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Posttraumatic growth: Examining three types of support in rural and non-rural breast
cancer survivors

By

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Dedication

In memory of Kat Werner, who supported many by volunteering with Susan G. Komen. She was crucial to the beginning of my research with breast cancer and her efforts will not be forgotten. Furthermore, this is dedicated to all women who have been diagnosed with breast cancer. Your courage does not go unnoticed. I have been honored that you allowed me to share in your story and hear your experience.

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Abstract

Posttraumatic growth: Examining three types of support in rural and non-rural breast cancer survivors

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Breast cancer, although considered a traumatic experience, can lead to posttraumatic growth (PTG). Research has found that a majority of breast cancer survivors experience posttraumatic growth. While there are factors suggested to contribute to PTG, inconsistencies are found in the literature. One such factor, social support, is a malleable factor that could be beneficial for interventions to foster PTG. Currently, there is no research on PTG in rural breast cancer survivors. Because of fewer resources and a lesser likelihood of having peer support groups, along with an increased likelihood of religious supports, the study hypothesized that rural survivors differed from non-rural survivors on levels of posttraumatic growth. Other hypotheses included those with both religious and nonreligious social support would have the highest levels of PTG and religious support would have a unique contribution above what other types of support have. The researchers explored these relationships to ascertain whether geographical location and type of support matter within a breast cancer survivor population. Results indicate that type of support does matter and that more research investigating responses from participants from a variety of geographical locations needs to determine if location makes a difference. Implications, limitations, and considerations for future research were explored.

Keywords: *posttraumatic growth, breast cancer, religious support, rural*

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CHAPTER I:
SUMMARY OF THE ISSUES

Posttraumatic growth: Examining three types of support in rural and non-rural breast cancer survivors

A woman living in the U.S. has a one in eight lifetime risk of being diagnosed with breast cancer (American Cancer Society [ACS], 2013). On January 1, 2012, more than 2.9 million women with a history of breast cancer were alive in the United States (ACS, 2013). Death rates have steadily declined over the past 15 years due to treatment advances, which means there are more breast cancer survivors alive in the United States (ACS, 2013). Breast cancer is considered a traumatic experience; however, it does not always lead to symptoms of posttraumatic stress. Some women return to baseline functioning, while others experience a form of benefit from the experience, referred to as posttraumatic growth (PTG). Research shows that 40-70% of people who experience a traumatic event later report PTG (Calhoun & Tedeschi, 1999). Tedeschi and Calhoun's model of posttraumatic growth states that PTG manifests as improved relationships, openness to new possibilities, a greater appreciation of life, an increased sense of personal strength, and spiritual development that occur both internally and externally, so that not only does one notice the changes oneself, but others notice the changes as well (Tedeschi & Calhoun, 1995). Posttraumatic growth occurs when one's "assumptive world" is challenged, which is when a person's beliefs and schemas that made sense pre-trauma no longer make sense post-trauma because reality has changed (Tedeschi & Calhoun, 2004). For example, in breast cancer survivors, the post-trauma body is not the same as the pre-trauma body. Moreover, there may be physical and mental symptoms and side effects that accompany cancer and cancer treatments, which can affect self-concept, self-efficacy, and more. Therefore, to make sense of the event, one

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may cognitively rebuild schemas and beliefs, thus leading to transformation and growth (Tedeschi & Calhoun, 2004).

Breast Cancer as Trauma

A diagnosis of breast cancer is a traumatic event in a person's life, according to research findings (Andrykowski, Cordova, Studts, & Miller, 1998; Palmer, Jacobsen, & Fields, 2004; Stanton & Snider, 1993) and patient perspectives (e.g. Koopman et al., 2001; Santos, Ford, dos Santos, & Vieira, 2014). After a diagnosis of breast cancer, a woman's basic values, beliefs, goals, psychological functioning, and sense of identity become threatened (Cordova et al., 2007; Montazeri et al., 2008). Furthermore, breast cancer is a chronic condition with no clear end and is often accompanied by a fear of recurrence (Butler et al., 2005; Connerty & Knott, 2013). Generally, the treatments are aggressive. The side effects of cancer treatments include fatigue, hair loss, early menopause, lymphedema (complications due to swollen lymph nodes), decreased libido, difficulties in sexual intercourse, and body image issues, all of which can be stressful and traumatic for those experiencing them (Montazeri, et al., 2008). However, these symptoms do not always mean solely negative outcomes for the breast cancer survivor, as many survivors experience posttraumatic growth. The experience of PTG is believed to occur in 50-83% of breast cancer survivors, meaning that a majority of women diagnosed with breast cancer report growth (Guner-Kucukkaya, 2009; Sears, Stanton, & Danoff-Burg, 2003). Silva, Crespo, and Canavarro (2012) studied women with breast cancer longitudinally and found that 56% of women, 6 months after diagnosis, reported PTG; PTG remained stable from the period of treatment to initial survival (the period of time directly after the cancer has been removed). Furthermore, Bower et al. (2005) studied 763 breast cancer survivors and found that 75%

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reported a changed outlook on life that was apparent up to 10 years after diagnosis, which means that PTG is non-transitory.

Posttraumatic growth has been found to predict better adjustment to traumatic events, conceptualized as self-reported quality of life, less negative emotion, and fewer symptoms of depression. For example, Carver and Antoni (2004) surveyed 230 early stage breast cancer patients in the year post surgery, then again between 4 and 7 years after the initial assessment. They found that initial PTG predicted more positive emotion and self-reported quality of life, along with less negative emotion and symptoms of depression (Carver & Antoni, 2004). Breast cancer survivors have been found to have higher PTG than those with colorectal, prostate, and hematological malignancies (liver tumors), regardless of other variables (Morris & Shakespeare-Finch, 2011). Qualitative research suggests differences may be because of the available support for breast cancer survivors who are post-diagnosis (Morris & Shakespeare-Finch, 2006).

Due to concerns that PTG may just be part of normal maturation, Silva, Moreira and Canavarro (2011) compared PTG in 71 breast cancer survivors and 89 healthy matched controls in Portugal. Breast cancer survivors showed higher total PTG than the healthy controls and univariate analyses indicated that breast cancer survivors had significantly higher scores of PTG. Even though PTG can result as part of the aging process, other studies have posited that PTG is not solely part of normal maturation (Andrykowski et al., 1996; Cordova et al., 2001; Tomich, Helgeson, & Vache, 2005). However, there is a gap in the PTG literature regarding rural populations as PTG has not been researched in this population, and social support, beneficial for breast cancer survivors, seems one of the main sources of support for rural populations.

Social Support and Posttraumatic Growth

Social support is difficult to define as it has many dimensions. However, simply stated, it represents someone's perception of being cared for, loved, esteemed, and valued (Cobb, 1976). Social support can take many forms, such as information, assistance, tangible resources, and communication (Beck & Keyton, 2014). The categories found in the literature are (a) tangible (providing goods and services), (b) emotional (showing love, empathy, concern), (c) informational (providing information in the form of facts or advice), (d) network (belonging, sharing similar characteristics with others), and (e) esteem (validating others) (Beck & Keyton, 2014).

Cohen and Willis (1985) reported that negative consequences of stressors are decreased by social support, and that this can positively affect health and well-being, an effect known as the stress buffering hypothesis (Cohen & McKay, 1984; Gore, 1981; House, 1981). Also, social-cognitive processing theory states that when an environment is socially supportive, it can encourage active cognitive processing of the stressful experience, which will then lead to integrating and resolving trauma-related information (Lepore, 2001; Lepore & Helgeson, 1998). In turn, the integration and resolution lead to positive psychological adjustment (Lepore, 2001; Lepore & Helgeson, 1998). Social support, in some research, has been found to be a moderator and a mediator for posttraumatic growth, making it an important variable to consider (Bozo, Gundogdu, & Buyukasik-Colak, 2009).

As discussed, the relationship between social support and posttraumatic growth is inconsistent in the research literature. Some findings suggest that social support systems play a key role in the aftermath of trauma, with greater social support leading to greater posttraumatic growth (Borja, Callahan, & Long, 2006; Cadell, Regehr, & Hemsworth, 2005; Cryder, Kilmer,

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Tedeschi, & Calhoun, 2006; Schulz & Mohamed, 2004). A meta-analysis supported the position that optimism, social support, spirituality, acceptance coping, reappraisal coping, religious coping, and coping by seeking support are associated with PTG, with social support having a moderately sized effect (Prati & Pietrantonio, 2009). In general, lack of social support has been linked to higher levels of depression and distress (Seligman, 1991; Winemiller, Mitchell, Sutliff, & Cline, 1993), though some studies have found no relationship between social support and PTG (Cohen & Numa, 2011; Cordova et al., 2001; Weiss, 2004). However, in rural areas, social support may often be one of the main sources of support, due to limited resources. Therefore, examining the specific types of support such as nonreligious social support (support from family, friends, and significant other), peer support, and religious support will help clarify the specific nature of the relationship between posttraumatic growth and social support.

Peer support. Peer support, commonly known as support groups, is provided by others affected by the same or a similar illness who come together to share experiences and advice, feel understood and supported, and discuss concerns about illness (Cope, 1995; Gray et al., 1997; Stevenson & Cold, 1993; Winefield et al., 2003). There are two types of groups: professionally led and community-based (McLean, 1995). For the purposes of the current study, the term peer support will be used for any support group that includes women with breast cancer, regardless of whether the support group is or was community-based or professionally led. For women with breast cancer, support groups can be beneficial. The benefits of support groups, whether social, physical, and psychological (Michalec, 2005), have been found in past studies to mostly result from sharing feelings and experiences (Cain et al., 1986; Classen et al., 2001; Jacobs et al., 1983; Kyngas et al., 2001; Samarel et al., 1998; Toro et al., 1987), learning positive coping skills (Bauman et al., 1992; Fawzy et al., 1995; Jacobsen et al., 2002; Koopman et al., 2001), gaining

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educational information (Helgeson et al., 1999; Rhoads et al., 2001), and forming relationships (Magen & Glajchen, 1999; McLean, 1995).

Avery and Nyhof-Young (2003) researched support groups held from 1990 to 1993 that met weekly for six 90-minute short-term sessions. Based on the responses, researchers reported that the support groups were effective, and the benefits to the groups were learning new coping skills, emotional support, emotional expression, and improved relationships (Avery & Nyhof-Young, 2003).

Religious support. Another type of support that has been cited in the literature as being helpful for cancer survivors, as well as a common form of support in rural areas, is religious support (Bellizzi et al., 2010; Fiala, Bjorck, & Gorsuch, 2002; George, Ellison, & Larson, 2002). Fiala, Bjorck, and Gorsuch (2002) found that religious support could provide resources above and beyond those furnished by social support. One study aimed at researching differences in a racially diverse population of breast cancer survivors found that PTG was higher in African Americans, which was mediated by religiosity (Bellizzi et al., 2010). The researchers postulated that it could be due to higher religious coping or greater social support from the church, but suggested these constructs needed to be explored. The idea that greater social support can be attained by attending church is supported by Koenig (2013), who stated that support can come from the faith community or God and that some may feel their illness creates a stronger bond with God or that the suffering represents a special mission or purpose from God. Thoughts such as these can create meaning and opportunity rather than feeling out of control or that one has experienced a senseless disaster. Therefore, while there have been discussions in the literature of religious coping and social support relationships with PTG, there have been none specifically addressing the differences in religious and nonreligious support. Analyzing the different types of

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support could potentially address some issues that have occurred when measuring the relationship between PTG and social support.

Rural Populations

Thus, it seems plausible that levels of posttraumatic growth may be different in rural compared to non-rural breast cancer survivors. There is a paucity of research on this topic in rural areas, especially comparing rural areas to non-rural areas. Rural areas are generally characterized by lack of employment opportunities, fewer resources, lower education and socioeconomic status, distance from metropolitan areas, and shortages of healthcare professionals, especially specialized healthcare professionals (Helbok, Marinelli, & Walls, 2006). However, in rural populations there is a strong sense of community and extended social networks, which can be a good source of support (Jameson & Blank, 2007). Rural areas are also less likely to have breast cancer support groups, and more likely to rely on religious support (Ellison & George, 1994; Fei Sun, 2011; Hamilton, Hamilton, Duncan, & Colocousis, 2008). Burris and Andrykowski (2010) found that breast cancer survivors in rural areas had greater levels of anxiety, depressive symptoms, psychological distress, emotional problems, and overall poorer mental functioning compared to non-rural participants. Also, geographic isolation made it more difficult for rural residents to attend formal breast cancer support groups, potentially leading rural breast cancer survivors to exhaust usual sources of support (Collie et al., 2007; Rees & Bath, 2000). The higher rates of mental health symptoms and geographic isolation from supports in rural regions could lead to levels of PTG being different from PTG rates in non-rural areas (Burris & Andrykowski, 2010; Rees & Bath, 2000). However, there have been no studies to date examining this phenomenon in rural populations.

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Rural residents may experience posttraumatic growth differently than non-rural residents. Furthermore, the types of social support available may be different. Social support has been reported, in most research, to have a positive relationship with posttraumatic growth. Breast cancer survivors have been shown to have high levels of posttraumatic growth and breast cancer survivors often rely on social support during recovery.

Method

Participants

The current study included 99 breast cancer survivors recruited from rural and non-rural areas. Historically, there have been difficulties assessing rural populations because of lack of access to the internet, geographic isolation, and transportation variables. Therefore, four methods were used for recruitment: (a) chain referral and social media to forward recruitment messages, (b) active recruitment at local breast cancer events, (c) physical copies of the survey were left at clinics along with addressed stamped envelopes for return, and (d) recruitment through Amazon Mechanical Turk. Participants included female breast cancer survivors 18 years of age and older diagnosed within the last 10 years, who were 1-year post breast cancer treatment(s), did not have other forms of cancer, and were in remission. Data from those participants who did not meet these criteria were not used in analyses.

Procedures

Approval for this study was obtained from Radford University's Institutional Review Board before recruitment of participants began. Participants received questionnaires electronically via a link from Qualtrics on social media or by email. For those without internet, questionnaires were available in a packet form with a stamped, addressed envelope to return the completed survey to the researcher. First, participants completed 12 items assessing

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demographics, including age, race, religious affiliation, education level, time since diagnosis, time since treatment, type of treatment, cancer stage at diagnosis, relationship status, and socioeconomic status. Next, participants answered 21 items assessing posttraumatic growth, 12 items surveying nonreligious support, 6 items examining peer support, 21 items asking about religious support, and 10 items investigating religiosity. With the demographics and questionnaires, the participants completed a total of 82 questions. Upon completion, participants received confirmation that the submitted surveys had been received and were then thanked for their participation.

Measures

Posttraumatic growth. The Posttraumatic Growth Inventory (PTGI) by Tedeschi and Calhoun (1996), normed on 604 college students, uses a 6-point Likert scale ranging from “I did not experience this change as a result of my crisis” (a score of 0) to “I experienced this change to a very great degree as a result of my crisis” (a score of 5) with 21 items mapping onto five factors. The five factors that make up the PTGI are (a) Relating to Others (e.g. putting effort into my relationships), (b) New Possibilities (e.g. I established a new path for my life), (c) Personal Strength (e.g. I discovered I am stronger than I thought I was), (d) Spiritual Change (e.g. I have a better understanding of spiritual matters), and (e) Appreciation of Life (e.g. I appreciate each day). The scores on the factors are summed together for an overall composite score of posttraumatic growth. The PTGI has reported ratings of strong internal consistency as demonstrated by an alpha of .90 (Tedeschi & Calhoun, 1996). Internal reliability of the five subscales ranges from .67 to .85 (Tedeschi & Calhoun, 1996). Test-retest reliability over a 2-month period was reported as strong ($r = 0.71$). The current study found the internal consistency reliability of the PTGI to be strong, $\alpha = .95$.

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Social support. The Multidimensional Scale of Perceived Social Support (MSPSS) assesses perceived adequacy of social support from family, friends, and significant others using a 7-point Likert scale ranging from “very strongly disagree” (1) to “very strongly agree” (7) (Zimet, Dahlem, Zimet, & Farley, 1988). The scale was normed on 275 undergraduates and showed strong internal consistency with Cronbach’s alphas of .88 for the total scale, .91 for the Significant Other, .87 for Family, and .85 for Friends subscales (Zimet, et al., 1988). Of the 275 participants, 69 were retested 2 to 3 months after the initial questionnaire and the test-retest reliability was .85 for the total scale (Zimet, et al., 1988). For the current study the reliability was strong, $\alpha = .96$.

Peer support. Peer support (breast cancer support groups) was evaluated with questions created by the researcher. These questions were developed because there are no known scales assessing breast cancer support groups, and it is important to compare peer support when assessing differences between rural and non-rural populations. The two questions used in the analyses were (a) did you attend a peer support group and (b) how supportive was the group? The reliability for these questions in measuring peer support was $\alpha = .70$.

Religious support. Fiala, Bjorck, and Gorsuch (2002) created the Religious Support Scale (RSS), which assesses and identifies three types of religious support: God Support (e.g., “I can turn to God for advice when I have problems”), Congregational Support (e.g., “Others in my congregation care about my life and my situation”), and Church Leader Support (e.g., “My church leaders give me the sense I belong”), and which the American Psychological Association published (Hill & Edwards, 2013). To be more inclusive of non-Christian religions, the scale was modified to say “local religious leaders” instead of “church leaders” and participants were told to substitute the term they use for “God” if they use a different term (e.g., higher power) in the

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statements that discuss support from God. These three factors sum together to form the total religious support score. The RSS uses a 5-point Likert scale ranging from “strongly disagree” (1) to “strongly agree” (5) and includes 21 questions. The scale was normed on 249 adult protestants and the internal consistency was strong for the RSS with an alpha of .91 (Fiala, Bjorck, & Gorsuch, 2002). The internal reliability of the three subscales ranged from .75-.91 (Fiala et al., 2002). The reliability of the RSS in the current study was strong, $\alpha = .97$.

Rurality. There has been a lack of consensus in the literature regarding what qualifies as rural. There is no perfect measure to date to completely capture rurality. However, Urban Influence Codes (UICs) created by the Economic Research Service in the United States Department of Agriculture were established to show the influence of population centers on surrounding counties. UICs were developed based on the Office and Budget Management definition of rurality, which states that metropolitan areas are areas that contain a city of at least 50,000 or are adjacent to a metropolitan county with significant commuting flows. Participants were asked what county and state they lived in so that the UIC could be determined.

Religiosity. Since it is possible for religious support to overlap with religiosity, a brief measure was included to separate out the variability accounted for by each construct. The Santa Clara Strength of Religious Faith Questionnaire (SCSORF) is a self-report measure that assesses strength of religious faith along with engagement (Plante & Boccaccini, 1997). The questionnaire is a 10-item instrument that uses a 4-point Likert scale ranging from (1) strongly disagree to (4) strongly agree. The questionnaire includes brief statements such as “I pray daily” and “My faith impacts many of my decisions.” The items are summed for a total score, with scores ranging from 10 (low strength of faith) to 40 (strong strength of faith). The scale was normed on 102 undergraduate students. The SCSORF was reported to have high internal

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consistency, $\alpha = .95$, and a split-half reliability, $\alpha = .92$ (Plante & Boccaccini, 1997). The SCSORF reliability in the current study was strong, $\alpha = .97$.

Results

The purpose of the current research was to examine the relationship between types of support and posttraumatic growth in breast cancer survivors and to compare those residing in rural and non-rural locations. Research participants completed an anonymous online questionnaire that included the Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1996), the Multidimensional Scale of Perceived Social Support (Zimet et al., 1998), the Religious Support Scale (Fiala et al., 2002), the Santa Clara Strength of Religious Faith Questionnaire (Plante & Boccaccini, 1997), and researcher-generated questions asking about peer support as there are no current scales available. Research participants additionally completed a demographics questionnaire developed by the researcher, which included zip code to identify rurality using Urban Influence Codes (Economic Research Service of the United States Department of Agriculture, 2003).

Description of the Sample

Participants in this study consisted of adult women, 18 years of age and older, diagnosed with breast cancer within the last 10 years (the longest time frame over which PTG has been researched), who did not have other forms of cancer, and who were at least 1-year post-treatment (surgery, chemotherapy, or radiotherapy). Participants were recruited through chain referral sampling (e.g., email, Facebook, and word of mouth), Amazon Mechanical Turk, and at local breast cancer events. The recruitment advertisement provided a hyperlink that directed participants to complete the research using Qualtrics survey software. An option for those living in rural areas was provided acknowledging that there may not be access to the internet: Hard

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copies of the survey and stamped, self-addressed envelopes were provided at a local family practitioner's office so that participants could take the survey and mail them back. Several physicians' offices were contacted to participate, but only one agreed to have survey copies left in its waiting areas for patients to participate in the study. There were no participants who used this method. One hundred forty-nine participants completed the survey. However, because of missing information, being from a different country, not having had breast cancer, or having multiple cancers, data from 50 participants were removed. The final sample consisted of 99 breast cancer survivors. The following section provides demographics related to the sample.

Sample Demographics

Each participant completed a demographics questionnaire that included questions related to personal demographics as well as disease characteristics and distress from breast cancer. Personal demographics included recruitment and how the person heard about the study, age, race, religious preference, education level, relationship status, county and state of residence, and yearly income. A question was asked about other types of cancer to rule out participants with multiple cancers. Breast cancer-related questions included years since diagnosis, years since last treatment, and cancer stage at diagnosis. Additionally, questions concerned with distress were asked such as how distressing the diagnosis was, how life changing breast cancer was, how distressed the participant was by the treatment, and how distressed the participant was when waiting between treatment and follow-up. The ages of the participants ranged from 20-77 years ($M = 45.01$; $SD = 15.2$). Regarding race, 58 participants (58.6%) identified as Caucasian, 6 participants (6.1%) as American Indian/Alaskan Native, 6 participants (6.1%) as Asian, 14 participants (14.1%) as African American, 4 participants (4.1%) as Hispanic, 5 participants

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(5.1%) as more than one race, and 4 participants (4%) as other. Two participants did not answer this question.

Participants endorsed a broad array of religious preferences. Extra categories were added to include religious diversity. Seven participants identified as agnostic (7.1%), 2 participants as atheist (2%), 48 participants as Christian/protestant (48.5%), 21 participants as Catholic (21.2%), 5 participants as Hindu (5%), 2 participants as Muslim (2%), 1 participant as Pagan (1%), 2 participants as Unitarian Universalist (2%), 9 participants believed in a higher power, but did not consider themselves religious (9.1%), and 2 participants did not provide data.

Regarding education, 12 participants graduated from high school (12.1%), 20 had some college (20.2%), 16 had an Associate's degree (16.2%), 28 had a Bachelor's degree (28.3%), 19 with a Master's degree (19.2%), 3 had a doctoral degree (3%), and 1 identified as other (1%). These participants had a broad range of household incomes with 6 participants earning less than \$10,000 (6.1%), 7 participants earning \$10,000-19,999 (7.1%), 15 participants earning \$20,000-34,999 (15.2%), 14 earning \$35,000-49,999 (14.1%), 17 earning \$50,000-74,999 (17.2%), 13 earning \$75,000-99,999 (13.1%), 13 earning \$150,000-149,999 (13.1%), 8 participants earning \$150,000-199,999 (8.1%), and 2 participants earning \$200,000 and up (2%). Data were missing from 4 participants.

Relationship status included 60 participants who were married (60.6%), 24 were single (24.2%), 8 were divorced (8.1%), 1 was separated (1%), and 5 endorsed the other category (5.1%). One participant did not answer the question about relationship status.

There may have been an issue for the question about state and county as 52 participants answered "America" (52.5%), "United States of America," or some variation of the country, i.e.,

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they confused “county” with “country.” There were 35 participants who identified as non-rural (35.4%) and 12 who identified as rural participants (12.1%). See Table 1 in Appendix B.

Breast cancer-related questions were included to gather additional information about women’s experiences. Forty-nine participants were diagnosed with stage I breast cancer (49.5%), 38 with stage II breast cancer (38.4%), 10 with stage III (10.1%), 1 with stage IV (1%), and 1 participant did not respond to this item. There were many different types of treatment utilized. Twenty-one participants had mastectomy (21.2%), 17 participants had lumpectomy (17.2%), 11 had radiotherapy (11.1%), 26 had chemotherapy (26.3%), 6 had chemotherapy, mastectomy, and radiation (6.1%), 7 had chemotherapy and radiation (7.1%), 2 mentioned using Essiac (2%), and 9 participants (9%) reporting having other types of therapy or combinations of therapy.

Participants answered a series of questions regarding distress. Two participants reported not feeling distressed at diagnosis (2%), 13 participants were neutral (13.1%), 22 participants were somewhat distressed (22.2%), and 62 participants reported being very distressed (62.6%) at diagnosis. Seven participants (7.1%) stated they were not distressed during treatment, 12 participants (12.1%) were neutral, 41 (41.4%) were somewhat distressed during treatment, and 39 (39.4%) were very distressed during treatment. Some women experienced distress between treatment and follow-up. Eight participants (8.1%) did not find that period of time distressing, 24 (24.2%) felt neutral, 34 (34.3%) were somewhat distressed, 32 (32.3%) very distressed, and 1 person did not respond to this item. Eight (8.1%) did not feel the diagnosis of breast cancer was life changing, 36 (36.4%) found the diagnosis somewhat life changing, and 55 (55.6%) reported the diagnosis was very life changing.

Survey Results

The measures used in the current study were the Posttraumatic Growth Inventory, the

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Multidimensional Scale of Perceived Social Support, the Religious Support Scale, questions to measure peer support, and the Santa Clara Strength of Religious Faith Questionnaire was implemented as there could be possible overlap with religious faith and religious support. In the current study, $N = 99$, PTG ranged from 21-105 with a mean of 64.73 and a standard deviation of 19.964. For measuring nonreligious social support, MSPSS ($N = 95$) scores ranged from 15-84 with a mean of 66.7 and a standard deviation of 15.98. The current participants' scores on the Religious Support Scale ($N = 94$) ranged from 25-105 with a mean of 76 and a standard deviation of 22. The SCSORF scores ($N = 96$) ranged from 10-40 with a mean of 30.56 and a standard deviation of 8.33. Rurality was measured by Urban Influence Codes. Only 47 participants correctly answered the question about the county in which they live. Data from 52 participants were missing on this question. Thirty-five participants indicated living in a non-rural area and 12 in a rural area. Two questions of peer support, "Did you attend a peer support group and how supportive was the group?" were included in the data analysis. Thirty-six participants stated they had participated in a peer support group and 60 said they had not participated in a peer support group. The second question included 89 participants and scores could range from "not supportive" (1) to "very supportive" (5). The second question had a mean of 5 and a standard deviation of 1.25.

Correlations among measures of post-traumatic growth, support, and religiosity

Several significant correlations were found in this study. Religiosity and religious support were significantly correlated, $r = .83$, $p < .001$. The two peer support questions were correlated, $r = .665$, $p < .001$. These all had large effect sizes. Posttraumatic growth was significantly correlated with nonreligious social support, $r = .34$, $p = .001$, religiosity, $r = .35$, $p < .001$, and religious support, $r = .31$, $p = .002$, with a moderate effect size. Posttraumatic growth was not

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significantly correlated with peer support, $r = -.17$, $p = .10$ for participation and $r = .04$, $p = .73$ for support. See Table 2 in Appendix B.

Hypotheses and Statistical Analyses

The hypotheses of the current study were (1) Levels of PTG would differ in rural versus non-rural areas, and this would be moderated by religious support; (2) those with both religious and nonreligious support would have the highest levels of PTG; and (3) levels of religious support would account for significant proportions of variability in scores for PTG, beyond that already accounted for by other types of perceived social support. Hypothesis 1 was tested by examining the main effects of each type of support and PTG as well as the interaction of the support variable and rural/non-rural status. Hypothesis 2 was tested using simple slopes and examining the rates of PTG for those who have both religious support and nonreligious support. Hypothesis 3 was tested by using hierarchical regression to examine the unique proportion of variability accounted for by each variable.

Effects of nonreligious social support and rural/non-rural status on PTG

The main effect of nonreligious social support (support from family, significant other, and friends) on PTG was not significant, $\beta = .26$, $t(42) = 1.44$, $p = .16$. The main effect of rural/non-rural status on PTG was not significant, $\beta = .135$, $t(42) = .89$, $p = .38$. The interaction of social support and rural/non-rural status also lacked significance, $\beta = -.040$, $t(42) = -.22$, $p = .83$.

Effects of religious support and rural/non-rural status on PTG

The main effect of religious support on PTG was significant, $\beta = .36$, $t(42) = 2.2$, $p = .03$, indicating that higher levels of religious support were associated with higher levels of PTG. The main effect of rural/non-rural status on PTG was not significant, $\beta = .061$,

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$t(42) = .41, p = .68$. The interaction of religious support and rural/non-rural status was not significant, $\beta = .15, t(42) = .92, p = .36$.

Effects of peer support and rural/non-rural status on PTG

The main effect of peer support participation on PTG was not significant, $\beta = -0.27, t(43) = -1.39, p = .17$. The main effect of rural/non-rural status on PTG was not significant, $\beta = .064, t(43) = .380, p = .706$. The interaction of peer support and rural/non-rural status was also not significant, $\beta = -0.12, t(43) = -.551, p = .585$. Similarly, the main effect of the perceived supportiveness of peer support on PTG was not significant, $\beta = -0.39, t(36) = -1.96, p = .240$. The main effect of rural/non-rural status on PTG was not significant, $\beta = .36, t(36) = 1.1, p = .28$. The interaction was not significant, $\beta = -0.41, t(36) = -1.05, p = .30$.

Effects of religiosity and rural/non-rural status on PTG

The main effect of religiosity on PTG was significant, $\beta = .342, t(43) = 2.3, p = .03$, indicating that religiosity was associated with higher levels of PTG. The main effect of rural/non-rural status on PTG was not significant, $\beta = .054, t(43) = .38, p = .71$. The interaction of religiosity and rural/non-rural status was not significant, $\beta = -0.024, t(43) = -.16, p = .87$.

Ability of social support to moderate the effect of religious support

To address Hypothesis 2, religious support, nonreligious support, and the variable coding the interaction between religious and nonreligious support were included in a multiple regression model predicting scores for PTG. Although no interaction effect was found [$\beta = -0.04, t(88) = -.408, p = .68$], the main effects for both religious support, $\beta = .23, t(88) = 2.2, p = .03$, and nonreligious support, $\beta = .27, t(88) = 2.54, p = .013$, indicate that the combination of high levels of religious support and high levels of nonreligious support is

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associated with the highest levels of PTG. A graph of the simple slopes for religious support predicting PTG at both high and low levels of nonreligious support is displayed in Graph 1 found in Appendix B.

Hierarchical Regression Analyses Identifying the Unique Contribution of Nonreligious Social Support, Peer Support, and Religious Support

The Unique Contribution of Nonreligious Support

A hierarchical regression analysis was conducted examining the unique contribution of nonreligious social support in predicting PTG, beyond the proportion of variability accounted for by religious support and peer support. When religious support and peer support were entered in a first block of predictors, those variables accounted for 12.4% of the variability, which was statistically significant, $F(2, 89) = 6.31, p = .003$. When nonreligious social support was entered in a second block, it accounted for an additional 6.6% of the variability (R-squared change = .066). This unique contribution of social support reached statistical significance, $F \text{ Change}(1, 88) = 7.17, p = .009$.

The Unique Contribution of Religious Support

A hierarchical regression analysis was conducted examining the unique contribution of religious support in predicting PTG, beyond the proportion of variability accounted for by nonreligious social support and peer support. When religious support and peer support were entered in a first block of predictors, those variables accounted for 15% of the variability, which was statistically significant, $F(2, 89) = 7.61, p = .001$. When religious support was entered in a second block, it accounted for an additional 4.4% of the variability, R-squared change = .044. This unique contribution of religious support reached statistical significance, $F \text{ Change}(1, 88) = 4.8, p = .031$.

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The Unique Contribution of Peer Support

A hierarchical regression analysis was conducted examining the unique contribution of peer support (participation) in predicting PTG, beyond the proportion of variability accounted for by nonreligious social support and religious support. When religious support and nonreligious social support were entered in a first block of predictors, those variables accounted for 17.6% of the variability, which was statistically significant, $F(2, 89) = 9.48, p = .000$. When peer support was entered in a second block, it accounted for an additional 1.4% of the variability, $R\text{-squared change} = .014$. This unique contribution of peer support did not reach statistical significance, $F \text{ Change}(1, 88) = 1.56, p = .22$.

The Contribution of All Support Variables

When all support variables, religious support, peer support, and nonreligious social support, were entered in the regression model, those variables accounted for 19% of the variability in predicting PTG. This reached statistical significance, $F(3, 88) = 6.88, p < .001$.

Hierarchical Regression: The Unique Contribution of Religiosity

A hierarchical regression analysis was conducted examining the unique contribution of religiosity in predicting PTG, beyond the proportion of variability accounted for by nonreligious social support, peer support, and religious support. When nonreligious social support, peer support, and religious support were entered in a first block of predictors, those variables accounted for 19% of the variability, which was statistically significant, $F(3, 88) = 6.88, p = .000$. When religiosity was entered in a second block, it accounted for an additional 0.7% of the variability, $R\text{-squared change} = .007$. This unique contribution of religiosity did not reach statistical significance, $F \text{ Change}(1, 87) = .704, p = .404$.

Discussion of the Results

Hypothesis 1

The first hypothesis stated that levels of PTG would differ in rural and non-rural breast cancer survivors, and this would be moderated by religious support. The results indicate that levels of PTG did not differ in rural and non-rural breast cancer survivors. Furthermore, there was no interaction with religious support and either rural or non-rural status on PTG. Hypothesis 1 was not supported by the data. However, this should be interpreted with caution as there were not enough people who answered the county demographic question correctly, likely causing the data to have fewer participants categorized as rural or non-rural. Furthermore, participants identified as rural were underrepresented in the data.

Hypothesis 2

The second hypothesis stated that those with both religious and nonreligious support would have higher rates of PTG. This hypothesis was supported by a simple slopes analysis. Specifically, Graph 1 in Appendix B displays separate regression lines for religious support predicting posttraumatic growth when scores of social support are one standard deviation above their mean and one standard deviation below their mean. The highest predicted scores of PTG occur when the scores for religious support are one standard deviation above their mean and scores for nonreligious social support are one standard deviation above their mean.

Hypothesis 3

The third hypothesis suggested that levels of religious support would account for significant proportions of variability in scores for PTG, beyond that already accounted for by other types of perceived social support. This hypothesis was supported by the results. Results from the hierarchical regression analysis suggest that religious support did account for a

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significant proportion of variability in scores for PTG, beyond what was already accounted for by the other types of support. Nonreligious social support also accounted for a significant proportion of variability in scores for PTG, when entered in the same regression model with the other two types of support. Peer support was the only variable that did not account for a significant proportion of variability in scores for PTG. However, there was no previously established measure for peer support and not as many people had attended peer support groups as those who had other types of support. Both may have influenced the results.

Discussion

The results of this study indicate that religiosity, religious support, and nonreligious social support all contribute to increased levels of posttraumatic growth. Religiosity, religious support, and nonreligious social support all accounted for significant proportions of variability in PTG. Based on these results, it appears that the type of support is important in promoting higher levels of PTG in breast cancer survivors. Religious support and nonreligious social support contributed significantly to PTG. This implies that ensuring someone has enough support or increasing one's support could potentially assist the individual in attaining PTG after trauma.

Limitations and Future Research

The current study attempted to assess posttraumatic growth in a breast cancer population living in rural regions, a geographical location that is understudied and has not been investigated for PTG to date. An attempt was made to reach this difficult-to-survey population. However, many participants mistook *county* for *country* and answered "USA" or a variation thereof, which eliminated over half of the sample data from the analysis of geographical location, thereby leaving too few participants in the rural sample. Further, chain referral sampling, though a common and valid method of sampling, was not highly effective in the current study. One

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explanation may be that individuals who received the recruitment materials chose not to pass them on to other potential participants. One reason may have been that the eligibility requirements were a barrier as potential participants may have had multiple forms of cancer or may have been past the 10-year survival mark. Furthermore, the idea of recruiting through general practitioners' offices proved problematic as it was difficult locating willing physicians' offices; for those that allowed recruitment, there may not have been many people in the waiting room who had time or motivation to complete a survey. No participant chose to complete and return a hard copy of the survey. One explanation may be that the internet is more convenient and requires fewer steps for getting the answers submitted. Another recruitment method used was Amazon Mechanical Turk, which presents with several limitations such as those associated with a convenience sample. This type of recruitment pays each participant a nominal \$.05 for taking the survey.

Future research should find ways to include a greater number of rural participants to examine the relationship between geographical location and PTG. Researchers might be successful in enrolling more rural participants by recruiting them in person at general practitioners' offices, as people may be more likely to fill out a survey after being personally invited and provided an explanation of the study. Establishing relationships with people in the rural communities may be helpful as people are more likely to pass on research and refer possible participants to researchers with whom they feel comfortable. Changing eligibility requirements may result in a greater sample size and would allow researchers to find out the levels of PTG that exist over a longer period. Finally, it would be helpful if a peer support measure were developed for comparing different types of support as the current study did not have an existing peer support questionnaire available, thus making comparison more difficult.

Conclusion

Based on the results of the current study, it appears that PTG levels are high in breast cancer survivors, as has been found in previous research (Guner-Kucukkaya, 2009; Sears, Stanton, & Danoff-Burg, 2003). The results also indicate that greater support led to higher levels of PTG, which prior research has often reported (Cohen & Numa, 2011; Prati & Pietrantonio, 2009; Tedeschi & Calhoun, 2004). This study's unique contribution was the examination of PTG in relation to three types of support, nonreligious social support, religious social support, and peer support, with an extra measure of religiosity. It appears that religious support, religiosity, and nonreligious social support lead to higher levels of PTG. Peer support in this study did not have the same effect, but may need to be examined in a future study using a better psychometric measure. Based on the current findings, it may be beneficial when working with breast cancer survivors to assess what support systems they have, the quality of the support, and if appropriate, assist in bolstering support. If peer support groups are unavailable in a breast cancer survivor's community, relying on supports available in the community may be more beneficial than driving great distances to seek peer support. Though this research has been consistent with research on PTG and breast cancer survivors and has contributed in a unique way to the literature by differentiating types of support, the question remains as to whether levels of posttraumatic growth differ in rural and non-rural breast cancer survivors and whether there are any factors that may moderate or mediate that relationship.

CHAPTER II:

Review of the Literature

“If there is meaning in life at all, then there must be meaning in suffering.”

-Viktor E. Frankl

This chapter provides an overview of posttraumatic growth in breast cancer survivors. First, operational definitions are given and posttraumatic growth is explained. Next, breast cancer and how dealing with breast cancer can lead to posttraumatic growth is explicated. Because the study compared differences in posttraumatic growth levels between rural and non-rural breast cancer survivors, a discussion of rurality is included. Finally, the three types of social support – nonreligious, religious, and peer support – are examined.

Operational Definitions

The following terms within the literature are often vague, have not had consensus among researchers, or do not have set definitions. Therefore, to provide clarity and ease of reading, the following definitions represent the way terms have been operationalized for the current study.

- *Posttraumatic Growth* is positive change occurring after a traumatic event that results from trying to cope with the event (Tedeschi & Calhoun, 1995; Tedeschi & Kilmer, 2005).
- *Breast Cancer Survivor* refers to an individual who had previously been diagnosed with breast cancer and is currently in remission.
- *Rural Resident* refers to someone who lives in a rural area, which is defined according to the Office of Management and Budget’s definition as someone living in a county of less than 50,000 people not located near a metropolitan area with significant commuting flows (Hart, Larson, & Lishner, 2005).

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- *Nonreligious Social Support* is the support received from family, friends, and significant others (Zimet et al., 1988).
- *Religious Social Support* is the support an individual receives from the congregation, religious leaders, and a Supreme Being or higher power, such as God (Fiala, et al., 2002).
- *Peer Support* is the support received from breast cancer support groups.

Posttraumatic Growth

Throughout a lifetime, 50% of women and 60% of men have experienced at least one traumatic event (Department of Veteran Affairs, n.d.). Immediately after experiencing a traumatic event, people typically experience psychological distress, such as sadness, depression, anxiety, anger, guilt, or irritability (Tedeschi & Calhoun, 2004). Distressing cognitions may also occur such as intrusive ruminative thoughts and images (Tedeschi & Calhoun, 2004). Physical symptoms may take place as well, including fatigue, muscle tension, gastric symptoms, and general discomfort (Tedeschi & Calhoun, 2004). Further, 7-8% of the population is reported to develop posttraumatic stress disorder (PTSD) after experiencing a traumatic event at some point in their lives (Department of Veteran Affairs, n.d.). Per the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders*, PTSD includes five categories of symptoms lasting longer than 1 month: (a) exposure to actual or threatened death, (b) intrusion symptoms (e.g. flashbacks), (c) avoidance, (d) negative changes in mood or cognition (e.g. diminished interest in activities), and (e) changes in arousal and reactivity (e.g. hypervigilance) (American Psychiatric Association, 2013).

However, others will be resilient (stay at baseline), while another portion will develop Posttraumatic Growth (PTG). Evidence shows that 40-70% of people who experience a traumatic event later report some form of benefit from their experience (Calhoun & Tedeschi,

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1999). This benefit is believed to be posttraumatic growth. The field of psychology has been moving away from pathogenesis (a disease-oriented approach) and toward salutogenesis for some time now (Antonovsky, 1979; Calhoun & Tedeschi, 1998, 1999; Hollister, 1965; Tedeschi & Calhoun, 1995). Salutogenesis has been described as processes that contribute to healthy physical and psychological outcomes, such as strengths, and growth and wellness enhancement (Antonovsky, 1979; Seligman & Csikzentmihalyi, 2000); PTG is an example of salutogenesis.

The concept of PTG has been known for centuries. Some of the oldest religious texts describe the concept of growing after suffering. For example, in the Bible, Job suffered, but through his suffering gained stronger faith. While the concept was understood, there was no specific research on PTG until the 1980s. The seminal study that introduced this form of growth was conducted by Affleck, Tennen, Croog, and Levine (1987), who found that perceived benefits (e.g. change in philosophy of life) at 7 weeks following a heart attack significantly predicted less heart attack recurrence at an 8-year follow-up. The original term used by Affleck and colleagues (1987) was perceived benefits. The concept of positive changes following adversity has been known by a variety of names: adversarial growth (Linley & Joseph, 2004), stress-related growth (Park, Cohen, & Merch, 1996), thriving (Carver, 1998), benefit-finding (Affleck & Tennen, 1996), stren conversion (Finkel, 1974, 1975), and positive psychological changes (Yalom & Lieberman, 1991). In 1995, the term posttraumatic growth was coined by Tedeschi and Calhoun in both a book and a research article that described their model. PTG is currently the most common term used, although other terms are sometimes interchangeable in the literature. PTG, specifically, refers to positive changes occurring after a traumatic event that result from trying to cope with the event (Tedeschi & Calhoun, 1995; Tedeschi & Kilmer, 2005). Events for which growth outcomes have been reported are transportation accidents, natural disasters,

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interpersonally violent experiences (e.g., rape or combat), medical problems (e.g., cancer), and other life experiences, such as divorce or bereavement (Joseph, 2005; Linley, & Joseph, 2004). Vicarious experiences of posttraumatic growth have also been shown to occur (Linley & Joseph, 2005b, 2006, 2007; Linley, Joseph, & Loumidis, 2005).

There are five key processes through which PTG is thought to occur: (a) shattering of fundamental assumptions about the world leading to cognitive restructuring of the person's world, (b) managing distress, which is related to optimism and coping styles, (c) rumination, which may lead to cognitive restructuring of schema and goals through reflection and meaning making of the event, (d) social support, and (e) continued distress (Moran, Burkner, & Schmidt, 2012; Shakespeare-Finch & Copping, 2006). The concept of shattered assumptions was a concept first described by Janoff-Bulman (1992) that has been incorporated in the Tedeschi and Calhoun (1995) model of posttraumatic growth. Janoff-Bulman described three fundamental assumptions: "The world is benevolent, the world is meaningful, and the self is worthy" (1992, p. 6). They say these assumptions are present, although people do not consciously think about them. However, when a traumatic event occurs, these assumptions become challenged, and people are forced to confront "shattered assumptions" (Janoff-Bulman, 1992, p. 52). According to Calhoun and Tedeschi (2006), PTG occurs after a challenge to core beliefs that changes the assumptive world for that person, the "shattered assumptions."

To clarify difficult concepts, an example of someone who experienced posttraumatic growth will be introduced here and interspersed throughout the review of the literature: Jane, a 35-year-old woman, was diagnosed with breast cancer. She was assured that the treatments discussed made survival likely. However, because her grandmother had died from breast cancer,

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she realized that death was a possibility. She also knew the negative changes that could occur because of breast cancer and treatments for breast cancer.

Models of Posttraumatic Growth

Models of posttraumatic growth will be discussed first, beginning with the Tedeschi and Calhoun model (1995), along with criticisms of the model, followed by the Joseph and Linley (2005) model. There will also be a discussion of testing the model, manifestations of growth, correlates and predictors of growth, and measures of growth.

Tedeschi and Calhoun Model

The Tedeschi and Calhoun (1995) model of PTG is a “self-regulatory system of feedback loops” (p. 88). The model is constructed as a figure with seven panels, recreated as figure 1. The panels refer to summaries of the processes that occur in the model. Panel one: Starting with initial trauma responses and throughout the entire process, personality characteristics are involved. In the example of Jane, she was an optimistic person, although her diagnosis was worrisome. Her optimistic outlook continued throughout her treatment and aided in her coping processes. Panel two: An individual appraises the event through the lens of her own personality tendencies. Once again, Jane’s outlook on life and her own tendencies to see the positive were involved in the way she viewed events that occurred throughout treatment and during the aftermath of her diagnosis. Panel three: Trauma that will later result in growth alters one’s normal way of behaving. First, initial shock or denial leads to emotional distress. Then, schemas become challenged. In this process, Jane felt that the breast cancer diagnosis was not real and that it was not happening to her. After shock and denial dissipated, her schemas about how life should be were challenged. Panel four: Rumination begins, schemas are revised, and emotion-focused coping strategies take effect while one tries to decrease the emotional distress

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experienced. Jane began ruminating. Through rumination, Jane's schemas became revised about what her life should look like and what was meaningful to her as a breast cancer survivor. Panel five: Social and emotional support occur as supportive others aid in understanding the trauma and making life more manageable. Jane's family and friends supported her and showed her the love and care that they have always shown her. She opened up to them about her feelings and received support from them. Panel six: "Initial growth" occurs as an influence of supportive others, personality characteristics, schema reworking, new goals being set, successful coping, new understanding, and ultimately decreased distress (Tedeschi & Calhoun, 1995, p. 90). All of the factors discussed came together within Jane and she set new goals, such as changing career paths because she was not satisfied in her career. She began seeing ways in which she was holding back from life and decided that she wanted to make some positive changes for herself and live life to the fullest by experiencing more enjoyable activities and traveling more. She decided that she wanted to spend more time with family and friends as she greatly appreciated being with them. Panel seven: More cognitive processing and even more growth occur; rumination is now reflective. Wisdom further develops from changes that happened in panel six. The life narrative and schemas are revised. Dialectical thinking (being able to see both sides of an experience) develops and one has enhanced personal relationships and meaning in life. Jane realized that even though she had faced a potentially traumatic event, there were benefits to having lived through that traumatic event. She had discovered that what she believed was meaningful before the trauma (e.g., her career) was now less meaningful as her family and friends brought her greater meaning, consequently changing her life narrative. She kept her optimistic outlook throughout, although at times she was anxious, and she also used positive

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copied skills such as yoga, self-disclosure, and mindfulness. She could reflect on the event without being so distressed by the memories.

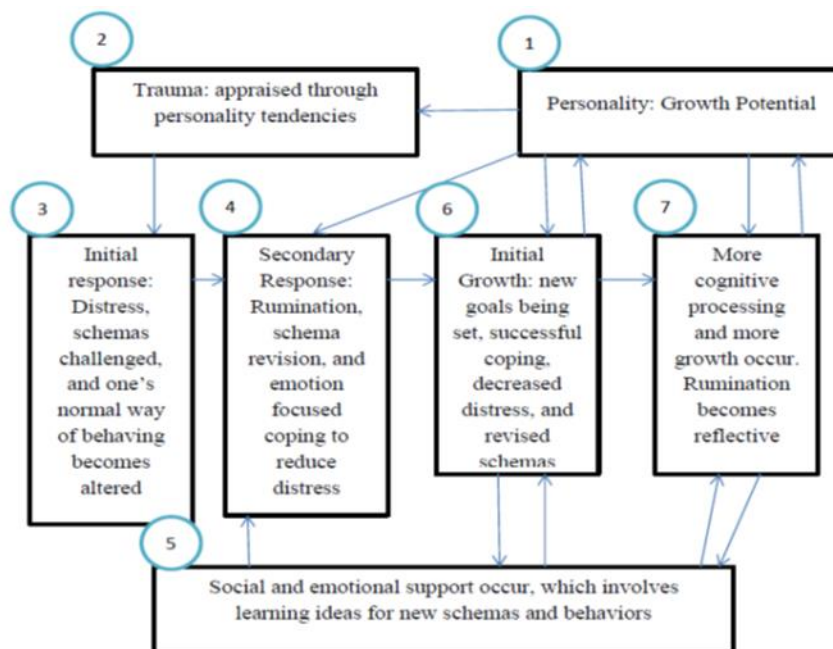


Figure 1

Seven principles. Tedeschi and Calhoun's (1995) model of PTG includes seven principles: (a) People have schemas and beliefs about the world. Because of the traumatic event, those schemas and beliefs become changed, and new schemas are produced, allowing for growth. Schemas and beliefs change when one's world seems to lack meaning; life becomes incomprehensible, or confusing. (b) Some beliefs are more rigid and may resist disconfirmation, which can reduce the possibility of schema changes and growth. Some beliefs are flexible while others are rigid. Those that are flexible but do not change tend to decrease suffering, but do not increase growth. (c) Restructuring beliefs need to include some type of positive appraisal for PTG to occur. (d) Different types of events can produce different types of growth due to the way one perceives the cause of the event: self, others, or chance. (e) Personality characteristics are related to chance of growth. (f) When an individual sees a difference in self pre- and post-trauma and trauma becomes an essential piece of the narrative, growth occurs. (g) Growth can produce

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wisdom, thus helping individuals view paradoxes of life as integrative (e.g., loss leads to gain and one may have to rely on others, while still being self-efficacious) (Tedeschi & Calhoun, 1995). Several researchers tested the Tedeschi and Calhoun model to determine if the model was a good representation of PTG.

Testing the model. In a model study of PTG, Triplett, Tedeschi, Cann, Calhoun, and Reeve (2012) investigated meaning in life and satisfaction. Their participants were included in two samples: 148 people in the first sample and 185 participants in the second sample. Triplett et al. included several measures in the study such as the Posttraumatic Growth Inventory, the Event Related Rumination Inventory, and measures of life satisfaction, meaning in life, and core beliefs. The researchers used path analysis and found support for PTG models that hypothesize challenges to the assumptive world ultimately lead to eventual growth. This study uncovered a relationship between rumination and PTG: Threats to core beliefs can lead to rumination as the individual attempts to make sense of what has happened through cognitive restructuring.

Two types of rumination exist, intrusive and deliberate. Intrusive rumination occurs when thoughts that are unwanted and anxiety provoking come into one's mind. Sometimes intrusive rumination can lead to deliberate rumination as purposefully thinking and processing an occurrence to come to a better understanding. Therefore, deliberate rumination can challenge the assumptive world leading to reconstructive cognitive efforts and thus is more likely to produce growth. The study found that posttraumatic growth had a statistically significant but weak direct relationship to life satisfaction. The indirect path from growth to satisfaction through meaning in life was statistically significant, suggesting growth is not necessarily strongly associated with current life satisfaction in a simple way. This path analysis supports other models previously

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created for PTG, such as the model created by Tedeschi and Calhoun (1995) (Triplett et al., 2012).

Woodward and Joseph (2003) conducted a qualitative study exploring themes of posttraumatic growth with a sample of individuals who had experienced various forms of early childhood abuse. Twenty-nine respondents participated in the study. Three domains were identified: inner drive toward growth, vehicles of change, and psychological changes. Inner drive comprised the belief or faith in self and the theme was the will to live. Vehicles of change represented experiences of awakening, validating, nurturing, liberating, and mastery nature. The themes associated with vehicles of change were awakening of responsibility, validation and acceptance, love and nurturing, liberation and freedom, mastery and control, and belonging and connection. Psychological changes referred to increased insight and understanding, recognizing changes, and processing experiences. The themes of psychological change were changes in self-perception, gaining new perspectives on life, and changes in relationships. These themes were consistent with domains found in the posttraumatic growth inventory. The findings in Joseph's (2003) qualitative study are important because they lend additional support to the credibility of the posttraumatic growth models already established, specifically in the areas of enhanced relationships, improved view of self, and positive changes in philosophy of life.

Criticisms of the model. Critics of the Tedeschi and Calhoun (1995) model assert that the model does not include action as a requirement for growth and that this component should not be excluded (Hobfoll et al., 2007). Others state that PTG is an illusory concept and that survivors experience unrealistic optimism and a sense of control to cope with the trauma (Maercker & Zoellner, 2004). However, these criticisms have themselves been questioned because first, action-focused growth narrows the concept of one's ability to change after trauma; secondly,

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numerous studies have found that people have experienced growth without action; and furthermore, corroboration studies have reported that significant others have documented the changes experienced by survivors (Frazier & Kaler, 2006; Shakespeare-Finch & Barrington, 2012; Shakespeare-Finch & Enders 2008; Westphal & Bonanno, 2007).

Joseph and Linley Model. In a similar vein, Joseph and Linley developed (2005) the Organismic Valuing Theory of Growth based on the organismic valuing process (OVP), which states that people understand their own values and what defines, for them, a fulfilling life, and thus moves them toward establishing goals that lead to growth. Generally, individuals process traumatic events by disconfirming or confirming previously held assumptions. Therefore, the incoming information must be either assimilated into, or accommodated by, the individual's existing model of the world. The concept of assimilating or accommodating is like Tedeschi and Calhoun's (1995) idea of restructuring schemas. However, unlike the Tedeschi and Calhoun model, the OVP (Joseph & Linley, 2005) is based on the social cognitive model of growth. The model posits humans are active, growth-oriented organisms inclined to integrate "psychological experiences into a unified sense of self and to integrate themselves into larger social groups and structures" (Joseph & Linley, 2005, p. 269). After a traumatic event, individuals are changed, and some emerge from the event more authentic and able to adhere to personal values and goals that, in accordance with OVP, may lead to growth. Authenticity occurs as people replace models of the world that no longer fit their lives with models that are more congruent with their new reality. Linley and Joseph (2005) state that autonomy, competence, and relatedness must be present for growth to occur.

According to the OVP model, fulfilling one's basic needs is an essential process for growth to occur. The model contains four theoretical principles. The first two are the completion

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tendency, which is the need to integrate new trauma related information into the individual's worldview. To resolve the incongruence between existing models of the world and the traumatic event that challenges the existing models, individuals utilize accommodation or assimilation; accommodation requires that people change their worldview, while assimilation takes the information and places it within the existing worldview (Joseph & Linley, 2005). For example, if Jane accommodated the information, she might perceive her experience as a random occurrence and her new model of the world might be that the world was not a fair world, but a random world. If Jane assimilated the information, she might blame herself for the event to keep the sense that the world was a just and fair place. Positive accommodation (growth) occurs when autonomy, competence, and relatedness meet. When these needs have not been met, the organismic valuing process is less likely to be given voice, and the person will tend toward negative accommodation.

If the person does not engage with the significance of the event and attempts to keep pre-trauma schema, the person tends toward assimilation. Joseph and Linley's (2005) third theoretical principle introduces the concept of meaning as comprehensibility versus meaning as significance, in which initially someone may be concerned more with the comprehension of an event, but later will be more concerned with significance (which is needed for growth). When trauma is negatively accommodated, it can lead to hopelessness, helplessness, and a negative worldview. However, when trauma is positively accommodated, growth can occur as people amend beliefs and more fully appreciate things in life that were perhaps taken for granted (e.g., relationships). Their final theoretical principle known as eudaimonic (meaning and self-realization) versus hedonic (pleasure attainment and pain avoidance) well-being, considers that the well-being a person may experience after growth from a traumatic event may not be a

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pleasurable well-being (e.g., the person may not be happier), but is a more meaningful type of well-being, so that the person is wiser and has closer relationships, deeper spirituality, and more self-acceptance (Joseph & Linley, 2005).

Several individual differences within the organismic valuing theory of growth through adversity were found among people who experienced a traumatic event (Joseph & Linley, 2005). These differences concern trauma, beliefs, and expectations pre-trauma, how the social environment interacted with the person, the extent to which people behave in accordance with their OVP, and how the social environment interacts with OVP in the aftermath. These individual differences explain why some people do not experience growth or why they do not experience growth through the steps of OVP.

The main difference between the Joseph and Linley (2005) model and the Tedeschi and Calhoun (1995) model is the additional discussion Joseph and Linley provide delineating the motivation to grow. Tedeschi and Calhoun present this concept as people trying to repair or replace “shattered assumptions.” The Tedeschi and Calhoun (1995) model remains the most widely cited model, and the PTGI inventory based on this model remains the most widely used instrument for measuring growth. Therefore, it was the model utilized in the current study, which is discussed in more depth in the following section.

Manifestations of Posttraumatic Growth

Tedeschi and Calhoun’s model of PTG suggests that the changes that occur manifest as improved interpersonal relationships, openness to new possibilities, a greater appreciation of life, an increased sense of personal strength, and spiritual development (1995). One of the benefits of PTG is the change in perception of self, which affects one’s self-reliance and vulnerability. The effects are not only on the perception of competence in various situations, but also the likelihood

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that one will choose to address difficulties in an assertive manner rather than a passive manner. Following trauma, self-reliance increases as a result of a difficult challenge and can be generalized to a multitude of situations (Tedeschi & Calhoun, 1995).

Another benefit of PTG is that one may have an enhanced appreciation of vulnerability, emotional experience, and self-awareness (Tedeschi & Calhoun, 1995). Intuitively, understanding one's own vulnerability may not appear to be a positive outcome. However, for people who believe they are invulnerable or who have lived dangerously and unhealthily, this awareness can be an awakening that leads to positive change. Possessing both self-reliance and vulnerability allows one to know that help is needed and leads to being willing to ask for help. PTG yields a changed perception of relationships with others. A continued need to process and cope with the consequences of the event(s) can lead to enhanced open communication with others. People who recognize their vulnerabilities may become more emotionally expressive, willing to accept help, and employ social supports that may have been previously ignored. Studies further suggest that individuals develop increased compassion, a greater sensitivity to the needs and feelings of others, put more effort into improving and fostering relationships, and support others. The ability to relate to others aids in feeling that a substantial part of the healing process is complete (Tedeschi & Calhoun, 1995).

Tedeschi and Calhoun (1995) noted that one may experience a changed philosophy of life because of trauma. When confronted with the inevitability of death, one may realize time and relationships are finite and meaningful, leading to a greater appreciation of life. Often there is (a) a spiritual component leading some to become cynical and less spiritual or (b) a significant number who may have strengthened spiritual beliefs. Spirituality may increase coping by giving individuals a greater sense of control, providing comfort to them, experiencing personal intimacy

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with the divine, and providing a sense of meaning (Tedeschi & Calhoun, 1995). Models of posttraumatic growth have been discussed and manifestations of growth have been explained to promote an understanding of what posttraumatic growth is and how it manifests in people's lives. Correlates and predictors of growth are important as they can be used to understand what could be helpful in promoting growth in those who have experienced a traumatic event.

Correlates and Predictors of Posttraumatic Growth

A review of the PTG literature between 1990 and 2006 found that optimism, social support, spirituality, acceptance coping, reappraisal coping, religious coping, and coping by seeking support are all associated with PTG (Prati & Pietrantonio, 2009). Predictors of PTG that have been researched are self-efficacy, extraversion, openness to experience, agreeableness, conscientiousness, optimism, positive affect, social support, and religiosity (Joseph & Linley, 2004; Moran, Burkner, & Schmidt, 2012). The Tedeschi and Calhoun model of PTG (1995) posits that PTG is related to personality, locus of control, self-efficacy, optimism, and sense of coherence – variables that will now be defined and their role in PTG considered in more depth.

Personality. Sometimes positive outcomes are related to personality factors (Tedeschi & Calhoun, 1995). According to Costa and McCrae (1985), personality is composed of five basic factors called the Big Five personality factors. The Big Five are openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism. PTG has been found to be associated with openness and extraversion (Tedeschi & Calhoun, 1995). Further, the personality type combining flexibility with persistence that may produce benefits after trauma also includes elements of self-efficacy (Bandura, 1977), self-confidence (Shaefer & Moos, 1992), optimism (Scheier & Carver, 1985), hardiness (Kobasa, 1979), resilience (Beards, Lee, & Podorefsky,

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1988; Rutter, 1987), a sense of coherence (Antonovsky, 1987), creativity (Strickland, 1989), and having an internal locus of control (Rotter, 1966).

Locus of control. Locus of control relates directly to perceptions and beliefs that what one does can be related to events that follow (Tedeschi & Calhoun, 1995). Those who possess an internal locus of control believe that outcomes are affected by the choices they make, and they believe they have control. For example, because Jane has an internal locus of control, she sought out information about her cancer and became more assertive with her medical care. On the other hand, a person with an external locus of control believes that events are caused by actions of others, chance, or fate. This person believes he or she has no control. Those with an external locus of control may not believe that their actions and adverse events are related, which may lead to the belief that they do not have the ability to escape something that is distressing. It may be significant that in the event of a traumatic event, individuals who have an internal locus of control generally experience more growth (Tedeschi & Calhoun, 1995).

Self-efficacy. Self-efficacy is another variable considered relevant to PTG; self-efficacy is defined as the perception that one has the ability to perform behaviors to deal with situations successfully and one has a sense of control over the environment, which aids in coping (Bandura, 1977). Researchers have also found a mediational role of self-efficacy in posttraumatic stress disorder (Benight & Harper, 2002). Those who report self-efficacy may be more apt to take action, feel a sense of mastery, and find positive elements in a negative event (Tedeschi & Calhoun, 1995).

Optimism. Internal locus of control, self-efficacy, and optimism are associated with the use of an active (problem-focused) coping style (Tedeschi & Calhoun, 1995). Optimism is the expectancy that no matter the situation, something good will happen. Optimism has been cited as

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adaptive; Scheier and Carver (1985) found that those who initially reported being highly optimistic later were less likely to report being troubled by physical health symptoms. Optimism has been reported to be a protective factor (Taylor, Kemeny, Reed, Bower, & Gruenewald, 2000), which can help preserve mental and physical health during traumatic events.

Sense of coherence. A sense of coherence follows when one has confidence that everything will work out as well as can be reasonably expected (Antonovsky, 1979). A sense of coherence is made up of comprehensibility, manageability, and meaningfulness (Antonovsky, 1979). When an event is comprehensible, it means that the individual perceives the event as making sense. Manageability means that challenges can be coped with or seem bearable. The term meaningfulness can be defined as believing that demands and challenges are worthy of investment and engagement because meaning can be found even in undesirable events (Tedeschi & Calhoun, 1995). With a sense of coherence, an individual may feel that he or she can meet demands expected after the trauma. Now that the models and manifestations of posttraumatic growth have been detailed, measures of growth will be discussed.

Measuring Growth

The literature cites several measures that assess levels of growth. Some of the measures for PTG include the Posttraumatic Growth Inventory (PTGI, Tedeschi & Calhoun, 1996), the Changes in Outlook Questionnaire (CiOQ, Joseph et al., 1993; Joseph et al., 2005), the Benefit Finding Scale (BFS, Tomich & Helgeson, 2002), and the Stress Related Growth Scale (Park, Cohen, & Murch, 1996).

The PTGI developed by Tedeschi and Calhoun (1996) is currently the most widely used instrument to assess PTG (Frazier et al., 2009; Shakespeare-Finch, Martinek, Tedeschi, & Calhoun, 2013). The measure includes five factors: Relating to Others, New Possibilities,

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Personal Strength, Spiritual Change, and Appreciation of Life. The full version of the PTGI contains 21 items. The total internal consistency is $\alpha = .90$, with New Possibilities ($\alpha = .84$), Relating to Others ($\alpha = .85$), Personal Strength ($\alpha = .72$), Spiritual Change ($\alpha = .85$), and Appreciation of Life ($\alpha = .67$). The results of the initial study, which included 604 college students, indicated that the PTGI has good internal consistency and acceptable test-retest reliability. The five-factor structure of the PTGI has been replicated in other populations and validated with confirmatory factor analysis (Linley, Andrews, & Joseph, 2007; Morris, Shakespeare-Finch, Rieck, & Newberry, 2005; Taku, Cann, Calhoun, & Tedeschi, 2008). Brunet and colleagues (2010) tested the five-factor structure of the PTGI in a sample of breast cancer survivors ($N = 470$) and found that the five-factor model was a good fit with all items loading significantly on their expected factors and an internal consistency of $\alpha = .95$.

A short-form of the PTGI (PTGI-SF) includes two items from each of the five subscales making a total of 10 items (Cann et al., 2010). Cann et al. identified and selected items from the long form to create a short form of the PTGI. They enrolled a sample of college students (45 males and 141 females) to verify psychometric properties. The five factors explained 65% of the total variance. Cann et al. (2010) concluded that the PTGI-SF is a good alternative to using the PTGI when a shorter version is warranted. The PTGI-SF reliability of the total score was generally around .90 for a variety of samples and the total score for internal reliability was only slightly below that of the PTGI.

Shakespeare-Finch, Martinek, Tedeschi, and Calhoun (2013) conducted a mixed-method study to further assess the validity of the PTGI. Fourteen participants completed a PTGI before a semi-structured interview was conducted. Results supported content validity and identified a relationship between themes and the five factors of the PTGI. Furthermore, two studies used a

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corroboration approach to validate the PTGI. Significant others filled out the PTGI on behalf of the survivors, as did the trauma survivors themselves (Shakespeare-Finch & Enders, 2008). Results showed that scores did not significantly differ, suggesting that the positive changes reported by the survivors were also observed by their significant others (Shakespeare-Finch & Barrington, 2012; Shakespeare-Finch & Enders, 2008).

The current study will use the PTGI to measure growth and the Tedeschi and Calhoun (1995) model of PTG as these are, respectively, the most widely cited scale and model. To complement the understanding of posttraumatic growth and how it is measured, a discussion of what makes posttraumatic growth different from posttraumatic stress follows, as it is important to understand the differences and similarities of the two experiences.

Posttraumatic Growth versus Posttraumatic Stress

The relationship between PTG and PTSD is unclear and lacks consensus (Shakespeare-Finch & Lurie-Beck, 2014). A posttraumatic growth paradox exists: Distress leads to PTG and PTG can be maintained through continuing distress (Tedeschi & Kilmer, 2005). Typically, PTG and PTSD both involve some type of rumination. As previously mentioned, the rumination associated with PTG is deliberate and focuses on understanding the traumatic experience, finding meaning from the experience, and ultimately creating a new life narrative (Triplett, Tedeschi, Cann, Calhoun, & Reeve, 2012). In contrast, rumination within PTSD is intrusive and obsessive (Triplett, Tedeschi, Calhoun, & Reeve, 2012).

Resilience can be equated with stable equilibrium and the ability to return to baseline after trauma. Bensimon's (2012) study examined the relationship of PTG, PTSD, and resilience. The study results partially supported hypotheses that "exposure to trauma will be positively associated with PTSD and PTG, higher resilience negatively associated with PTSD, PTSD

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positively associated with PTG and the association of trauma and resilience with growth mediated by PTSD” (Bensimon, 2012, p. 785). However, resilience was *not* negatively associated with PTG; indeed, resilience was positively associated with PTG. Results were consistent with the theory of PTG that “more intense experiences with trauma may produce greater benefits” (Tedeschi & Calhoun, 1996, p. 456).

Cadell, Regehr, and Hemsworth (2003) proposed a structural equation model to determine what factors contribute to growth. The researchers hypothesized that a person’s sense of spirituality, social support, and levels of posttraumatic distress could be important predictors of posttraumatic growth. Participants included 174 HIV/AIDS caregivers. Researchers predicted that higher levels of distress would be related to lower levels of growth and vice versa. However, findings did not support their hypothesis, but rather suggested that distress contributed positively to growth. Furthermore, results indicated that spirituality and social support were positive contributors to PTG in bereaved HIV/AIDS caregivers.

PTG has been found to endure over time. Dekel, Ein-Dor, and Solomon (2012) conducted a longitudinal study on ex-prisoners of war in Israel. They compared 118 participants with matched controls in three data collections. Depression, anxiety, global distress, PTG, and PTSD were all measured during the years 2003 and 2008. Their main finding indicated that growth is a response to distress, but distress was not a response to growth. This conclusion means that sometimes when there is distress, growth can occur. However, when one is experiencing growth, the experience of distress does not follow (Dekel, et al., 2012). Elevated PTSD in 2003 predicted subsequent elevated PTG in 2008 above and beyond PTG itself, suggesting that the distress led to increased levels of PTG. Neither depression nor anxiety levels predicted subsequent levels of PTG.

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In their longitudinal study of PTG, Linley, Joseph, and Goodfellow (2008) included 40 participants who completed measures at time one and time two in a 6-month interval, longitudinal design. Findings showed that positive psychological changes predicted fewer symptoms of PTSD, depression, and anxiety 6 months later. The authors commented that the nature of the association reflected the stages of processing proposed by Joseph et al. (2005). They stated that after a traumatic event, breakdown and disorganization occurs in which PTSD and PTG are correlated as people search for meaning (positive and negative). This is followed by emotional processing when the two become increasingly disassociated. Finally, PTG and PTSD become inversely correlated as people develop new meanings, which tend to be either mostly positive or mostly negative.

Studies of the link between PTSD and PTG have found no relationship (Cordova, Cunningham, Carlson, & Andrykowski, 2001), a positive relationship (Kilmer et al., 2009), a negative relationship (Frazier, Conlon, & Glaser, 2001), and a curvilinear relationship (Butler et al., 2005). In an effort to clarify the lack of consensus in the literature about the relationship between PTG and PTSD, Shakespeare-Finch and Lurie-Beck (2014) conducted a meta-analysis. The researchers conducted literature searches from 1996 to 2011 and included 42 studies. They found a curvilinear relationship such that symptoms of PTSD increase initially with PTG, but the relationship becomes negatively correlated when a critical point is reached in the severity of the traumatic symptoms (Shakespeare-Finch & Lurie-Beck, 2014). Furthermore, the nature of the event and the age of the person have an impact on the relationship between the factors investigated. Other findings included a weak or non-existent relationship between PTSD and PTG when trauma resulted from serious ill health of self and others or for those who assisted survivors of trauma, such as health professionals.

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Breast Cancer

“When I went public with my breast cancer diagnosis 6 weeks ago, the overwhelming outpouring of love, prayers and support really helped me heal faster.”

-Giuliana Rancic

“Cancer is a group of diseases that cause cells in the body to change and grow out of control” (ACS, 2013). There are two types of breast cancer: in situ and invasive (ACS, 2013). The most common type of in situ breast cancer, ductal carcinoma in situ (DCIS), accounted for 83% of in situ cases 2006-2010, and is considered noninvasive as the cells have not grown beyond where they originated (ACS, 2013). This type of cancer, left untreated, is estimated to become invasive in about one-third of those with DCIS (ACS, 2013). Most breast cancers are invasive (infiltrating), which means that they have broken through ductal or glandular walls where they originated and moved into surrounding breast tissue (ACS, 2013). “In 2013, an estimated 232,340 new cases of invasive breast cancer will be diagnosed among women, as well as an estimated 64,640 additional cases of in situ breast cancer” (ACS, 2013). Breast cancer incidence generally increases with age, having 79% of new cases and 88% of breast cancer deaths occurring in women 50 years of age and older (ACS, 2013). A woman living in the U.S. has a 12.3% or a 1 in 8 lifetime risk of being diagnosed with breast cancer (ACS, 2013). Death rates have steadily declined over the past 15 years due to advances in treatment, which means there are more breast cancer survivors living in the United States (ACS, 2013).

According to researchers, a diagnosis of breast cancer is considered a traumatic event in a person’s life (Andrykowski, Cordova, Studts, & Miller, 1998; Palmer, Jacobsen, & Fields, 2004; Stanton & Snider, 1993). After a diagnosis of breast cancer, a woman’s basic values, beliefs, goals, psychological functioning, and sense of identity become threatened (Cordova et al., 2007;

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Montazeri et al., 2008). Further, breast cancer is a chronic condition with no clear end; there is often a fear of recurrence (Butler et al., 2005; Connerty & Knott, 2013). Generally, the treatments are aggressive with a range of possible side effects including fatigue, hair loss, early menopause, lymphedema, decreased libido, difficulties in sexual intercourse, and body image issues, which can be stressful and traumatic for those experiencing them (Montazeri et al., 2008). Some of the available treatment options include chemotherapy, radiotherapy, hormonal therapy, and surgery such as lumpectomy (surgical removal of the tumor) and mastectomy (surgical removal of the breast) (ACS, 2013; Pruitt, McQueen, Deshpande, Jeffe, & Schootman, 2012). Another variable to consider is age; younger women with breast cancer face different challenges than older women, such as concerns for the care of young children (Gould, Grassau, Manthorne, Gray, & Fitch, 2006), potential loss of fertility, and early menopause (Adams et al., 2011; Gould et al., 2006). In a qualitative study by Pedersen, Hack, McClement, and Taylor-Brown (2014), young survivors reported feeling uncertain and frustrated, anxious, powerless, and vulnerable.

Approximately one-third to one-half of women with breast cancer develop lymphedema (Armer & Stewart, 2005). Lymphedema is a significant and persistent swelling, associated with an abnormal accumulation of a protein-rich fluid, usually in a woman's arm, which results from removing numerous lymph nodes during mastectomy and/or radiation treatment effects (Casley-Smith, 1992; Mortimer, 1998). Hull (1988) described the impact of symptoms on the daily lives of women, which included activities such as difficulty sleeping due to trying to elevate the arms, carrying items such as groceries, difficulty exercising, and the challenge of finding clothing that fits and is comfortable.

Cancer-related fatigue is another common and distressing side effect of cancer and cancer treatment (Hofman, Ryan, Figueroa-Moseley, Jean-Pierre, & Morrow, 2007). Research reported

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that around 50-90% of cancer patients reported fatigue that persists for months or even years (Campos, Hassan, Riechelmann, & Del Giglio, 2011). Qualitative findings suggested that it is difficult to obtain a diagnosis for cancer-related fatigue due to the invisible nature of the symptoms (others cannot physically see the symptoms), which can lead to a sense of isolation and further burden the cancer patient (Dickson et al., 2007; Sim & Madden, 2008).

Breast Cancer and Posttraumatic Growth

“Should you shield the canyons from the windstorms you would never see the true beauty of their carvings.”

-Elisabeth Kübler-Ross

Experiencing breast cancer as traumatic (Koopman et al., 2001) does not always mean that the experience has a solely negative effect or outcome for the breast cancer survivor. Some survivors may experience PTSD. A review of the literature from 1990-2010 found that the rate was relatively low and varied from 2.4% to 19% (Koutrouli, Anagnostopoulos, & Potamianos, 2012). However, many survivors experience posttraumatic growth. The experience of PTG is believed to occur in between 50-98% of breast cancer survivors, meaning that a large portion of women diagnosed with breast cancer report growth (Guner-Kucukkaya, 2009; Sears, Stanton, & Danoff-Burg, 2003; Weiss, 2002). Silva, Crespo, and Canavarro (2012) researched women with breast cancer in a longitudinal design and found that 56% of women 6 months after diagnosis reported PTG. Furthermore, the PTG remained stable from the period of treatment to initial survival. Bower et al. (2005) studied 763 breast cancer survivors and found that 75% reported changed outlooks on life that were apparent up to 10 years after diagnosis. Posttraumatic growth has been found to predict better adjustment to traumatic events. For example, Carver and Antoni (2004) surveyed 230 early stage breast cancer patients in the year post surgery and then had them

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complete the surveys again between 4 and 7 years later. They found that initial PTG predicted more positive emotion and self-reported quality of life, along with less negative emotion and symptoms of depression (Carver & Antoni, 2004).

Correlates and Predictors of Growth in Breast Cancer Survivors

There has not been complete agreement in the literature on what correlates with or predicts growth. A multitude of factors could influence the differences in findings on what correlates with or predicts PTG. This dissertation will focus on the role of social support and religious support. Therefore, those variables will be examined in more detail following a brief review of the PTG literature on predictors and correlates.

Researchers explored the roles of rumination, social support, and distress (Morris & Shakespeare-Finch, 2011) in an Australian sample of 313 cancer survivors, with a structural equation model (SEM). They found that the content of rumination was more influential than its timing. Also, seeking social support was related to PTG while social support itself was indirectly related. The researchers suggested this may be because seeking support promotes deliberate rumination and deliberate rumination has been associated with PTG. This SEM found that distress conceptualized as PTSD was not related directly to PTG. Overall, this research supported the findings and the model proposed by Calhoun and Tedeschi (2006).

These same researchers also compared PTG in breast cancer survivors to PTG in survivors of prostate cancer, colorectal cancer, and hematological malignancies. Among their 355 participants, breast cancer survivors reported higher levels of PTG than other cancers. Moreover, those who perceived the diagnosis as more traumatic had higher levels of distress also conceptualized as PTSD symptoms and reported greater PTG. These PTG differences between cancer survivors remained after covariates including gender were considered. Researchers

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suggest that this difference may be linked to social support as breast cancer survivors may have more opportunities for support (Morris & Shakespeare-Finch, 2011).

Other researchers found that distress (conceptualized as anxiety and depression) did not decrease PTG, but that PTG did not imply the absence of distress (Boot, Holcombe, & Salmon, 2010). The study's participants were 156 women with breast cancer split into three groups: 2-4 weeks, 6 months - 2 years, and 2-5 years post-diagnosis. They found PTG in breast cancer survivors 2-5 years after diagnosis, but not in those assessed earlier. Also, they found that anxiety and depression could still occur while having PTG. After controlling for anxiety, the PTG remained significant. The effects of PTG differed between groups, but depression did not.

Demographic correlates found to contribute to growth are being married (Bellizzi & Blank, 2006), employed (Bellizzi & Blank, 2006), lower education (Bellizzi & Blank, 2006; Weiss, 2004), younger age (Bellizzi & Blank, 2006; Bellizzi et al., 2009; Lechner et al., 2003; Manne et al., 2004), higher incomes (Cordova et al., 2001), and minority status (Bellizzi et al., 2009, 2010). One study found higher PTG in African American breast cancer survivors than in Caucasian and Hispanic women, mediated by religiosity. The authors suggested this difference could signify a use of religious coping, which is often higher in African Americans than in Caucasians (Taylor, Chatters, & Levin, 2004), or that they may get more social support from the church (Cordova et al., 2001). Bellizzi and Blank (2006) found that hope and optimism were not related to PTG in breast cancer survivors, contrary to the findings of Tedeschi and Calhoun (1995). Having children did not increase PTG (Bellizzi & Blank, 2006). Related to disease, Lechner et al. (2003) assessed PTG in 83 men and women with different forms and stages of cancer and found no significant differences in levels of PTG based on demographic variables such as education, gender, marital status, income, and employment status; neither were there any

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significant differences in PTG between participants based on the time since diagnosis (Lechner et al., 2003). Those still in treatment did not differ from those who completed treatment. The only significant findings were found for stage of disease, with stage II having more PTG benefit than those in stages I and IV. However, PTG levels in Stage II and III participants were similar. These researchers did not report on PTG differences between types of cancers.

Long-Term Posttraumatic Growth in Breast Cancer Survivors

Little research is available regarding the long-term relationship of breast cancer and PTG. Researchers who have examined levels of PTG consistently found that PTG is supported within 5 years of diagnosis (Bellizzi & Blank, 2006; Cordova, Cunningham, Carlson, & Andrykowski, 2001; Ganz, Roland, Desmond, Meyerowitz, & Wyatt, 1998; Lelorain, Bonnaud-Antignac, & Florin, 2010; Sears et al., 2003; Tomich & Helgeson, 2004; Weiss, 2002). One longitudinal study by Lelorain, Bonnaud-Antignac, and Florin (2010) found that 56% of women 6 months after diagnosis of breast cancer reported PTG, which remained stable from the period of treatment to initial survival (the time directly after the cancer is considered in remission). That research, completed in France, included 307 participants diagnosed with breast cancer 5-15 years prior. Of those women, 66.8% reported long-term sequelae of cancer, 36.5% with pain, 26.7% with fatigue, 27.4% with physical limitations, and 15% other topics such as discomfort with appearance due to weight gain or mastectomy. The women reported levels of PTG that varied from moderate to great. When analyzed by hierarchical regression, several predictors were found for PTG. Receiving chemotherapy was a predictor, accounting for 4.2% of the variance; the addition of positive affectivity increased the variance to 18.9%. In the final step of the hierarchical regression, coping strategies were included, and the total model explained 44% of the variance. Active, positive, relational, and religious coping were all predictors of growth. The

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researchers posited that this demonstrated long-term PTG regardless of time since diagnosis (Lelorain, Bonnaud-Antignac, & Florin, 2010).

Bower and colleagues (2005) completed a longitudinal study of breast cancer with 763 breast cancer survivors who completed surveys at time one and time two, which ranged from 1 to 4 years from the first survey. They found that 75% reported breast cancer changed their outlook on life. These changes were apparent up to 10 years after diagnosis, showing that the positive changes from breast cancer can be considered enduring (Bower et al., 2005).

Lastly, Danhauer and associates (2013) examined change in PTG over 24 months following a breast cancer diagnosis in 652 participants. The participants were sent baseline questionnaires within 8 months of diagnosis. Follow-ups occurred 6, 12, and 18 months after baseline. Over time, all domains in the PTGI showed significant increases, with the exception of relating to others. PTG increased initially the most during the first year after diagnosis, and then leveled off over time. The model in this study found longer time since diagnosis, greater social support, spirituality or faith, use of active adaptive coping, and illness intrusiveness ($p < .05$) were significantly associated with higher scores on the PTGI. Various studies support the theory that social support promotes PTG, although there have been inconsistencies within the literature. These inconsistencies will be reviewed later.

Comparison of Healthy Controls

Researchers have compared breast cancer survivors to healthy controls to assess the contribution of surviving breast cancer on PTG and to provide support that PTG is different than the typical aging process. Due to concerns that PTG may merely be part of normal maturation, Silva, Moreira, and Canavarro (2011) compared PTG in 71 breast cancer survivors and 89 healthy matched controls in Portugal. Breast cancer survivors showed higher total PTG than the

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healthy controls and univariate analyses indicated that breast cancer survivors had significantly higher scores of PTG. Thus, even though PTG can result as a part of the aging process, other studies have agreed that PTG is more than a part of normal maturation (Andrykowski et al., 1996; Cordova et al., 2001; Tomich, Helgeson & Vache, 2005).

Similarly, Mohls, Vingerhoets, Coeberg, and van de Poll-Franse (2009) studied 183 participants (10-year breast cancer survivors compared to normative population) in the Netherlands. Breast cancer survivors were found to have life satisfaction that was significantly higher than the normative population, with 79.2% of breast cancer survivors experiencing PTG; the correlates were satisfaction in life and having treatments other than radiotherapy.

Presenting a different perspective, Ruini, Vescovelli, and Albieri (2013) compared breast cancer survivors to healthy controls who had experienced other stressful events in a sample of 120 Italian participants. Their findings were that breast cancer survivors had significantly higher PTG scores and symptoms of distress, along with lower levels of psychological well-being compared to the healthy controls. The implications of these comparison studies are that positive changes and distress are not mutually exclusive, PTG is not just part of the normal aging process, and compared to both a normative population and healthy controls that had experienced stressful situations, the traumatic nature of breast cancer fosters more growth.

Partner Posttraumatic Growth

Research has found that PTG can happen after vicarious experiences of trauma occur (Linley & Joseph, 2005b, 2006, 2007; Linley, Joseph, & Loumidis, 2005). Therefore, Weiss (2004) investigated the correlates of PTG in husbands of breast cancer survivors. These 72 husbands also experienced PTG that was significantly associated with social support, positive

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qualities of the marital relationship, and level of the wife's PTG. Furthermore, the wives' scores of PTG significantly predicted their husbands' scores.

Moreover, Manne et al. (2004) studied levels of PTG with 162 women and their partners in a longitudinal design. Findings revealed that PTG increased for both patient and partner during the 18-month timespan they were followed. Partners may have experienced less growth than patients because the possibility of death and the experience of traumatic treatments did not occur directly to them. Also, patients experienced more growth when partners were emotionally expressive. Thus, patient growth may not solely be an individual activity and it may be helpful to include partners and families in intervention to aid in fostering growth.

Few of the studies reported so far occur in rural regions as there is a paucity of research on the topic of posttraumatic growth outside of suburban and urban areas, especially comparing breast cancer survivors. Declining rates of cancer mortality in the U.S. population are due to improvements in cancer prevention, detection, and treatment. However, these rates have not declined to the same degree in rural and poorer settings, particularly the southeastern U.S. (Eheman et al., 2012; Singh, Williams, Siahpush, & Mulhollen, 2011). Before discussing breast cancer survivors and PTG in rural areas, it is necessary to define rural and examine characteristics of rurality.

Rural

“As much as I converse with sages and heroes, they have very little of my love and admiration. I long for rural and domestic scene, for the warbling of birds and the prattling of my children.”

-John Adams

Over 60 million people (19.3% of the U.S. population) living in small towns and communities occupy a vast rural area covering 97% of the land in the U.S. (United States Census

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Bureau, 2015). Rural areas have yet to be precisely defined by a single definition. Definitions are frequently based on the size and density of a population and economic factors (Smalley et al., 2010). Rural areas are generally categorized by lack of employment opportunities, fewer resources, lower education and socioeconomic status, distance from metropolitan areas, and shortages of healthcare professionals, especially specialized healthcare professionals, such as psychologists (Helbok, Marinelli, & Walls, 2006).

While rural areas are not homogenous, several authors have created characteristics to describe them. Jameson, Blank and Chambless (2009) stated that rural areas are often characterized by an intimate sense of community and a more relaxed pace of life with comparatively little crime, pollution, and traffic, and abundant recreational activities. This is a positive aspect of rural dwelling. Other characteristics of rural areas are stigma, lack of privacy, and lack of anonymity. Rainer (2010) suggested that there is much stigma in rural communities since privacy and anonymity are difficult to maintain. However, in rural areas the strong sense of community and extended social networks can be a good source of support for clients (Jameson & Blank, 2007). Helbok, Marinelli, and Walls (2006) declared that rural residents, in general, have strong family relationships, avoid conflict or talking about feelings, have high religious involvement, and limited tolerance of diversity. Wagenfeld (2003) reported that several scholars suggest there is a gap between rural values and urban values, although the gap seems to be shrinking. The rural values that contrast with urban values are the focus on self-reliance, conservatism, distrust of outsiders, religious values, work orientation, emphasis on family, individualism, and fatalism.

Jameson warned, “Despite our heritage as a rural society, individuals in rural areas today can be characterized as a vulnerable population” (2007, p.283). The vulnerability of rural areas is

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a result of several factors. Barriers to accessing care for rural clients are numerous:

Unemployment is high, there are fewer options for transportation, affordability of services, and having greater travel distances to services (Helbok, Marinelli, & Walls, 2006). Wagenfeld (2003) stated that rural areas tend to be unstable economically, which can affect mental health. Also, rural residents' self-reported health status was more likely to be fair or poor and chronic conditions higher (Wagenfeld, 2003). Rural regions tend to attract fewer and less well-trained providers, making quality, holistic care even more difficult to attain. People in rural areas are exposed to considerable stress due to poverty and financial strain, natural disasters, farm crises, and other conditions outside their control (Helbok, 2003). These characteristics influence women's experiences of breast cancer in rural settings.

Burris and Andrykowski (2010) found that rural breast cancer survivors had greater anxiety, depressive symptoms, distress, emotional problems, and overall poorer mental functioning compared to non-rural participants. Also, geographic isolation makes it more difficult for rural residents to attend formal breast cancer support groups and rural breast cancer survivors are more likely to exhaust usual sources of support (Collie et al., 2007; Rees & Bath, 2000). Rural populations tend to have a strong sense of community and extended social networks, which can be a good source of support (Jameson & Blank, 2007). However, researchers suggest that women with breast cancer living in rural areas are more likely to exhaust the usual sources of support while facing the multitude of challenges related to breast cancer, yet are unlikely to have access to professionally led support groups (Collie et al., 2007). Therefore, it may be that women in rural areas are more likely to rely on religious support (Ellison & George, 1994; Hamilton, Hamilton, Duncan, & Colocousis, 2008; Sun, 2011). If there are formal breast cancer support groups in rural areas, they usually exist through local faith-based groups (Lea et

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al., 2013). Thus, it seems plausible that levels of posttraumatic growth may be different for rural compared to non-rural breast cancer survivors. There have been no studies to date examining this phenomenon in rural populations. The following section will describe the term social support and discuss several types of support.

Support

“Love and compassion are necessities, not luxuries. Without them humanity cannot survive.”

-Dalai Lama

Social Support

No simple definition suffices for social support as it has many dimensions; however, it represents someone's perception of being cared for, loved, esteemed, and valued (Cobb, 1976). Social support can take many forms, such as information, assistance, tangible resources, and communication (Beck & Keyton, 2014). The categories are (a) tangible (providing goods and services); (b) emotional (showing love, empathy, concern); (c) informational (providing information in the form of facts or advice); (d) network (belonging, sharing similar characteristics with others); and (e) esteem (validating others) (Beck & Keyton, 2014). Cohen and Willis (1985) reported that negative effects of stressors are decreased by social support, which can positively affect health and well-being; this is known as the stress buffering hypothesis (Cohen & McKay, 1984; Gore, 1981; House, 1981). Also, social cognitive processing theory states that when an environment is socially supportive, it can encourage active cognitive processing of the stressful experience, which will then lead to integrating and resolving trauma-related information (Lepore, 2001; Lepore & Helgeson, 1998). In turn, the integration and resolution lead to positive psychological adjustment (Lepore, 2001; Lepore & Helgeson, 1998).

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Social support has been found to be a moderator and a mediator (Bozo, Gundogdu, & Buyukasik-Colak, 2009).

As discussed, the relationship between social support and posttraumatic growth appears inconsistent. Some findings suggest social support systems play a key role in the aftermath of trauma, with greater social support leading to greater posttraumatic growth (Borja, Callahan, & Long, 2006; Cadell, Regehr, & Hemsworth, 2005; Cryder, Kilmer, Tedeshi, & Calhoun, 2006; Schulz & Mohamed, 2004). A meta-analysis supported that optimism, social support, spirituality, acceptance coping, reappraisal coping, religious coping, and coping by seeking support are associated with PTG, with social support having a medium effect size (Prati & Pietrantonio, 2009). A longitudinal study by Shroever, Helgeson, Sanderman and Ranchor (2010) investigated the effect of social support on PTG in 206 breast cancer patients. They assessed the patients at 3 months and subsequently 8 years later and found a significant association between emotional support and PTG. Thus, those who received more emotional support following diagnosis experienced more PTG in the long term, suggesting that when there is a relationship between the two constructs, it has lasting effects. In general, lack of social support has been linked to higher levels of depression and distress (Seligman, 1991; Winemiller, Mitchell, Sutliff, & Cline, 1993). However, some studies found no relationship between social support and PTG (Cohen & Numa, 2011; Cordova et al., 2001; Weiss, 2004). Nevertheless, due to limited resources, in rural areas social support is often one of the main sources of support. Therefore, one way to clarify the specific nature of the relationship between posttraumatic growth and social support is to examine the specific types of support such as nonreligious social support (support from family, friends, and significant other), peer support, and religious support.

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Peer Support

Peer support, commonly known as support groups, is provided by others affected by the same or a similar illness who come together to share experiences and advice, feel understood and supported, and discuss concerns about their illness (Cope, 1995; Gray et al., 1997; Stevenson & Cold, 1993; Winefield et al., 2003). There are two types of groups: professionally led and community-based (McLean, 1995). For purposes of the current study, the term peer support was used for any support group that includes women with breast cancer in a support group regardless of whether it was community-based or professionally led. For women with breast cancer, support groups can be beneficial. The benefits of support groups can be social, physical, and psychological (Michalec, 2005) and have been found in past studies to mostly result from sharing feelings and experiences (Cain et al., 1986; Classen et al., 2001; Jacobs et al., 1983; Kyngas et al., 2001; Samarel et al., 1998; Toro et al., 1987), learning positive coping skills (Bauman et al., 1992; Fawzy et al., 1995; Jacobsen et al., 2002; Koopman et al., 2001), gaining educational information (Helgeson et al., 1999; Rhoads et al., 2001), and forming relationships (Magen & Glajchen, 1999; McLean, 1995). Avery and Nyhof-Young (2003) studied support groups that met weekly for six 90-minute short-term sessions held from 1990-1993. Based on the responses, the researchers reported that the support groups were effective and the benefits to the groups were learning new coping skills, emotional support, emotional expression, and improved relationships (Avery & Nyhof-Young, 2003).

Qualitative research has demonstrated benefits of peer support groups. Power and Hegarty (2010) looked at a 7-week peer support program involving eight women with breast cancer. They identified several benefits: mutual identification, support for hair loss, help with moving on, consolidation of information, importance of cancer survivor, and mutual sharing

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(Power & Hegarty, 2010). Stang and Mittlemark (2008) found both negative and positive aspects for attending support groups. The researchers studied 18 Norwegian women with breast cancer and found that positive benefits included a sense of fellowship, ability to acknowledge emotions, having a place of refuge, and ability to include humor and laughter. The women also felt that by attending peer groups/a peer group, they could lessen the burden on friends and family with all their concerns. However, they also reported some negative experiences: interpersonal stress due to feeling different from others in the group, having irregularities in treatment or side effects that others did not have, and thinking about death due to losing a group member during the support group. Another qualitative study examined how leaders could create more support for the members and found the best skills were the ability to smoothly transition and change the focus of the interaction, show support through relational message, and clarify any complex issue that arose (Beck & Keyton, 2014).

While many studies have referenced benefits of support groups, one study found that the benefits were not sustained over time. A long-term follow-up of 191 women with breast cancer in the control group compared to 191 women with breast cancer in the intervention support group who met for 1 week found that 5 to 9 years later, the differences between groups on anxiety and depression were not statistically significant (Bjornekleit et al., 2013). Further, a study by Vos et al. (2006) found that timing mattered in benefits from breast cancer support groups. Those who were offered the support group intervention at a later time were more distressed 6 months post intervention compared to those who started the intervention earlier. These two studies suggest that timing in attending support groups may be important as one study had the participants meet only for 1 week, which may not have been enough time, and the other study found that attending groups later in the course of the illness was less beneficial. Therefore,

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interventions should offer groups earlier in the illness process, take into consideration the schedules of those who plan to attend the groups, and lengthen the amount of time spent meeting.

Researchers have linked certain characteristics to those who attend breast cancer support groups, including younger age, higher income, higher education, full- or part-time employees, and married (Michalec, 2005). These characteristics make it difficult to assess whether the support group led to higher quality of life or if the benefit was due to other confounding variables. Michalec (2005) studied 958 women diagnosed with breast cancer from the 1980s to the 1990s. Out of those, only 169 participated in support groups whereas the other 82% never attended support groups. Those who attended reported significantly higher levels of social quality of life and overall quality of life. However, once the demographic variables were controlled for, the effect on quality of life was no longer significant. The demographic variables explained much of the effect on quality of life. Further, after controlling for confounds, support group participation did not have a significant effect on psychological or physical quality of life. Thus, research on support groups may be confounded by the demographic variables of women who choose to attend support groups.

There are difficulties associated with convincing patients to participate in support groups and to study those who participate (Hamann et al., 2000; Pascoe, Edelman, & Kidman, 2000). Winefield et al. (2003) researched 93 women with breast cancer in Australia. The results showed that the most common barriers for survivors attending support groups were participants reported receiving enough information and support from other avenues, meetings were inconveniently located or scheduled (e.g., having to travel and schedule), and survivors did not want to focus on the illness. The most common reasons that influenced the decision not to attend were location, time of meetings, and transportation. Thus, it may be that some survivors can get enough support

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without the groups. If so, having fewer peer support groups in rural areas may not have a large impact on survivors if they can meet social support needs in other ways. Furthermore, one researcher suggested that it may be better to focus on strengthening the supports already available rather than trying to create new supports through support groups (Helgeson et al., 1999).

In conclusion, there have been positive and negative variables associated with peer support groups, some inconsistent findings, timing and demographic effects, and barriers to attendance. Therefore, to date, whether peer support groups are superior to other forms of support for breast cancer survivors remains inconclusive.

Religious Support

Another type of support that has been cited in the literature as being helpful for cancer survivors as well as a common form of support in rural areas is religious support (Belizzi et al., 2010; Fiala, Bjorck, & Gorsuch, 2002; George, Ellison, & Larson, 2002). Pargament says that “religious support may come from at least two distinct sources: support from God and support from the congregation” (1997, p.208). Others have also stated that support can come from church leaders (Fiala et al., 2002). Religious support allows one to count on others with similar beliefs and values who will pray for the person, while also believing that God can help the person work through others (Hill & Pargament, 2003). Like other types of support, there is an inconsistent relationship between religion and spirituality with beneficial outcomes for individuals with cancer (Stefanek, McDonald, & Hess, 2005; Thune-Boyle, Stygall, Keshtgar, & Newman, 2006). Ano and Vasconcelles (2005) conducted a meta-analysis with 49 studies totaling 13,512 participants, which found 47% positive relationships with religion and mental health, 23% negative relationships, and 30% no relationship. A total of 469 articles were included in the

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meta-analysis, yet only 4.7% of those articles related to religion and spirituality to some extent (Weaver et al., 2003). Although research on the topic has increased since the meta-analysis was completed from 1991-1994, religion or spirituality continues to be considered an understudied variable in health-related research (Weaver et al., 1998). Regarding religious support, no distinction will be made between religiosity and spirituality as this dissertation considers religious support to be support from God, the congregation, or from church leaders (Fiala et al., 2002), and the terms religiosity and spirituality will not be discussed separately due to the paucity of research and difficulty in separating the specific relations with PTG (Shaw, Joseph, & Linley, 2005).

Beneficial Outcomes

Research has posited that religious support could provide resources above and beyond the resources attained by social support, and may be more valuable especially to a person dealing with health concerns (Fiala et al., 2002; Hill & Pargament, 2003). One study aimed at researching differences in a racially diverse population of breast cancer survivors found that PTG was higher in African Americans, and this was mediated by religiosity (Bellizzi et al., 2010). Researchers postulated that it could be due to higher religious coping or greater social support from the church, and suggested future research needed to explore these constructs. The idea that greater social support can be attained by attending church is supported by Koenig (2013), who stated that support can come from the faith community or from God, and that some may feel that the physical illness one has may produce a closer relationship with God, or that the suffering represents a special mission or purpose from God. Thoughts such as these can create meaning and opportunity rather than feeling out of control or thinking that one has experienced a senseless disaster. When trauma occurs, it has been stated that assumptions such as those about

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safety, power or control, the self, and about the world itself are “shattered” (Janoff-Bulman, 1992). One reason religion and spirituality are thought to be helpful when this occurs is that religion and spirituality can provide meaning and purpose when meaning and purpose have changed because of trauma (Gerber, Boals, & Shuetller, 2011).

Furthermore, some studies found that when investigating religion and spirituality along with trauma, the faith and religious communities aided people in coping with the trauma (Weaver et al., 1996); many people who turn to faith to cope also turn to clergy (Schuster et al., 2001; Weinrich et al., 1990). With 327 Christian participants, Harris and his colleagues (2008) found that seeking religious social support was a significant predictor of PTG, effects sizes were large, and religious factors accounted for 21% of the variance in PTG. Although seemingly contradictory, doubting, searching, and questioning religion can help with growth and development after trauma, likely because of the restructuring of schemas (Batson et al., 1993). Particular to the current research, religion and spirituality have been shown to aid in adjusting to cancer, leading to less depression and higher quality of life for cancer survivors (Jenkins & Pargament, 1995; Koenig et al., 2001; Lavery & O’Hea, 2010; McClain et al., 2003; McCullough & Larson, 1999; McCullough et al., 2000; Thune-Boyle et al., 2006).

There has been much literature connecting religion and spirituality to physical and mental health, with both religion and spirituality being robust in predicting health-related outcomes (e.g., Koenig, McCullough, & Larson, 2001; McCullough, Hoyt, Larson, Koenig, & Thoresen, 2000; Plante & Sherman, 2001; Powell, Shahabi, & Thoresen, 2003). Attachment theory, with God as the attachment figure, has been conceptualized in the literature as a closer connection that has been correlated with less depression, less loneliness, greater relational maturity, better self-rated health, and better psychological adjustment (Hall & Edwards, 2002; Kaufman, 1981;

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Kirkpatrick, 1995; Kirkpatrick, Kellas, & Shillito, 1993; Koenig, Pargament, & Nielsen, 1998; Krause, 1998; Maton, 1989; Smith, Pargament, Brant, & Oliver, 2000). Similarly, religious support has been compared to Maslow's hierarchy of needs (1954) because it provides members with a sense of belonging, sense of meaning in life, helps members get basic needs met, and promotes a healthy lifestyle. In a study by Krause and Wulff (2005), 824 participants with support from other church members were found more likely to feel a sense of belonging, which is associated with greater satisfaction with health. Support has been found to be a potential mediator of the relationship between religious involvement and improved physical and mental health (Willoughby et al., 2008).

Moreover, spirituality has been viewed as a protective factor. Kristeller, Sheets, Johnson, and Frank (2011) studied 124 patients with various types of cancer and found that those with high religiosity and high spirituality and those with low religiosity and high spirituality showed good adjustment. However, the negative religious copers (those who engage in distancing, are having religious struggle, or cope by turning inward), although most were depressed, still retained moderate levels of adjustment and a high level of benefit finding; those with low religiosity and spirituality had the lowest levels of adjustment to cancer. The researchers also reported finding that if a physician even briefly addressed spiritual issues, it appeared beneficial in decreasing depression especially for those lower in spiritual well-being (Kristeller et al., 2005).

Although religious attendance has been described as less important than religious support (Fiala et al., 2002), church involvement has been reported to increase the number of social connections and support available. Ellison and George (1994) found that the frequency of religious attendance was a relatively strong predictor of the number of non-kin relationships and

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the increment in religious attendance was associated with an increase of about 17% in the odds of reporting positive options of social relationships. Greater frequency of church attendance was associated with lower levels of depression in inmates and family members of accident victims and people who committed suicide (Koenig, 1995; Sherkat & Reed, 1992). Thus, religious attendance can potentially increase the quantity and quality of social resources for an individual, which is shown to have benefits to mental and physical health (Willoughby et al., 2008).

Religious Coping

Pargament, Koenig, and Perez (2000) identified religious coping strategies that are either positive or negative. Positive religious coping strategies included providing and seeking spiritual support, finding new spiritual direction, seeking spiritual purification, God as partner when facing problems, religion as a distractor, giving control to God, seeking a stronger relationship with God, maintaining religious standards, and reframing the stressor as God's benevolence, related to PTG and better religious outcomes (Pargament et al., 2000; Pargament, Smith, Koenig, & Perez, 1998). Negative religious coping included not being satisfied with one's relationship with God, passively waiting for God's help, believing the stressor was from the devil, being dissatisfied with one's relationship with the clergy and others in the faith group, redefining God as not omnipotent, identifying the stressor as punishment from God, and asking God for a miracle. Higher distress, poorer physical health, reduced quality of life, and poorer cognitive functioning were associated with negative coping (Bjorck, & Thurman, 2007; Pargament et al., 2000; Pargament et al., 2002).

Religious coping often includes seeking religious support as a coping mechanism and has been found to produce positive psychological outcomes such as hope, life satisfaction, optimism, spiritual growth, stress-related growth, and acceptance (Ano & Vasconcelles, 2005). Gerber,

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Boals, and Schuettler (2011) identified differences between positive and negative coping styles. Examples of positive coping include seeking spiritual support, religious forgiveness, and benevolent religious reappraisals, while negative coping examples include spiritual discontent, punitive religious reappraisals, and demonic religious reappraisals. For 1,016 undergraduate students, positive religious coping was one of the strongest predictors of PTG and negative religious coping was a significant predictor of PTSD (Gerber et al., 2011).

Negative experiences. There are also negative correlates associated with religion and adjustment to cancer. Beliefs that one has been punished by God or other negative religious beliefs can become sources of stress (Carpenter et al., 1999; Cole et al., 2008; Lavery & O’Hea, 2010; Nelson et al., 2009; Park et al., 2009). Some trauma survivors find religion helpful in coping, but others consider it harmful and may abandon their faith (Falsetti, Resick, & Davis, 2003; Pargament, Koenig, Tarakeshwar, & Hahn, 2002; Pargament, Murray-Swank, Magyar, & Ano, 2004). Beliefs in God may be changed because beliefs in a benevolent God may be inconsistent with trauma experiences (Caddell, Regehr, & Hemsworth, 2003).

Measurement

The American Psychological Association published scale for religious support (Hill & Edwards, 2013), the Religious Support Scale (RSS), is the only measure of religious support. However, other measures address similar constructs such as seeking support (e.g., RCOPE, Pargament et al., 1988). Bjorck and Kim (2009) focused on 108 Nazarene college students who were serving 2-month assignments as short-term missionaries. All three types of religious support from the RSS significantly related to better psychological functioning for Protestant church attenders and found comparable results with religious Jews in Israel (Fiala et al., 2002;

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Lazar & Bjorck, 2008). An interaction between God support and life satisfaction was also observed (Bjorck & Kim, 2009).

Willoughby, Cadigan, Burchinal, and Skinner (2008) found that a two-factor model fit best for a sample of 1,156 new mothers. The two factors were God support and congregation/clergy support as participants' experiences with support from clergy and support from congregation were similar (Willoughby et al., 2008). A qualitative study by Roff, Simon, Nelson-Gardell, and Pleasants (2009) found that 18 African American breast cancer survivors reported support from God, congregation, and the clergy. The concept of religious support has not been studied quantitatively with breast cancer survivors (Fiala, Bjorck, & Gorsuch, 2002; Krause et al., 2001; VandeCreek et al., 1999). Researchers posit that the RSS represents a psychometrically sound measure of religious social support and is an equally good measure with African Americans and European Americans (Willoughby et al., 2008).

Conclusion

In the preceding overview of the literature, posttraumatic growth was discussed while models, manifestations, correlates and predictors, opposition and rebuttal, measures, and a comparison of PTSD and PTG were explored. The experience of breast cancer and the relationship between breast cancer and posttraumatic growth was explained. Additionally, a short summary of rural factors was provided as well as a report that rural residents remain understudied and that PTG has not been assessed in rural residents. Therefore, rural culture, barriers to support group participation, and difficulties associated with rural dwelling were discussed. Finally, a review of three types of support (nonreligious, peer, and religious) was detailed.

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Whereas there have been discussions in the literature about religious coping and social support relationships with PTG, there has been none specifically addressing the differences in religious and nonreligious support. Analyzing the different types of support could potentially answer some questions that have occurred when measuring the relationship of PTG and social support, especially related to breast cancer survivors. PTG has not been assessed in rural populations and due to differences in culture, support systems, and access to care, these populations may have different levels of PTG. Rural breast cancer survivors may have more access to religious support than peer support, which could also influence PTG. The following chapter will describe the current study's hypotheses and the methods utilized to analyze the hypotheses.

CHAPTER III:

Method

Posttraumatic growth has been researched in the breast cancer literature, however, none of the research has specifically looked at levels of posttraumatic growth in rural populations. Based on differences in geographical location, access to care, peer support differences, and cultural differences, it is possible that levels of posttraumatic growth differ between rural and non-rural breast cancer survivors. There is also a possibility that the types of social support contributing to growth may differ between rural and non-rural breast cancer survivors. Further, there are inconsistencies within the literature regarding the relationship between PTG and social support. Therefore, breaking social support into three categories of support, nonreligious support, peer support, and religious support, may be helpful in determining which type or types of support contribute the most to posttraumatic growth and what differences exist between rural and non-rural populations. There have been no studies specifically involving religious support in a breast cancer population, few studies examining peer support, and none investigating the three types of support.

This chapter describes the methodology utilized for the study. First, information is provided regarding recruitment of participants and sample selection. Then, procedures and methods are discussed. Finally, hypotheses and analyses are reviewed.

Method

Participants

The current study involved 99 participants recruited from rural and non-rural areas. Historically, there have been difficulties assessing a rural population related to geographical isolation, transportation barriers, and internet access. Therefore, three methods were used in

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recruitment: (a) chain referral and social media (e.g., Facebook) to forward recruitment messages, (b) active recruitment at local breast cancer events, and (c) physical copies left at clinics along with addressed stamped envelopes for return. Participants included female breast cancer survivors 18 years of age and older diagnosed within the last 10 years (the longest time frame for which PTG has been researched), who have not had other forms of cancer, and who are at least 1-year post-treatment (surgery, chemotherapy, or radiotherapy). The literature suggests a period of rumination facilitates PTG and the literature suggests 1 year provides sufficient time for this rumination to occur (Bellizzi & Blank, 2006; Tedeschi & Calhoun, 1996). Data from those participants who did not meet criteria were not used in the analysis.

Procedures

Approval for this study was obtained from Radford University's Institutional Review Board (IRB) before recruitment of participants began. IRB documents can be found in Appendix A. Participants received questionnaires electronically via a link from Qualtrics on social media or by email. For those without internet access, measures were available in a packet with a stamped, addressed envelope. First, participants completed several items assessing demographics, including age, race, religious affiliation, where they heard about the survey, time since initial diagnosis, time since most recent treatment, type of treatment, cancer stage at diagnosis, relationship status, county, and socioeconomic status measured by annual income and education level. Then, participants answered 21 items assessing posttraumatic growth, 12 items assessing nonreligious support, 6 items assessing peer support, 21 items assessing religious support, and 10 items assessing religiosity. With the demographics and questionnaires, the participants completed a total of 82 questions. Upon completion, participants received confirmation that the

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surveys had been received and were thanked for their participation. The full battery of survey items can be found in Appendix B.

Measures

Posttraumatic growth. The Posttraumatic Growth Inventory (PTGI) by Tedeschi and Calhoun (1996), normed on 604 college students, uses a 6-point Likert scale ranging from “I did not experience this change as a result of my crisis” (a score of 0) to “I experienced this change to a very great degree as a result of my crisis” (a score of 5) with 21 items mapping onto five factors. The five factors that make up the PTGI are (a) Relating to Others (e.g., putting effort into my relationships), (b) New Possibilities (e.g., I established a new path for my life), (c) Personal Strength (e.g., I discovered I am stronger than I thought I was), (d) Spiritual Change (e.g., I have a better understanding of spiritual matters), and (e) Appreciation of Life (e.g., I appreciate each day). The scores on the factors are summed together for an overall composite score of posttraumatic growth.

Reliability. Tedeschi and Calhoun (1996) reported the PTGI has ratings of strong internal consistency, $\alpha = .90$ calculated using all of the items; the internal reliability of the five subscales ranged from .67 to .85; the test-retest reliability over a 2-month period was strong ($r = .71$) for composite scores.

Validity. Discriminant validity was tested using the Marlow-Crowne Social Desirability Scale (Crowne & Marlowe, 1960) and was found to be uncorrelated with the PTGI, $r = -.15$ (Tedeschi & Calhoun, 1996). Concurrent validity was assessed by comparing the PTGI to the Life Orientation Test (LOT) by Scheier and Carver (1985), the NEO Personality Inventory (Costa & McCrae, 1992), and a 3-item measure of religious participation (Pressman, Lyons, Larson, & Strain, 1990). Tedeschi and Calhoun found that the PTGI positively correlated with all

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of these measures (LOT, $r = .23$; religious participation, $r = .25$; NEO, $r = .29$ for Extraversion, $r = .21$ for Openness, $r = .18$ for Agreeableness, and $r = .16$ for Conscientiousness), with the exception of neuroticism from the NEO Personality Inventory (1996). Construct validity was determined assessing the occurrence and impact of trauma with the Traumatic Stress Schedule (Norris, 1990) to provide support that ordinary life events differ from traumatic events on levels of PTG. Compared to those without a traumatic event, those with traumatic events had higher scores on all factors except Spiritual Change.

Utility. The PTGI has been utilized in a variety of populations (e.g., Bauwens & Tosone, 2014; Salo, Punamaki, & Quota, 2004). Brunet and colleagues (2010) tested the five-factor structure of the PTGI in a sample of breast cancer survivors ($N = 470$) and found that the five-factor model was a good fit with all items loading significantly on their expected factors and an internal consistency of $\alpha = .95$. In the current study, the reliability was strong, $\alpha = .95$.

Nonreligious social support. The Multidimensional Scale of Perceived Social Support (MSPSS) assesses perceived adequacy of social support from family, friends, and significant others using a 7-point Likert scale with response options ranging from “very strongly disagree” (1) to “very strongly agree” (7) (Zimet, Dahlem, Zimet, & Farley, 1988). The scale was normed on 275 undergraduates.

Reliability. The MSPSS showed strong internal consistency with Cronbach’s alpha of .88 for total scale and .91 for the Significant Other, .87 for Family, and .85 for Friends subscales (Zimet, et al. 1988). Of the 275 participants, 69 were retested between 2 and 3 months after initial questionnaire and the test-retest reliability was .85 for the total scale (Zimet, et al., 1988).

Validity. Construct validity was tested by comparing the MSPSS to the Hopkins Symptom Checklist (HSCL) (Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974). Support

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was found from negative correlations between social support and the anxiety and depression subscales of the HSCL (Zimet et al., 1988). Perceived support from family was significantly negatively correlated to depression, $r = -.24$, and anxiety, $r = -.24$. Perceived support from friends was negatively related to depression, $r = -.24$, but not anxiety. Perceived support from significant other was negatively related to depression, $r = -.13$, as was the scale, $r = -.25$.

Utility. The MPSS has been utilized with a variety of populations (e.g., Fry, 2003; Gilbar & Refaeli, 2000; Short & Johnston, 1997). When used with a sample of breast cancer survivors, internal reliability was strong, $\alpha = .93$ (Cohen & Numa, 2011). The current study resulted in $\alpha = .96$.

Peer support. Peer support (breast cancer support groups) was evaluated with questions created by the researcher because there are no known scales assessing breast cancer support groups and it is important to compare this type of support when assessing differences between rural and non-rural populations. Participants were asked: (a) “Have you ever participated in a breast cancer support group,” (b) “What was the name of the group(s) that you attended,” (c) “How long did you attend the group(s),” (d) “When did you begin to attend the support group,” (e) “How do you feel about the group(s) you attended,” and (f) “On a scale of 1-5, how supportive did you find the group,” with 1 being “not supportive” to 5 being “very supportive,” and 3 being “neutral.” The current study found that $\alpha = .70$ for the peer support questions used in analyses. The two questions used in the analyses were “Have you attended a peer support group?” and “How supportive was that group?”

Religious social support. The American Psychological Association published scale (Hill & Edwards, 2013) for assessing religious support, the Religious Support Scale (RSS) by Fiala et al. (2002), identifies three types of religious support: God Support (e.g., “I can turn to God for

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advice when I have problems”), Congregational Support (e.g., “Others in my congregation care about my life and my situation”), and Church Leader Support (e.g., “My church leaders give me the sense I belong”). These three factors add together to form the total religious support score. The scale was modified using the term “local religious leader” instead of “church leader” to be more inclusive of other religions. To further make the scale more inclusive, a statement was made in introducing the scale indicating that participants could substitute the label that worked best for the religion with which they identified for the word “God.” The RSS uses a 5-point Likert scale ranging from “strongly disagree” (1) to “strongly agree” (5) and includes 21 questions. The scale was initially normed on 249 adult Protestants.

Reliability. The internal consistency was strong for the RSS with an alpha of .91; internal reliability of the three subscales ranged from .75-.91 (Fiala et al., 2002).

Validity. Convergent validity was established by finding positive correlation of the RSS and the Social Provisions Scale (Cutrona & Russell, 1987), a measure of social support ($r = .41$). Religious social support was found to be a distinct, but related measure (Fiala et al., 2002). There was a negative correlation with depression ($r = -.25$) and a positive correlation with life satisfaction ($r = .30$) (Fiala et al., 2002).

Utility. The RSS has been used in a variety of populations (Oren & Possick, 2009; Yorgason, Whelan, & Meyers, 2012), but religious support has never been measured in breast cancer survivors. The current sample found a high reliability with $\alpha = .97$.

Rurality. There has been a lack of consensus within the literature regarding what qualifies as rural. No perfect measure has been developed to date to completely capture rurality. Urban Influence Codes (UICs) created by the Economic Research Service in the United States Department of Agriculture were established to show the influence of population centers on

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surrounding counties. UICs were developed based on the Office and Budget Management definition of rurality, which states that metropolitan areas are areas that contain a city of at least 50,000 or were adjacent to a metropolitan county with significant commuting flows. These codes are a 12-level county classification system, which will be used in the current research as a code of one and two for non-rural and three to 12 for more rural counties. Research on health has used the UIC to determine rurality (Hall, Kaufman, & Ricketts, 2006) and the federal government most frequently uses the county based classification system (Hart, Larson, & Lishner, 2005). The UICs are used in healthcare because these codes consider the size of the largest town in the county, which is associated with the likelihood of access to available local hospitals and clinics (Hart, Larson, & Lishner, 2005).

Religiosity. Since it is possible that religious support overlaps with religiosity, a brief measure of religiosity was included to separate out the variability accounted for by each construct. The Santa Clara Strength of Religious Faith Questionnaire (SCSORF) is a self-report measure that assesses strength of religious faith along with engagement (Plante & Boccaccini, 1997). The questionnaire is a 10-item instrument that uses a 4-point Likert scale ranging from (1) “strongly disagree” to (4) “strongly agree.” The questionnaire includes brief statements such as “I pray daily” and “My faith impacts many of my decisions.” The items are summed for a total score, with scores ranging from 10 (low strength of faith) to 40 (strong strength of faith). The scale was normed on 102 undergraduate students.

Reliability. The SCSORF was reported to have high internal consistency, $\alpha = .95$, and a high split-half reliability, $\alpha = .92$ (Plante & Boccaccini, 1997).

Validity. The SCSORF was compared to the Symptoms Check-List (Derogatis, 1977), the Hope Scale (Snyder, 1995), the Weinberger Adjustment Inventory (Weinberger, 1991), and the

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Belief in Personal Control Scale (Berrenberg, 1987). Previous researchers have posited that the SCSORF is a valid scale because high scores on the SCSORF were positively correlated with hope, coping, and belief in exaggerated control (r 's = .20 to .27) and negatively correlated with low self-esteem, depression, God control, and interpersonal sensitivity (r 's = .20 to .40) (Plante & Boccaccini, 1997).

Utility. The SCSORF has been used in a variety of populations (e.g., Plante, Saucedo, & Rice, 2001; Pardini, Plante, Sherman, & Stump, 2001). The measure was utilized with 95 breast cancer patients compared to healthy adults and researchers found high internal consistency (r 's = .95-.97) and suggested that this measure might be useful for oncology patients (Sherman et al., 2001). The current study found the reliability to be strong, $\alpha = .97$.

Hypotheses and Data Analysis

As has been noted, the relationship between social support and PTG is unclear. Additionally, previous research has not evaluated whether the finding of PTG can be generalized to rural areas. Given these voids in the literature the hypotheses of the current study were: (1) Levels of PTG would differ in rural versus non-rural areas, and this would be moderated by religious support; (2) those with both religious and nonreligious support would have the highest levels of PTG; and (3) levels of religious support would account for significant proportions of variability in scores for PTG, beyond that already accounted for by other types of perceived social support. These hypotheses are discussed in relation to data analyses in the following chapter.

CHAPTER IV:

Analysis and Results

The purpose of the current research was to examine the relationship between types of support and posttraumatic growth in breast cancer survivors and to compare those residing in rural and non-rural locations. Research participants completed an anonymous online questionnaire that included the Posttraumatic Growth Inventory (Tedeschi & Calhoun, 1996), the Multidimensional Scale of Perceived Social Support (Zimet, Dahlem, Zimet, & Farley, 1998), the Religious Support Scale (Fiala, Bjorck, & Gorsuch, 2002), the Santa Clara Strength of Religious Faith Questionnaire (Plante & Boccaccini, 1997), and several researcher-created questions asking about peer support as there are no established scales available at this time. Research participants additionally completed a demographics questionnaire developed by the researcher, which included zip code to identify rurality using Urban Influence Codes (Economic Research Service of the United States Department of Agriculture, 2003).

Description of the Sample

Participants in this study consisted of adult women who were 18 years of age and older, diagnosed with breast cancer within the last 10 years (the longest time frame over which PTG has been researched), who did not have other forms of cancer, and who were at least 1-year post-treatment (surgery, chemotherapy, or radiotherapy). Participants were recruited through chain referral sampling (e.g., email, Facebook, and word of mouth), Amazon Mechanical Turk, and at local breast cancer events. The recruitment advertisement provided a hyperlink that directed participants to complete the research using Qualtrics survey software. An option for those living in rural areas was provided, acknowledging that there may not be access to the internet: hard copies of the survey with stamped, self-addressed envelopes were provided at a local general

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medical practitioner's office so that participants could take the survey and mail them back.

Several offices were contacted to participate, but only one agreed. There were no participants who used this method. One hundred forty-nine participants completed the survey. However, because of missing information, being from a different country, not having had breast cancer, or having multiple cancers, 50 participants were removed. The final sample consisted of 99 breast cancer survivors. The following section provides demographics related to the sample.

Sample Demographics

Each participant completed a demographics questionnaire that included questions related to personal demographics as well as disease characteristics and levels of distress from breast cancer. Personal demographics included recruitment and how the person heard about the study, age, race, religious preference, education level, relationship status, county and state residing in, and yearly income. A question was asked about other types of cancer to rule out ineligible participants. Breast cancer-related questions included years since diagnosis, years since last treatment, and cancer stage at diagnosis. Additionally, questions concerned with distress were asked, such as how distressing the diagnosis was, how life changing breast cancer was, how distressed the participant was by the treatment, and how distressed the participant was when waiting between treatment and follow-up. The ages of the participants ranged from 20-77 years ($M = 45.01$; $SD = 15.2$). Regarding race, 58 participants (58.6%) identified as Caucasian, 6 participants (6.1%) as American Indian/Alaskan Native, 6 participants (6.1%) as Asian, 14 participants (14.1%) as African American, 4 participants (4.1%) as Hispanic, 5 participants (5.1%) chose more than one race, and 4 participants (4%) identified as other. Two participants did not answer this question.

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Participants endorsed a broad array of religious preferences. Extra categories were added to accommodate religious diversity. Seven participants identified as agnostic (7.1%), 2 participants as atheist (2%), 48 participants as Christian/protestant (48.5%), 21 participants as Catholic (21.2%), 5 participants as Hindu (5%), 2 participants as Muslim (2%), 1 participant as Pagan (1%), 2 participants as Unitarian Universalist (2%), and 9 participants who believed in a higher power, but did not consider themselves religious (9.1%); two participants did not provide data.

Regarding education, 12 participants had graduated from high school (12.1%), 20 had some college (20.2%), 16 an Associate's degree (16.2%), 28 a Bachelor's degree (28.3%), 19 a Master's degree (19.2%), 3 a doctoral degree (3%), and 1 who endorsed other (1%). These participants had a broad range of household incomes with 6 participants earning less than \$10,000 (6.1%), 7 participants earning \$10,000-19,999 (7.1%), 15 participants earning \$20,000-34,999 (15.2%), 14 earning \$35,000-49,999 (14.1%), 17 earning \$50,000-74,999 (17.2%), 13 earning \$75,000-99,999 (13.1%), 13 earning \$150,000-149,999 (13.1%), 8 participants earning \$150,000-199,999 (8.1%), and 2 participants earning \$200,000 and up (2%). Data were missing from 4 participants.

Relationship status included 60 participants who were married (60.6%), 24 single (24.2%), 8 divorced (8.1%), 1 separated (1%), and 5 other (5.1%); one participant did not answer the question about relationship status. There may have been a clarity issue for the question about state and county as 52 participants answered "America" (52.5%), "United States of America," or some variation of the country (i.e., they confused "county" with "country)." Thirty-five participants identified as non-rural (35.4%) and 12 as rural (12.1%). See Table 1 in Appendix B.

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Breast cancer-related questions were included to find out more information about women's experiences. Forty-nine participants were diagnosed with stage I breast cancer (49.5%), 38 were diagnosed with stage II breast cancer (38.4%), 10 were diagnosed with stage III (10.1%), 1 diagnosed with stage IV (1%), and 1 participant did not respond to this item. There were many different types of treatment utilized. Twenty-one participants had mastectomy (21.2%), 17 participants had lumpectomy (17.2%), 11 had radiotherapy (11.1%), 26 had chemotherapy (26.3%), 6 had chemotherapy, mastectomy, and radiation (6.1%), 7 had chemotherapy and radiation (7.1%), 2 mentioned using Essiac (2%), and 9 participants (9%) reporting having other types of therapy or combinations of therapy.

Participants answered a series of questions regarding distress. Two participants reported not feeling distressed at diagnosis (2%), 13 participants were neutral (13.1%), 22 participants were somewhat distressed (22.2%), and 62 participants reported being very distressed (62.6%) at diagnosis. Seven participants (7.1%) stated they were not distressed during treatment, 12 participants (12.1%) were neutral, 41 (41.4%) were somewhat distressed during treatment, and 39 (39.4%) were very distressed during treatment. Some women experienced distress between treatment and follow-up. Eight participants (8.1%) did not find that time period distressing, 24 (24.2%) felt neutral, 34 (34.3%) felt somewhat distressed, 32 (32.3%) felt very distressed, and 1 person did not respond to this item. Eight (8.1%) did not feel the diagnosis of breast cancer was life changing, 36 (36.4%) found the diagnosis somewhat life changing, and 55 (55.6%) found the diagnosis very life changing.

Survey Results

The measures used in the current study were the Posttraumatic Growth Inventory, the Multidimensional Scale of Perceived Social Support, the Religious Support Scale, questions to

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measure Peer Support (created by the researchers), and finally, the Santa Clara Strength of Religious Faith Questionnaire was implemented as there could be possible overlap with religious faith and religious support. In the current study, $N = 99$, PTGI scores ranged between 21-105 with a mean of 64.73 and a standard deviation of 19.964. For measuring nonreligious social support, MSPSS ($N = 95$) scores ranged from 15-84 with a mean of 66.7 and a standard deviation of 15.98. The current participants' scores on the Religious Support Scale ($N = 94$) ranged from 25-105 with a mean of 76 and a standard deviation of 22. The SCSORF scores ($N = 96$) ranged from 10-40 with a mean of 30.56 and a standard deviation of 8.33. Rurality was measured by Urban Influence Codes. Only 47 participants correctly answered the question about the county in which they live. The data from 52 participants was missing on this question. Thirty-five participants indicated living in a non-rural area and 12 indicated living in a rural area. Two questions of peer support, "Did you attend a peer support group and how supportive was the group," were included in the data analysis. Thirty-six participants stated they had participated in a peer support group and 60 stated they had not participated in a peer support group. The second question included 89 participants and scores could range from "not supportive" (1) to "very supportive" (5). The second question had a mean of 5 and standard deviation of 1.25.

Correlations among measures of post-traumatic growth, support, and religiosity

Several significant correlations were found in this study. Religiosity and religious support were significantly correlated, $r = .83$, $p < .001$. The two peer support questions were correlated, $r = .665$, $p < .001$. These all had large effect sizes. Posttraumatic growth was significantly correlated with nonreligious social support, $r = .34$, $p = .001$, religiosity, $r = .35$, $p < .001$, and religious support, $r = .31$, $p = .002$, with a moderate effect size. Posttraumatic growth was not significantly correlated with peer support, $r = -.17$, $p = .10$ for participation, and $r = .04$, $p = .73$

for support. See Table 2 in Appendix B.

Hypotheses and Statistical Analyses

The hypotheses of the current study were: (1) Levels of PTG would differ in rural versus non-rural areas, and this would be moderated by religious support; (2) those with both religious and nonreligious support would have the highest levels of PTG; and (3) levels of religious support would account for significant proportions of variability in scores for PTG, beyond that already accounted for by other types of perceived social support. Hypothesis 1 was tested by examining the main effects of each type of support and PTG as well as the interaction of the support variable and rural/non-rural status. Hypothesis 2 was tested using simple slopes and examining the rates of PTG for those who have both religious support and nonreligious support. Hypothesis 3 was tested by using hierarchical regression to examine the unique proportion of variability accounted for by each variable.

Effects of nonreligious social support and rural/non-rural status on PTG

The main effect of nonreligious social support (support from family, significant other, and friends) on PTG was not significant, $\beta = .26$, $t(42) = 1.44$, $p = .16$. The main effect of rural/non-rural status on PTG was not significant, $\beta = .135$, $t(42) = .89$, $p = .38$. Neither was the interaction of social support and rural/non-rural status significant, $\beta = -.040$, $t(42) = -.22$, $p = .83$.

Effects of religious support and rural/non-rural status on PTG

The main effect of religious support on PTG was significant, $\beta = .36$, $t(42) = 2.2$, $p = .03$. The main effect of rural/non-rural status on PTG was not significant, $\beta = .061$, $t(42) = .41$, $p = .68$. The interaction of religious support and rural/non-rural status was not significant, $\beta = .15$, $t(42) = .92$, $p = .36$.

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Effects of peer support and rural/non-rural status on PTG

The main effect of peer support participation on PTG was not significant, $\beta = -0.27$, $t(43) = -1.39$, $p = .17$. The main effect of rural/non-rural status on PTG was not significant, $\beta = .064$, $t(43) = .380$, $p = .706$. Neither was the interaction of peer support and rural/non-rural status significant, $\beta = -0.12$, $t(43) = -.551$, $p = .585$. Similarly, the main effect of the perceived supportiveness of peer support on PTG was not significant, $\beta = -0.39$, $t(36) = -1.96$, $p = .240$. The main effect of rural/non-rural status on PTG was not significant, $\beta = .36$, $t(36) = 1.1$, $p = .28$. The interaction was not significant, $\beta = -0.41$, $t(36) = -1.05$, $p = .30$.

Effects of religiosity and rural/non-rural status on PTG

The main effect of religiosity on PTG was significant, $\beta = .342$, $t(43) = 2.3$, $p = .03$, indicating that religiosity was associated with higher levels of PTG. The main effect of rural/non-rural status on PTG was not significant, $\beta = .054$, $t(43) = .38$, $p = .71$. The interaction of religiosity and rural/non-rural status was not significant, $\beta = -0.024$, $t(43) = -.16$, $p = .87$.

Ability of social support to moderate the effect of religious support

To address Hypothesis 2, religious support, nonreligious support, and the variable coding the interaction between religious and nonreligious support were included in a multiple regression model predicting scores for PTG. Although no interaction effect was found ($\beta = -0.04$, $t(88) = -.408$, $p = .68$), the fact that main effects for both religious support, $\beta = .23$, $t(88) = 2.2$, $p = .03$, and nonreligious support, $\beta = .27$, $t(88) = 2.54$, $p = .013$, were observed indicates that the combination of high levels of religious support and high levels of nonreligious support is associated with the highest levels of PTG. A graph of the simple slopes for religious support predicting PTG at both high and low levels of nonreligious support is displayed in Graph 1 found

in Appendix B.

Hierarchical Regression Analyses Identifying the Unique Contribution of Nonreligious Social Support, Peer Support, and Religious Support

The Unique Contribution of Nonreligious Support

A hierarchical regression analysis was conducted examining the unique contribution of nonreligious social support in predicting PTG, beyond the proportion of variability accounted for by religious support and peer support. When religious support and peer support were entered in a first block of predictors, those variables accounted for 12.4% of the variability, which was statistically significant, $F(2, 89) = 6.31, p = .003$. When nonreligious social support was entered in a second block, it accounted for an additional 6.6% of the variability (R-squared change = .066). The unique contribution of nonreligious social support reached statistical significance, $F \text{ Change}(1, 88) = 7.17, p = .009$.

The Unique Contribution of Religious Support

A hierarchical regression analysis was conducted examining the unique contribution of religious support in predicting PTG, beyond the proportion of variability accounted for by nonreligious social support and peer support. When religious support and peer support were entered in a first block of predictors, those variables accounted for 15% of the variability, which was statistically significant, $F(2, 89) = 7.61, p = .001$. When religious support was entered in a second block, it accounted for an additional 4.4% of the variability, R-squared change = .044. The unique contribution of religious support reached statistical significance, $F \text{ Change}(1, 88) = 4.8, p = .031$.

The Unique Contribution of Peer Support

A hierarchical regression analysis was conducted examining the unique contribution of

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peer support (participation) in predicting PTG, beyond the proportion of variability accounted for by nonreligious social support and religious support. When religious support and nonreligious social support were entered in a first block of predictors, those variables accounted for 17.6% of the variability, which was statistically significant, $F(2, 89) = 9.48, p < .001$. When peer support was entered in a second block, it accounted for an additional 1.4% of the variability, $R\text{-squared change} = .014$. The unique contribution of peer support did not reach statistical significance, $F\text{ Change}(1, 88) = 1.56, p = .22$.

The Contribution of All Support Variables

When all support variables, religious support, peer support, and nonreligious social support were entered into the regression model, those variables accounted for 19% of the variability in predicting PTG. This reached statistical significance, $F(3, 88) = 6.88, p < .001$.

Hierarchical Regression: The Unique Contribution of Religiosity

A hierarchical regression analysis was conducted examining the unique contribution of religiosity in predicting PTG, beyond the proportion of variability accounted for by nonreligious social support, peer support, and religious support. When nonreligious social support, peer support, and religious support were entered in a first block of predictors, those variables accounted for 19% of the variability, which was statistically significant, $F(3, 88) = 6.88, p < .001$. When religiosity was entered in a second block, it accounted for an additional 0.7% of the variability, $R\text{-squared change} = .007$. The unique contribution of religiosity did not reach statistical significance, $F\text{ Change}(1, 87) = .704, p = .404$.

Discussion of the Results

Hypothesis 1

The first hypothesis stated that levels of PTG would differ in rural and non-rural breast

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cancer survivors, and this would be moderated by religious support. The results indicated that levels of PTG did not differ in rural and non-rural breast cancer survivors. Further, there was no interaction with religious support, nor with rural or non-rural status on PTG. Hypothesis 1 was not supported by the data. However, this should be interpreted with caution as there were not enough people who answered the county demographic question correctly, likely causing the data to have fewer participants categorized as rural or non-rural. Furthermore, from the few participants who did respond to this question, it seems that rural participants were underrepresented in the data.

Hypothesis 2

The second hypothesis stated that those with both religious and nonreligious support would have higher rates of PTG. This hypothesis was supported by a simple slopes analysis. Specifically, Graph 1 in Appendix B displays separate regression lines for religious support predicting posttraumatic growth when scores of social support are one standard deviation above their mean and one standard deviation below their mean. The highest predicted scores of PTG occur when the scores for religious support are one standard deviation above their mean and scores for nonreligious social support are one standard deviation above their mean.

Hypothesis 3

The third hypothesis suggested that levels of religious support would account for significant proportions of variability in scores for PTG, beyond that already accounted for by other types of perceived social support. This hypothesis was supported by the results. Results from the hierarchical regression analysis suggest that religious support did account for a significant proportion of variability in scores for PTG, beyond what was already accounted for by the other types of support. Nonreligious social support also accounted for a significant

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proportion of variability in scores for PTG, when entered into the same regression model with the other two types of support. Peer support was the only variable that did not account for a significant proportion of variability in scores for PTG. However, there was no previously established measure for peer support and not as many people had attended peer support groups as those who had other types of support, so this may have influenced the results.

CHAPTER V:

Discussion and Conclusion

This chapter provides an overview of the current study, beginning with a summary of the research project. Next, this chapter presents the current study's findings and examines how these relate to the existing literature. This chapter will then identify limitations of the current study as well as future directions for this field of research. Finally, this chapter will close with conclusions drawn from the current investigation.

Research Summary

The literature suggests that breast cancer, a potentially traumatic experience, leads to PTG in a majority (50-98%) of survivors (Guner-Kucukkaya, 2009; Sears, Stanton, & Danoff-Burg, 2003; Weiss, 2002). One factor, social support, is a commonly studied variable in the PTG literature. The Tedeschi and Calhoun model of PTG (1995) asserted that greater social support led to higher levels of PTG. Furthermore, researchers believed social support is a variable that can often be changed, making it a possibly valuable avenue of intervention for promoting PTG.

However, results of the relationship between social support and PTG have often been inconsistent, with most research finding a positive relationship and some research finding no relationship. Additionally, PTG has not been assessed in rural populations, which would be likely to rely on different types of support than non-rural populations because of the lack of other available supports and the higher reliance on religion and community for coping. Therefore, the purpose of this study was to discover whether PTG differed in rural and non-rural populations. Next, the researchers sought to understand the relationship between social support and posttraumatic growth, specifically three different types of social support: nonreligious, religious, and peer support. These three types of support have not previously been differentiated in the

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literature, and religious support has often been overlooked.

Summary of Results

The results of this study indicate that religiosity, religious support, and nonreligious social support all contribute to increased levels of posttraumatic growth. Rural and non-rural status did not have a significant effect on PTG. These results may be due to limitations of the study. Peer support had no significant effect on PTG. This finding may be due to limitations of the study, discussed in more detail below. Religiosity, religious support, and nonreligious social support all accounted for significant proportions of variability in PTG, but peer support did not. It is possible that this lack of significance resulted from the way peer support was measured as no established peer support scale exists at this time and the researcher had to rely on creating questions. Further, it could be because not all breast cancer survivors attended peer support groups, or alternatively, that not all survivors had access to a support group in the community, which could have skewed the data. Based on these results, it appears that the type of support is important in promoting higher levels of PTG in breast cancer survivors. Religious support and nonreligious social support contributed significantly to PTG. These findings imply that ensuring an individual has enough support or increasing that individual's support could potentially assist her in attaining PTG after trauma.

Limitations and Future Research

The current study endeavored to assess posttraumatic growth in a rural breast cancer population, a geographical location that is understudied and that, to date, has not been assessed for PTG. The researchers attempted to reach a difficult-to-survey population. Unfortunately, many participants answered "USA" for *county*, which eliminated over half of the sample data for geographical location, leaving a rural sample too small to yield meaningful results. Future

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researchers would benefit from adding a request for participants' zip codes to ensure that even if a participant were to misunderstand the question about county, sufficient data would remain available to determine the county of residence for rural and non-rural comparisons.

Furthermore, chain referral sampling, though a common and valid method of sampling, was not effective in the current study. One explanation may be that individuals who received the recruitment materials chose not to pass it on to other potential participants. The eligibility requirements may have been a barrier as some women have had multiple forms of cancer and many are past the 10-year survival mark. Changing eligibility requirements in future studies may result in a higher sample size and might allow researchers to find out the levels of PTG that exist during longer time periods.

In addition, the idea of recruiting through physicians' offices proved ineffective as the researcher was unable to locate many outpatient medical centers willing to participate. The patients waiting in the offices that allowed recruitment may not have believed there was time to complete the survey, may not have felt like completing the survey, or may not have been motivated to do so. No participants chose to complete and return a hard copy of the survey. One explanation may be that the internet is more convenient and requires less effort to submit the survey.

Amazon Mechanical Turk was one of the methods used in recruitment. A limitation of this method includes that participants are paid, though minimally, and it is a convenience sample. This is a limitation because it may not be representative of the population being studied. People who enlist in Amazon Mechanical Turk studies have internet access (which in rural areas is less common) and are likely more technologically savvy. Future researchers may consider recruiting participants in person at the general medical practitioner's office as people may be more likely to

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fill out a survey after being personally recruited and receiving an explanation of the study.

Establishing relationships with people in the rural communities may be helpful as people are more likely to pass on a study request and suggest other possible participants when they meet the researchers and become comfortable with them. In rural communities, it is not uncommon for individuals to distrust newcomers, so building rapport as a component of recruitment may be necessary to counteract such misgivings.

It would be helpful if a peer support measure were developed for comparing different types of support as the current study did not have a peer support questionnaire available, making comparison difficult. A peer support scale more comparable to the other measures included in the study (e.g., Likert scale and summed total) would be beneficial and make comparisons easier. Therefore, creation of a peer support scale would be an important next step for allowing comparisons of various types of support.

Future research should find ways to obtain a greater number of rural participants to examine the relationship between geographical location and PTG as this project, rather than determining that there is no difference, simply concludes that no difference was found in *this* study, which had few participants identified as rural.

Support could be further researched by dividing types of support to examine support from healthcare providers, adding additional types of peer support (e.g., online groups), and considering the types of benefits perceived from the support (e.g., emotional, tangible, instrumental). Support groups could be compared by type of activities, leaders, and quality of support. Religious support research would benefit from a larger sample of diverse religions to determine if type of religion impacts the support perceived from the religious support system. Qualitative research could be beneficial to investigate the themes surrounding PTG and support

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systems. Questions about quality, quantity, perceived benefits, types, and growth could be asked in an open-ended manner to discover themes that could direct a future quantitative research study.

Implications

The main implication of this study is that various types of social support can increase levels of PTG in breast cancer survivors. It is plausible that social support may be especially important during initial distress following trauma. Research by Shakespeare-Finch and Lurie-Beck (2014) found a curvilinear relationship such that symptoms of PTSD increased initially with PTG, however the relationship became negatively correlated when a critical point was reached in the severity of the traumatic symptoms. Therefore, taking into consideration the findings of the current study, we can speculate that if a survivor were to have enough social support during the initial distress, then that support might assist with meaning making, providing emotional and tangible resources, making sure basic needs were met, providing hope and humor, and more. Social support might be the variable that assists people in reaching growth instead of PTSD.

Further, research has found that communities can develop PTG (communal PTG), meaning that increasing the support in a community can increase the likelihood of PTG from traumatic experiences for its members (Włodarczyk et al., 2016). Community improvement projects, advocacy, and legislation to build stronger communities may be beneficial on a macro, systemic scale. On a smaller, mezzo scale, as a clinician being immersed in a community, identifying specific community needs and then applying for grants for those needs may help improve community support.

Conclusion

Based on the results of the current study, PTG levels appear to be high (50-98%) in breast cancer survivors, which replicates results of previous research (Guner-Kucukkaya, 2009; Sears, Stanton, & Danoff-Burg, 2003; Weiss, 2002). In support of much of the previous research (e.g., (Borja, Callahan, & Long, 2006; Cadell, Regehr, & Hemsworth, 2005; Cryder, Kilmer, Tedeshi, & Calhoun, 2006; Schulz & Mohamed, 2004), the current findings indicated that greater support led to higher levels of PTG. Specifically, when people had the highest levels of combined nonreligious and religious social support, they had the highest PTG. All types of support together accounted for 19% of the variability in predicting PTG.

This study's unique contribution was the examination of PTG in relation to three types of support, nonreligious social support, religious social support, and peer support, as well as religiosity. Results showed that religious support, religiosity, and nonreligious social support led to higher levels of growth. Based on these findings, it may be beneficial when working with breast cancer survivors to assess the support systems they possess, the quality of the existing support, and when appropriate, assist in bolstering support.

Peer support did not appear to have the same effect as religious support and nonreligious social support. Therefore, the implication may be that if peer support groups are unavailable in the breast cancer survivor's community, it may be more beneficial for a survivor to rely on supports available in the community than to drive great distances to seek peer support. This means that instead of creating new groups, which may constitute an additional expense, breast cancer advocates and care providers could bolster already existing supports, using the community's existing strengths. On a macro level, strengthening communities could increase the likelihood of people developing PTG.

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Though this study has been consistent with research on PTG and breast cancer survivors and has contributed in a unique way to the literature by differentiating types of support, the question remains as to whether levels of posttraumatic growth differ in rural and non-rural breast cancer survivors and whether any factors exist that may moderate or mediate that relationship.

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POSTTRAUMATIC GROWTH: TYPES OF SUPPORT

Appendix A: IRB Documents

Radford University P.O. Box 6946 Radford, VA 24142 (540) 831-5361(540) 831-6113 Fax. www.radford.edu. You are invited to participate in a survey, entitled “Posttraumatic growth in breast cancer survivors: Religious and nonreligious support in rural versus urban areas.” The study is being conducted by Dr. Ruth Riding-Malon and Savannah LeBarre in the Psychology Department of Radford University at P.O. Box 6946 Radford, Virginia 24142, ssimpson2@radford.edu. The purpose of this study is to examine differences in posttraumatic growth (positive changes after trauma) in a sample of rural and urban breast cancer survivors. Also, different types of support will be compared, seeing if a certain type of support leads to more growth. Your participation in the survey will contribute to a better understanding about the relationship between support and growth and whether or not rates of growth are similar or different for rural and urban breast cancer survivors. We estimate that this survey will take about 1 hour of your time. You are free to contact the above email address to discuss the survey. Risks to participation are considered minimal. There will be no costs for participating and no direct benefits. IP addresses will not be recorded and a limited number of research team members will have access to the data during data collection. Your participation in this survey is voluntary. You may decline to answer any question and you have the right to withdraw from participation at any time without penalty. If you wish to withdraw from the study or have any questions, contact the investigator listed above. You may also request a hard copy of the survey form the contact information above. If you have any questions about your rights as a study participant or are unsatisfied at any time with any aspect of this study you may contact Dr. Dennis Grady, Dean, College of Graduate and Professional Studies, Radford University, dgrady4@radford.edu, 1-540-831-5187. If you agree to participate, please press the arrow button at the bottom right of the

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screen. Otherwise, use the X at the upper right corner to close the window and disconnect. Thank you.

Survey

Demographics

1 How did you hear about this study?

- ☐ Email (1)
- ☐ Facebook (2)
- ☐ Breast cancer event (3)
- ☐ Local clinic (4)
- ☐ Another person (5)
- ☐ Other, Specify (6) _____

2 What is your age?

3 How would you describe your race?

- ☐ American Indian or Alaskan Native (1)
- ☐ Asian (2)
- ☐ African American (3)
- ☐ Native Hawaiian or Pacific Islander (4)
- ☐ Hispanic (5)
- ☐ More than one race/ethnicity (6)
- ☐ Other, Specify (7) _____

4 Please indicate which ONE of the following most accurately describes your present religious preference:

- ☐ Agnostic (1)

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- ☐ Atheist (2)
- ☐ Buddhist (3)
- ☐ Christian/Protestant (4)
- ☐ Catholic (5)
- ☐ Hindu (6)
- ☐ Jewish (7)
- ☐ Muslim (8)
- ☐ Pagan (9)
- ☐ Unitarian Universalist (10)
- ☐ Other, Specify (11) _____
- ☐ I believe in a higher power, but do not identify as religious (12)

5 Education level:

6 How many years has it been since your diagnosis?

7 How long ago was your last treatment (e.g., surgery, radiation, chemotherapy)?

8 Type of treatment:

- ☐ Mastectomy (1)
- ☐ Lumpectomy (2)
- ☐ Radiotherapy (3)
- ☐ Other, Specify (4) _____

9 Cancer stage:

10 How would you describe your relationship status?

- ☐ Married (1)
- ☐ Single (2)

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- ☐ Divorced (3)
- ☐ Separated (4)
- ☐ Other, specify (5) _____

11 What county and state do you reside in?

12 What is an estimation of your household yearly income?

Posttraumatic Growth Inventory: Indicate for each of the statements below the degree to which this change occurred in your life as a result of having breast cancer.

13 My priorities about what is important in life

- ☐ I did not experience this change as a result of having breast cancer (1)
- ☐ I experienced this change to a very small degree as a result of having breast cancer (2)
- ☐ I experienced this change to a moderate degree as a result of having breast cancer (3)
- ☐ I experienced this change to a great degree as a result of having breast cancer (4)
- ☐ I experienced this change to a very great degree as a result of having breast cancer (5)

14 An appreciation for the value of my own life

- ☐ I did not experience this change as a result of having breast cancer (1)
- ☐ I experienced this change to a very small degree as a result of having breast cancer (2)
- ☐ I experienced this change to a moderate degree as a result of having breast cancer (3)

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☐ I experienced this change to a great degree as a result of having breast cancer (4)

☐ I experienced this change to a very great degree as a result of having breast cancer

(5)

15 I developed new interests

☐ I did not experience this change as a result of having breast cancer (1)

☐ I experienced this change to a very small degree as a result of having breast

cancer (2)

☐ I experienced this change to a moderate degree as a result of having breast cancer

(3)

☐ I experienced this change to a great degree as a result of having breast cancer (4)

☐ I experienced this change to a very great degree as a result of having breast cancer

(5)

16 A feeling of self-reliance

☐ I did not experience this change as a result of having breast cancer (1)

☐ I experienced this change to a very small degree as a result of having breast

cancer (2)

☐ I experienced this change to a moderate degree as a result of having breast cancer

(3)

☐ I experienced this change to a great degree as a result of having breast cancer (4)

☐ I experienced this change to a very great degree as a result of having breast cancer

(5)

17 A better understanding of spiritual matters

☐ I did not experience this change as a result of having breast cancer (1)

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☐ I experienced this change to a very small degree as a result of having breast cancer (2)

☐ I experienced this change to a moderate degree as a result of having breast cancer (3)

☐ I experienced this change to a great degree as a result of having breast cancer (4)

☐ I experienced this change to a very great degree as a result of having breast cancer (5)

18 Knowing that I can count on people in times of trouble

☐ I did not experience this change as a result of having breast cancer (1)

☐ I experienced this change to a very small degree as a result of having breast cancer (2)

☐ I experienced this change to a moderate degree as a result of having breast cancer (3)

☐ I experienced this change to a great degree as a result of having breast cancer (4)

☐ I experienced this change to a very great degree as a result of having breast cancer (5)

19 I established a new path for my life

☐ I did not experience this change as a result of having breast cancer (1)

☐ I experienced this change to a very small degree as a result of having breast cancer (2)

☐ I experienced this change to a moderate degree as a result of having breast cancer (3)

☐ I experienced this change to a great degree as a result of having breast cancer (4)

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☐ I experienced this change to a very great degree as a result of having breast cancer
(5)

20 A sense of closeness with others

☐ I did not experience this change as a result of having breast cancer (1)
☐ I experienced this change to a very small degree as a result of having breast cancer (2)

☐ I experienced this change to a moderate degree as a result of having breast cancer
(3)

☐ I experienced this change to a great degree as a result of having breast cancer (4)
☐ I experienced this change to a very great degree as a result of having breast cancer
(5)

21 A willingness to express my emotions

☐ I did not experience this change as a result of having breast cancer (1)
☐ I experienced this change to a very small degree as a result of having breast cancer (2)

☐ I experienced this change to a moderate degree as a result of having breast cancer
(3)

☐ I experienced this change to a great degree as a result of having breast cancer (4)
☐ I experienced this change to a very great degree as a result of having breast cancer
(5)

22 Knowing I can better handle difficulties

☐ I did not experience this change as a result of having breast cancer (1)

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☐ I experienced this change to a very small degree as a result of having breast cancer (2)

☐ I experienced this change to a moderate degree as a result of having breast cancer (3)

☐ I experienced this change to a great degree as a result of having breast cancer (4)

☐ I experienced this change to a very great degree as a result of having breast cancer (5)

23 I'm able to do better things with my life

☐ I did not experience this change as a result of having breast cancer (1)

☐ I experienced this change to a very small degree as a result of having breast cancer (2)

☐ I experienced this change to a moderate degree as a result of having breast cancer (3)

☐ I experienced this change to a great degree as a result of having breast cancer (4)

☐ I experienced this change to a very great degree as a result of having breast cancer (5)

24 Being able to accept the way things work out

☐ I did not experience this change as a result of having breast cancer (1)

☐ I experienced this change to a very small degree as a result of having breast cancer (2)

☐ I experienced this change to a moderate degree as a result of having breast cancer (3)

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☐ I experienced this change to a great degree as a result of having breast cancer (4)

☐ I experienced this change to a very great degree as a result of having breast cancer

(5)

25 Appreciating each day

☐ I did not experience this change as a result of having breast cancer (1)

☐ I experienced this change to a very small degree as a result of having breast

cancer (2)

☐ I experienced this change to a moderate degree as a result of having breast cancer

(3)

☐ I experienced this change to a great degree as a result of having breast cancer (4)

☐ I experienced this change to a very great degree as a result of having breast cancer

(5)

26 New opportunities are available which wouldn't have been otherwise

☐ I did not experience this change as a result of having breast cancer (1)

☐ I experienced this change to a very small degree as a result of having breast

cancer (2)

☐ I experienced this change to a moderate degree as a result of having breast cancer

(3)

☐ I experienced this change to a great degree as a result of having breast cancer (4)

☐ I experienced this change to a very great degree as a result of having breast cancer

(5)

27 Having compassion for others

☐ I did not experience this change as a result of having breast cancer (1)

POSTTRAUMATIC GROWTH: TYPES OF SUPPORT

☐ I experienced this change to a very small degree as a result of having breast cancer (2)

☐ I experienced this change to a moderate degree as a result of having breast cancer (3)

☐ I experienced this change to a great degree as a result of having breast cancer (4)

☐ I experienced this change to a very great degree as a result of having breast cancer (5)

28 Putting effort into my relationships

☐ I did not experience this change as a result of having breast cancer (1)

☐ I experienced this change to a very small degree as a result of having breast cancer (2)

☐ I experienced this change to a moderate degree as a result of having breast cancer (3)

☐ I experienced this change to a great degree as a result of having breast cancer (4)

☐ I experienced this change to a very great degree as a result of having breast cancer (5)

29 I'm more likely to try to change things which need changing

☐ I did not experience this change as a result of having breast cancer (1)

☐ I experienced this change to a very small degree as a result of having breast cancer (2)

☐ I experienced this change to a moderate degree as a result of having breast cancer (3)

☐ I experienced this change to a great degree as a result of having breast cancer (4)

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☐ I experienced this change to a very great degree as a result of having breast cancer
(5)

30 I have a stronger religious faith

☐ I did not experience this change as a result of having breast cancer (1)
☐ I experienced this change to a very small degree as a result of having breast cancer (2)

☐ I experienced this change to a moderate degree as a result of having breast cancer
(3)

☐ I experienced this change to a great degree as a result of having breast cancer (4)
☐ I experienced this change to a very great degree as a result of having breast cancer
(5)

31 I discovered that I'm stronger than I thought I was

☐ I did not experience this change as a result of having breast cancer (1)
☐ I experienced this change to a very small degree as a result of having breast cancer (2)

☐ I experienced this change to a moderate degree as a result of having breast cancer
(3)

☐ I experienced this change to a great degree as a result of having breast cancer (4)
☐ I experienced this change to a very great degree as a result of having breast cancer
(5)

32 I learned a great deal about how wonderful people are

☐ I did not experience this change as a result of having breast cancer (1)

POSTTRAUMATIC GROWTH: TYPES OF SUPPORT

☐ I experienced this change to a very small degree as a result of having breast cancer (2)

☐ I experienced this change to a moderate degree as a result of having breast cancer (3)

☐ I experienced this change to a great degree as a result of having breast cancer (4)

☐ I experienced this change to a very great degree as a result of having breast cancer (5)

33 I accept needing others

☐ I did not experience this change as a result of having breast cancer (1)

☐ I experienced this change to a very small degree as a result of having breast cancer (2)

☐ I experienced this change to a moderate degree as a result of having breast cancer (3)

☐ I experienced this change to a great degree as a result of having breast cancer (4)

☐ I experienced this change to a very great degree as a result of having breast cancer (5)

Multidimensional Scale of Perceived Social Support. We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.

34 There is a special person who is around when I am in need

☐ Very Strongly Disagree (1)

☐ Strongly Disagree (2)

☐ Mildly Disagree (3)

POSTTRAUMATIC GROWTH: TYPES OF SUPPORT

- ☐ Neutral (4)
- ☐ Mildly Agree (5)
- ☐ Strongly Agree (6)
- ☐ Very Strongly Agree (7)

35 There is a special person with whom I can share my joys and sorrows.

- ☐ Very Strongly Disagree (1)
- ☐ Strongly Disagree (2)
- ☐ Mildly Disagree (3)
- ☐ Neutral (4)
- ☐ Mildly Agree (5)
- ☐ Strongly Agree (6)
- ☐ Very Strongly Agree (7)

36 My family really tries to help me.

- ☐ Very Strongly Disagree (1)
- ☐ Strongly Disagree (2)
- ☐ Mildly Disagree (3)
- ☐ Neutral (4)
- ☐ Mildly Agree (5)
- ☐ Strongly Agree (6)
- ☐ Very Strongly Agree (7)

37 I get the emotional help and support I need from my family.

- ☐ Very Strongly Disagree (1)
- ☐ Strongly Disagree (2)

POSTTRAUMATIC GROWTH: TYPES OF SUPPORT

- ☐ Mildly Disagree (3)
- ☐ Neutral (4)
- ☐ Mildly Agree (5)
- ☐ Strongly Agree (6)
- ☐ Very Strongly Agree (7)

38 I have a special person who is a real source of comfort to me.

- ☐ Very Strongly Disagree (1)
- ☐ Strongly Disagree (2)
- ☐ Mildly Disagree (3)
- ☐ Neutral (4)
- ☐ Mildly Agree (5)
- ☐ Strongly Agree (6)
- ☐ Very Strongly Agree (7)

39 My friends really try to help me.

- ☐ Very Strongly Disagree (1)
- ☐ Strongly Disagree (2)
- ☐ Mildly Disagree (3)
- ☐ Neutral (4)
- ☐ Mildly Agree (5)
- ☐ Strongly Agree (6)
- ☐ Very Strongly Agree (7)

40 I can count on my friends when things go wrong.

- ☐ Very Strongly Disagree (1)

POSTTRAUMATIC GROWTH: TYPES OF SUPPORT

- ☐ Strongly Disagree (2)
- ☐ Mildly Disagree (3)
- ☐ Neutral (4)
- ☐ Mildly Agree (5)
- ☐ Strongly Agree (6)
- ☐ Very Strongly Agree (7)

41 I can talk about my problems with my family.

- ☐ Very Strongly Disagree (1)
- ☐ Strongly Disagree (2)
- ☐ Mildly Disagree (3)
- ☐ Neutral (4)
- ☐ Mildly Agree (5)
- ☐ Strongly Agree (6)
- ☐ Very Strongly Agree (7)

42 I have friends with whom I can share my joys and sorrows.

- ☐ Very Strongly Disagree (1)
- ☐ Strongly Disagree (2)
- ☐ Mildly Disagree (3)
- ☐ Neutral (4)
- ☐ Mildly Agree (5)
- ☐ Strongly Agree (6)
- ☐ Very Strongly Agree (7)

POSTTRAUMATIC GROWTH: TYPES OF SUPPORT

43 There is a special person in my life who cares about my feelings.

- ☐ Very Strongly Disagree (1)
- ☐ Strongly Disagree (2)
- ☐ Mildly Disagree (3)
- ☐ Neutral (4)
- ☐ Mildly Agree (5)
- ☐ Strongly Agree (6)
- ☐ Very Strongly Agree (7)

44 My family is willing to help me make decisions.

- ☐ Very Strongly Disagree (1)
- ☐ Strongly Disagree (2)
- ☐ Mildly Disagree (3)
- ☐ Neutral (4)
- ☐ Mildly Agree (5)
- ☐ Strongly Agree (6)
- ☐ Very Strongly Agree (7)

45 I can talk about my problems with my friends.

- ☐ Very Strongly Disagree (1)
- ☐ Strongly Disagree (2)
- ☐ Mildly Disagree (3)
- ☐ Neutral (4)
- ☐ Mildly Agree (5)
- ☐ Strongly Agree (6)

POSTTRAUMATIC GROWTH: TYPES OF SUPPORT

- ☐ Very Strongly Agree (7)

Peer support. The following questions are about breast cancer support groups. If you did not attend a breast cancer support group, indicate no in the first questions and N/A for the following questions on this page.

46 Have you ever participated in a breast cancer support group?

- ☐ Yes (1)

- ☐ No (2)

47 What was the name of the group(s) that you attended?

48 How long did you attend the group(s)?

49 When did you begin to attend support group(s)?

- ☐ Upon initial diagnosis (1)

- ☐ During treatment (2)

- ☐ After treatment (3)

- ☐ Other, Specify (4) _____

50 How do you feel about the group(s) you attended?

51 On a scale of 1-5, one being not supportive and five being very supportive, how supportive did you find the group(s) attended?

Religious Support Scale. For the following questions, please read the statement and decide which answer fits best. If a question uses the term “God” you can substitute that term for the religious or spiritual term that best fits for your beliefs (e.g., higher power).

52 I can turn to others in my congregation for advice when I have problems

- ☐ Strongly Disagree (1)

- ☐ Disagree (2)

POSTTRAUMATIC GROWTH: TYPES OF SUPPORT

☐ Neutral (3)

☐ Agree (4)

☐ Strongly Agree (5)

53 If something went wrong, my local religious leaders would give me assistance

☐ Strongly Disagree (1)

☐ Disagree (2)

☐ Neutral (3)

☐ Agree (4)

☐ Strongly Agree (5)

54 God gives me the sense that I belong

☐ Strongly Disagree (1)

☐ Disagree (2)

☐ Neutral (3)

☐ Agree (4)

☐ Strongly Agree (5)

55 Others in my congregation care about my life and situation

☐ Strongly Disagree (1)

☐ Disagree (2)

☐ Neutral (3)

☐ Agree (4)

☐ Strongly Agree (5)

56 I have worth in the eyes of my local religious leaders

☐ Strongly Disagree (1)

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- ☐ Disagree (2)
- ☐ Neutral (3)
- ☐ Agree (4)
- ☐ Strongly Agree (5)

57 I feel appreciated by God

- ☐ Strongly Disagree (1)
- ☐ Disagree (2)
- ☐ Neutral (3)
- ☐ Agree (4)
- ☐ Strongly Agree (5)

58 I do not feel close to others in my congregation

- ☐ Strongly Disagree (1)
- ☐ Disagree (2)
- ☐ Neutral (3)
- ☐ Agree (4)
- ☐ Strongly Agree (5)

59 I can turn to local church leadership for advice when I have a problem

- ☐ Strongly Disagree (1)
- ☐ Disagree (2)
- ☐ Neutral (3)
- ☐ Agree (4)
- ☐ Strongly Agree (5)

60 If something went wrong, God would give me assistance

POSTTRAUMATIC GROWTH: TYPES OF SUPPORT

- ☐ Strongly Disagree (1)
- ☐ Disagree (2)
- ☐ Neutral (3)
- ☐ Agree (4)
- ☐ Strongly Agree (5)

61 Others in my congregation give me the sense that I belong

- ☐ Strongly Disagree (1)
- ☐ Disagree (2)
- ☐ Neutral (3)
- ☐ Agree (4)
- ☐ Strongly Agree (5)

62 My local religious leaders care about my life and situation

- ☐ Strongly Disagree (1)
- ☐ Disagree (2)
- ☐ Neutral (3)
- ☐ Agree (4)
- ☐ Strongly Agree (5)

63 I have worth in the eyes of God

- ☐ Strongly Disagree (1)
- ☐ Disagree (2)
- ☐ Neutral (3)
- ☐ Agree (4)
- ☐ Strongly Agree (5)

POSTTRAUMATIC GROWTH: TYPES OF SUPPORT

64 I feel appreciated by others in my congregation

- ☐ Strongly Disagree (1)
- ☐ Disagree (2)
- ☐ Neutral (3)
- ☐ Agree (4)
- ☐ Strongly Agree (5)

65 I do not feel close to my local religious leaders

- ☐ Strongly Disagree (1)
- ☐ Disagree (2)
- ☐ Neutral (3)
- ☐ Agree (4)
- ☐ Strongly Agree (5)

66 I can turn to God for advice when I have problems

- ☐ Strongly Disagree (1)
- ☐ Disagree (2)
- ☐ Neutral (3)
- ☐ Agree (4)
- ☐ Strongly Agree (5)

67 If something went wrong, others in my congregation would give me assistance

- ☐ Strongly Disagree (1)
- ☐ Disagree (2)
- ☐ Neutral (3)
- ☐ Agree (4)

POSTTRAUMATIC GROWTH: TYPES OF SUPPORT

☐ Strongly Agree (5)

68 My local religious leaders give me the sense that I belong

☐ Strongly Disagree (1)

☐ Disagree (2)

☐ Neutral (3)

☐ Agree (4)

☐ Strongly Agree (5)

69 God cares about my life and situation

☐ Strongly Disagree (1)

☐ Disagree (2)

☐ Neutral (3)

☐ Agree (4)

☐ Strongly Agree (5)

70 I have worth in the eyes of others in my congregation

☐ Strongly Disagree (1)

☐ Disagree (2)

☐ Neutral (3)

☐ Agree (4)

☐ Strongly Agree (5)

71 I feel appreciated by my local religious leaders

☐ Strongly Disagree (1)

☐ Disagree (2)

☐ Neutral (3)

POSTTRAUMATIC GROWTH: TYPES OF SUPPORT

- ☐ Agree (4)
- ☐ Strongly Agree (5)

72 I do not feel close to God

- ☐ Strongly Disagree (1)
- ☐ Disagree (2)
- ☐ Neutral (3)
- ☐ Agree (4)
- ☐ Strongly Agree (5)

Santa Clara Strength of Faith Questionnaire. We are interested in how you feel about the following statements. Read each statement carefully. Indicate how you feel about each statement.

73 My religious faith is extremely important to me

- ☐ Strongly Disagree (1)
- ☐ Disagree (2)
- ☐ Agree (3)
- ☐ Strongly Agree (4)

74 I pray daily

- ☐ Strongly Disagree (1)
- ☐ Disagree (2)
- ☐ Agree (3)
- ☐ Strongly Agree (4)

75 I look to my faith as a source of inspiration

- ☐ Strongly Disagree (1)
- ☐ Disagree (2)

POSTTRAUMATIC GROWTH: TYPES OF SUPPORT

☐ Agree (3)

☐ Strongly Agree (4)

76 I look to my faith as providing meaning and purpose in life

☐ Strongly Disagree (1)

☐ Disagree (2)

☐ Agree (3)

☐ Strongly Agree (4)

77 I consider myself active in my faith or church

☐ Strongly Disagree (1)

☐ Disagree (2)

☐ Agree (3)

☐ Strongly Agree (4)

78 My faith is an important part of who I am as a person

☐ Strongly Disagree (1)

☐ Disagree (2)

☐ Agree (3)

☐ Strongly Agree (4)

79 My relationship with God is extremely important to me

☐ Strongly Disagree (1)

☐ Disagree (2)

☐ Agree (3)

☐ Strongly Agree (4)

80 I enjoy being around others who share my faith

POSTTRAUMATIC GROWTH: TYPES OF SUPPORT

- ☐ Strongly Disagree (1)
- ☐ Disagree (2)
- ☐ Agree (3)
- ☐ Strongly Agree (4)

81 I look to my faith as a source of comfort

- ☐ Strongly Disagree (1)
- ☐ Disagree (2)
- ☐ Agree (3)
- ☐ Strongly Agree (4)

82 My faith impacts many of my decisions

- ☐ Strongly Disagree (1)
- ☐ Disagree (2)
- ☐ Agree (3)
- ☐ Strongly Agree (4)

Appendix B: Tables and Graphs

Table 1. Demographic Information of Participants

Demographics	N	Percentage
Recruitment		
Email	12	12.1
Facebook	7	7.1
Local event	19	19.2
Another person	19	19.2
Other, specify	42	42.4
Race		
American Indian/Alaska Native	6	6.1
Asian	6	6.1
African American	14	14.1
Hispanic	4	4
Caucasian	58	58.6
Other	4	4
More than one	5	5.1
Missing	2	
Religion		
Agnostic	7	7.1
Atheist	2	2
Christian/Protestant	48	48.5
Catholic	21	21.2
Hindu	5	5.1
Muslim	2	2
Pagan	1	1
Unitarian Universalist	2	2
Higher power, not religious	9	9.1
Missing	2	
Education		
HS graduate	12	12.1
Some College	20	20.2
Associate's Degree	16	16.2
Bachelor's Degree	28	28.3
Master's Degree	19	19.2
Doctoral Degree	3	3
Other	1	1

POSTTRAUMATIC GROWTH: TYPES OF SUPPORT

Income (household)		
Less than 10,000	6	6.1
10,000-19,999	7	7.1
20,000-34,999	15	15.2
35,000-49,999	14	14.1
50,000-74,999	17	17.2
75,000-99,999	13	13.1
100,000-149,999	13	13.1
150,000-199,999	8	8.1
200,000 and up	2	2
Missing	4	
Relationship status		
Married	60	60.6
Single	24	24.2
Divorced	8	8
Separated	1	1
Other	5	5.1
Missing data	1	
Geographical location		
Non-rural	35	35.4
Rural	12	12.1
Missing (put USA for county)	52	

POSTTRAUMATIC GROWTH: TYPES OF SUPPORT

Table 2. Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1 Rural/Non-rural	1	.08	-.17	.14	.21	-.04	.07	.32*	.14	.00	-.00	.07	.17	.20
2 PTGI	.08	1	.34**	-.17	.04	.31**	.36**	.12	.10	-.21*	-.17	.11	-.03	.41**
3 Social Support	-.17	.34**	1	-.02	.22*	.37**	.34*	.38**	.29**	.06	-.14	.35**	-.20	.39**
4 Peer Support (participate)	.14	-.17	-.02	1	.67**	.01	.00	.20	.21	.06	-.08	.10	.19	-.05
5 Peer Support (support)	.21	.04	.22*	.67**	1	.07	.07	.34**	.20	.15	-.05	.28**	.19	.21
6 Religious Support	-.04	.31**	.37**	.01	.07	1	.83**	.33**	.19	-.15	-.14	.02	-.16	.17
7 Religiosity	.07	.36**	.24*	.00	.07	.83**	1	.32**	.16	-.15	-.16	.03	-.15	.14
8 Age	.32**	.12	.38**	.20	.34**	.33	.32**	1	.59**	.10	.88	.35**	.12	.35**
9 Race	.14	.10	.29**	.21*	.20	.19	.16	.59**	1	.04	-.11	.29**	.06	.23**
10 Religion	.02	-.21*	.06	.06	.15	-.15	-.15	.10	.04	1	.17	.20	-.02	.04
11 Education	-.00	-.17	-.14	-.08	-.05	-.14	-.16	.09	-.11	.17	1	.28**	-.11	-.02
12 Income	.06	.11	.35**	.10	.28**	.02	.03	.35**	.28**	.20	.28**	1	-.25**	-.23**
13 Relationship Status	.17	-.03	-.20	.19	.19	-.16	-.15	.12	.06	-.02	-.11	-.25**	1	.01
14 How distressing was dx	.20	.41**	.39**	-.05	.21	.17	.14	.35**	.23*	.04	-.02	.23**	.01	1

POSTTRAUMATIC GROWTH: TYPES OF SUPPORT

Graph 1: Simple Slopes

