out my own personality, interests, and opinions
   □ 1 (Very uncharacteristic of me)
   □ 2
   □ 3
   □ 4 (Very characteristic of me)

3. Due to my breast cancer, I often think how fragile my existence is
   □ 1 (Very uncharacteristic of me)
   □ 2
   □ 3
   □ 4 (Very characteristic of me)

4. Within the context of my breast cancer, I have a pretty good sense of what my long-term goals are in life
   □ 1 (Very uncharacteristic of me)
   □ 2
   □ 3
   □ 4 (Very characteristic of me)

5. Within the context of my breast cancer, I sometimes wonder if people can actually see me
   □ 1 (Very uncharacteristic of me)
   □ 2
   □ 3
   □ 4 (Very characteristic of me)

6. Within the context of my breast cancer, other people’s thoughts and feelings seem to carry greater weight than my own
   □ 1 (Very uncharacteristic of me)
7. Within the context of my breast cancer, I have a clear and definite sense of who I am and what I am all about
   □ 1 (Very uncharacteristic of me)
   □ 2
   □ 3
   □ 4 (Very characteristic of me)

8. Within the context of my breast cancer, it bothers me that my personality does not seem to be well-defined
   □ 1 (Very uncharacteristic of me)
   □ 2
   □ 3
   □ 4 (Very characteristic of me)

9. Due to my breast cancer, I am not sure that I can understand or put much trust in my thoughts and feelings
   □ 1 (Very uncharacteristic of me)
   □ 2
   □ 3
   □ 4 (Very characteristic of me)

10. Due to my breast cancer, Who am I? is a question that I ask myself a lot
    □ 1 (Very uncharacteristic of me)
    □ 2
    □ 3
    □ 4 (Very characteristic of me)

11. Due to my breast cancer, I need other people to help me understand what I think or how I feel
    □ 1 (Very uncharacteristic of me)
    □ 2
    □ 3
    □ 4 (Very characteristic of me)

12. Within the context of my breast cancer, I tend to be very sure of myself and stick to my own preferences even when the group I am with expresses different preferences
    □ 1 (Very uncharacteristic of me)
    □ 2
    □ 3
☐ 4 (Very characteristic of me)
## Appendix J—Analysis of Biographical Disruption Measure

### Table 10

<table>
<thead>
<tr>
<th>If Item Deleted—Biographical Disruption Scale (12–Items)</th>
<th>Scale Mean if Item Deleted</th>
<th>Scale Variance if Item Deleted</th>
<th>Cronbach’s Alpha if Item Deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>As a result of my breast cancer, I have felt that I need to reconsider how I think about myself</td>
<td>19.56</td>
<td>47.464</td>
<td>.900</td>
</tr>
<tr>
<td>As a result of my breast cancer, I am now more preoccupied with my health</td>
<td>19.37</td>
<td>45.77</td>
<td>.891</td>
</tr>
<tr>
<td>As a result of my breast cancer, I feel more negatively about myself</td>
<td>20.53</td>
<td>48.40</td>
<td>.895</td>
</tr>
<tr>
<td>As a result of my breast cancer, my daily life has changed for the worse</td>
<td>20.65</td>
<td>46.40</td>
<td>.883</td>
</tr>
<tr>
<td>As a result of my breast cancer, I have had to change my plans for the future in ways that are not ideal</td>
<td>20.61</td>
<td>45.16</td>
<td>.884</td>
</tr>
<tr>
<td>As a result of my breast cancer, my relationship with others has become more strained</td>
<td>20.70</td>
<td>46.36</td>
<td>.883</td>
</tr>
<tr>
<td>As a result of my breast cancer, I feel that others see me as weak or defective in some way</td>
<td>20.79</td>
<td>48.66</td>
<td>.890</td>
</tr>
<tr>
<td>As a result of my breast cancer, I feel that it is difficult to connect with people that I used to have much in common with</td>
<td>20.73</td>
<td>45.41</td>
<td>.879</td>
</tr>
<tr>
<td>As a result of my breast cancer, I feel that I can no longer rely on the things that I used to know</td>
<td>20.44</td>
<td>43.48</td>
<td>.876</td>
</tr>
<tr>
<td>As a result of my breast cancer, I feel uncertain about who I am as a person</td>
<td>20.71</td>
<td>46.67</td>
<td>.883</td>
</tr>
<tr>
<td>As a result of my breast cancer, I have felt uncertain about my future</td>
<td>20.01</td>
<td>42.68</td>
<td>.877</td>
</tr>
<tr>
<td>As a result of my breast cancer, I isolate myself more often</td>
<td>20.65</td>
<td>44.49</td>
<td>.878</td>
</tr>
</tbody>
</table>

Total Scale Reliability = .894
### Table 11

Factor Analysis—Biographical Disruption Scale

<table>
<thead>
<tr>
<th></th>
<th>Component 1</th>
<th>Component 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>As a result of my breast cancer, I have felt that I need to reconsider how I think about myself</td>
<td>.416</td>
<td>.777</td>
</tr>
<tr>
<td>As a result of my breast cancer, I am now more preoccupied with my health</td>
<td>.568</td>
<td>.515</td>
</tr>
<tr>
<td>As a result of my breast cancer, I feel more negatively about myself</td>
<td>.475</td>
<td>-.069</td>
</tr>
<tr>
<td>As a result of my breast cancer, my daily life has changed for the worse</td>
<td>.733</td>
<td>-.364</td>
</tr>
<tr>
<td>As a result of my breast cancer, I have had to change my plans for the future in ways that are not ideal</td>
<td>.719</td>
<td>-.335</td>
</tr>
<tr>
<td>As a result of my breast cancer, my relationship with others has become more strained</td>
<td>.737</td>
<td>-.167</td>
</tr>
<tr>
<td>As a result of my breast cancer, I feel that others see me as weak or defective in some way</td>
<td>.565</td>
<td>.086</td>
</tr>
<tr>
<td>As a result of my breast cancer, I feel that it is difficult to connect with people that I used to have much in common with</td>
<td>.813</td>
<td>.064</td>
</tr>
<tr>
<td>As a result of my breast cancer, I feel that I can no longer rely on the things that I used to know</td>
<td>.826</td>
<td>-.022</td>
</tr>
<tr>
<td>As a result of my breast cancer, I feel uncertain about who I am as a person</td>
<td>.727</td>
<td>.087</td>
</tr>
<tr>
<td>As a result of my breast cancer, I have felt uncertain about my future</td>
<td>.810</td>
<td>-.045</td>
</tr>
<tr>
<td>As a result of my breast cancer, I isolate myself more often</td>
<td>.820</td>
<td>-.076</td>
</tr>
</tbody>
</table>

Eigenvalue = 5.84
Variance Explained = 48.67

Eigenvalue = 1.17
Variance Explained = 9.78
Figure 12
Scree Plot of Eigenvalues for the Biographical Disruption Scale