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RELIGIOSITY AND DISPOSITIONAL OPTIMISM WHILE AWAITING
BREAST CANCER DIAGNOSIS

By

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Abstract

Research suggests that dispositional optimism (i.e., the tendency to expect good things in one's future) is beneficial in many domains, including when people face stressful health events. Other evidence reveals the benefits of religion for coping with health and wellness issues. However, little research has examined how these protective factors may influence how people cope with stressful uncertainty while waiting for news about their health, including the wait for breast biopsy results. Thus, the purpose of this study is to investigate the relationship between optimism and religiosity and how they influence coping and well-being in women awaiting the results of breast biopsies. We recruited and interviewed 195 female participants (M_{age} = 45.5; 77% Latina) at their biopsy appointment. The interview included a brief measure of perceived religiosity and a well-validated measure of dispositional optimism. Participants then completed daily surveys during the wait for biopsy results, which included measures of health and well-being. Analyses examined how religiosity and optimism played independent and interrelated roles in predicting health and well-being during the wait for biopsy results and found positive associations for both religiosity and optimism with positive emotions and negative associations for both in regards to negative emotions.

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Introduction

During times of high stress and anxiety, especially in situations pertaining to one's health and well-being, it can be difficult to find and rely on coping mechanisms to motivate one through periods of uncertainty. In the context of awaiting breast biopsy results, simply being put in that situation can be enough for even the best optimists to brace for the worst and resort to pessimistic thinking (Sweeny and Falkenstein, 2016). Dispositional optimism has been shown to be an effective coping technique during stressful health-related situations (Scheier and Carver, 1987; Stanton and Snider, 1993). Additionally, religiosity and/or maintaining a spiritual belief has also shown promising results in regards to coping with health and wellness related issues. In the present study, we will be investigating how religiosity and dispositional optimism, among other variables, play a role in predicting health and well-being during the wait for biopsy results.

Dispositional Optimism

Dispositional optimism is the tendency to expect good things in one's future. It shares many similar attributes with constructs such as hope and self-efficacy, but differs in that it focuses directly on positive and negative expectations (Carver and Scheier, 2014). It is evident that those who engage in optimistic behaviors and maintain optimistic beliefs about their future differ from pessimists, or even realists, in how they choose to cope with situations, disclose information with others, and confront their issues. Optimism can be used as an effective coping strategy when navigating periods of uncertainty in efforts to reduce anxiety or rumination (Sweeny and Andrews, 2014). Optimism has an inverse relationship with hopelessness, promotes the ability to remain resilient during stressful or traumatic situations, and is partly influenced by socioeconomic factors (Carver et al., 2010).

Optimism and Health

In the context of medical situations, various studies have demonstrated positive effects of holding optimistic thoughts before, during, and after different types of procedures. An analysis on incident coronary heart disease and mortality among women through the Women's Health Initiative found that anger and hostility predict cardiovascular disease, whereas optimists were less likely to be hypertensive and diabetic (Tindle et al., 2018). Additionally, research found that following coronary artery bypass graft surgery, depressed patients who held optimistic perceptions were responsive and receptive to depression treatment at greater rates than their non-optimistic counterparts (Tindle et al., 2012). Optimists also maintained a lower probability of rehospitalization eight months after this procedure.

Aside from cardiovascular outcomes, various studies have also found positive outcomes for optimists experiencing breast cancer or awaiting biopsy results. In this study, women were interviewed at various time points, which include during initial diagnosis, one day before surgery, a few days after surgery, and three, six, and twelve months after surgery. During the initial assessment, it was found that optimism predicted lower levels of distress as time progressed and also predicted a greater level of resilience against distress throughout the entire year (Carver et al., 1993). A separate study also found that those with optimistic tendencies experienced lower levels of distress leading up to their surgery (Montgomery et al., 2002). A more recent study investigated the relationship between optimism and emotional well-being with mediation through social support, problem-focused coping, and self-transcendence (e.g., expanding one's conceptual boundaries, inward and outward, through introspective activities, concern for the welfare of others, and analyzing an individual's perception of their past and future to augment their present state) and found that there was a positive relationship in regards to emotional well-being (Matthews and Cook, 2008). Generally speaking, many studies have

found that having an overall optimistic outlook during a critical time in an individual's health has resulted in experiencing a better overall quality of life in relation to awaiting breast biopsy results. Finally, although not directly related to dispositional optimism, a study by Sweeny and colleagues found that Latina patients and those with a higher educational attainment awaiting breast biopsy results made a greater effort to be optimistic, and these efforts were associated with somewhat less distress during the wait (Sweeny et al., 2018).

Religiosity

Various studies have found that maintaining religious beliefs while enduring medical illnesses is beneficial for the ability to cope. An analysis by Koenig and colleagues found that it is common for many to turn to religion and religious practices to regain a sense of control, sustain hope, and retain meaning and purpose in their life (Koenig et al., 2001). In some instances, it is evident that many see religion as a way of buffering the negative emotions associated with medical diagnoses or as a way of framing the situation such that it turns into an experience from which to grow, strengthening the religious bond some have. Another study investigated the association between religion and its ability to act as a buffer or deterrent while adjusting to life with an illness. Results found that religion is commonly used as a means of gaining more emotional support and can be used as an effective coping strategy during such turbulent times (Siegel et al., 2001). Furthermore, research suggests that using religion as a schema in the context of filling in gaps of missing information may help in the context of coping. As mentioned in an article by McIntosh (1995), individuals are able to combine their knowledge with religious schemas as a way to connect with information they may not know or understand (e.g., awaiting a biopsy diagnosis as a means of testing their faith). Another example of this is individuals' perception of their ability to recover from an illness, such as making the assumption

that prayer allowed them to overcome the illness rather than relying on the scientific basis that medication and treatment were the cause of the cure (McIntosh, 1995). Maintaining the ability to use schemas as a religious justification towards adversity in the context of health can serve as a coping mechanism for those who heavily rely on their faith.

In the context of specifically being able to cope with cancer, many adults find themselves partaking in some form of religious activity to mitigate the uncertainty of awaiting their results or the emotional pain associated with a positive diagnosis. One study found that those who have a stronger connection with their religious background reported lower levels of pain, anxiety, and hostility while also experiencing a greater sense of life satisfaction (Jenkins and Pargament, 1995). Furthermore, it is apparent that many who have already been diagnosed with cancer use religion as a way to cope with the diagnosis, trying to piece together their new reality of living with cancer. Whether awaiting results or making sense of them, many believe that engaging in prayer is an effective coping mechanism even when they feel like their prayers are not answered (Caplan et al., 2014). Lastly, those who engage in religious practices find that they develop a greater amount of social support, which could possibly be attributed to group prayer or other religious group activities.

Overview and Hypotheses

With extensive consideration of the supporting data on religiosity during stressful situations and the benefits of dispositional optimism within the domain of health and well-being, this study was concerned with identifying the relationship between these two variables, should one exist, and how they could be interrelated during the biopsy waiting period. We hypothesize that these two factors aid in the coping experience for women awaiting biopsy results while minimizing the negative emotions affiliated with uncertainty. Being able to identify the

relationship between dispositional optimism and religiosity within the context of uncertainty can allow researchers to develop interventions to improve the pre-diagnostic experiences for patients in the future.

Methods

Participants

Female patients ($N = 195$) were given the opportunity to participate in an interview prior to their breast biopsy appointment in a local Southern California hospital between April 2017 and January 2020. Patients who had previously received an abnormal mammography were recommended to follow-up with a breast biopsy. Patients who were eligible to participate in the study were fluent in either English or Spanish (49% of interviews were conducted in Spanish), were at least 18 years of age ($M_{age} = 45.93$, $SD_{age} = 11.90$), and were not currently incarcerated. The typical waiting period for biopsy results ranged between seven to ten days upon the patient's completion of the breast biopsy. Participants were 74% Latina, 49% married, and 38% employed.

Procedures

Biopsy Interview

Patients were first informed about the study via the hospital staff when conducting their routine reminder calls regarding their biopsy appointments. Those who were interested in participating and/or learning more about the study were asked to arrive 30 minutes prior to their biopsy appointment. Upon check-in at the hospital, patients were escorted into a private room within the Radiology Department where they would be introduced to a trained research member who would execute the interview should the patient decide to participate. Prior to conducting the

interview, researchers provided a more thorough explanation in regards to the content and purpose of the study and completed all required consent procedures.

After the consent process, a structured interview was conducted that lasted approximately 20 minutes and covered a variety of topics (see below for measures relevant to this investigation). Upon completion of the interview, participants were given a binder containing a series of daily measures which were instructed to be completed at home throughout the waiting period leading up to their follow-up appointment. Participants were compensated \$10 for completing the initial interview.

Daily Surveys

Researchers provided participants with a binder containing 10 days of daily measures to be completed following their biopsy interview. The daily measures were to be answered in the morning and evening, when participants would record the duration and quality of their sleep in the morning and emotional well-being, effectiveness of their coping strategies, rumination, social support, and physical symptoms in the evening (see below for measures relevant to this investigation). Participants were asked to complete these daily measures until the day of their follow-up appointment, when they would bring it with them and return it to a researcher at a location convenient for both parties. Participants were compensated \$30 upon return of the binder.

Measures

The primary measures of interest for this study were religiosity and optimism, obtained through biopsy interviews, and measures of well-being obtained at the biopsy appointment and during the wait for results.

Biopsy Interview Measures

Religiosity. Participants reported their religious affiliation in their initial interview, followed with a question regarding their level of religiosity (1 = *not at all religious*, 10 = *extremely religious*; $M = 6.31$, $SD = 2.30$). Regarding religious affiliation, 53% of participants identified as Catholic, 33% as Christian (other), 1% as Muslim, 0.5% as Buddhist, 6% as non-religious, and 8% as other.

Optimism. Dispositional optimism was assessed with the Life Orientation Task-Revised (Scheier, Carver, & Bridges, 1994), minus the filler items (e.g., “In uncertain times, I usually expect the best”; 1 = *strongly disagree*, 7 = *strongly agree*; $M = 5.14$, $SD = 1.07$).

Rumination. This measure contained three items in the initial biopsy interview (e.g., “Breast cancer was never far from my mind”; 1 = *strongly disagree*, 7 = *strongly agree*). These measures assessed persistent thoughts related to breast cancer throughout the participant’s day. These items were then averaged to form a composite score ($M = 4.70$, $SD = 1.91$).

Physical Symptoms. Physical symptoms were measured through a series of items asking participants to recall if they have experienced any of the mentioned symptoms (e.g., upset stomach or nausea, backache, headache) that day (0 = *no*, 1 = *yes*; $M = .29$, $SD = .23$)

Emotions. Emotion and feelings of anxiety were measured throughout various timepoints. One series of emotion-based items evaluated participants’ emotional states during the present time (“How much of the time today have you felt [anxious / sad / happy]?” 1 = *none of the time*, 4 = *all of the time*; $M_s = 2.34, 1.70, 2.59$, respectively; $SD_s = .99, .86, .98$). A second series of emotion items asked participants to recall their emotional state following an abnormal mammogram result (“During that time, between the mammogram results and today, how much of the time did you feel [anxious / sad / happy]?” 1 = *none of the time*, 4 = *all of the time*; $M_s = 2.46, 2.03, 2.43$, respectively; $SD_s = .90, .89, .88$). Lastly, a third series of measures asked

participants to speculate how they would feel in the following week (e.g., during the waiting period: “On average, how much of the time each day do you think you will feel [anxious/ sad/ happy] while you’re waiting for your biopsy results?”; $M_s = 2.61, 1.89, 2.63$, respectively; $SDs = .92, .82, .87$)

Support Availability. During the initial interview, participants reported the degree to which they thought social support was available to them. This measure contained four items extracted from the Medical Outcomes Study (MOS; Sherbourne & Stewart, 1991), which evaluated four different types of support with one item (tangible support, “How often do you have someone to help you with your daily chores if you were sick?”; informational support, “How often do you have someone to turn to for suggestions about how to deal with a personal problem?”; positive social interaction, “How often do you have someone to do something enjoyable with?”; affectionate support, “How often do you have someone to love and make you feel wanted?”; for all, 1 = *none of the time*, 4 = *all of the time*; $M = 3.11$, $SD = .74$).

Daily Diary Measures

Emotions. Participants’ daily emotional state was evaluated through a series of items (“How much of the time today did you feel each of the emotions?” ; 1 = *none of the time*, 4 = *all of the time*) where nine of these items were related to positive emotions (e.g., happiness, interest, joy; $M = 2.00$, $SD = .56$) and 15 addressed negative emotions (e.g., despair, shame, disappointment; $M = 1.35$, $SD = .42$).

Rumination. This measure consisted of a three-item assessment of the extent to which participants believed they could control their thoughts pertaining to breast cancer as well as the impact associated with these thoughts (e.g. “Breast cancer was never far from my mind”; 1 = *strongly disagree*, 5 = *strongly agree*; $M = 2.63$, $SD = 1.09$).

Sleep Quality. The morning questionnaires asked participants to report the quality of their sleep from the night before through a one-item measure (“How would you rate the quality of your sleep last night?”; 1 = *very bad*, 4 = *very good*; $M = 2.90$, $SD = .60$).

Perceived Support. A one-item measure in the evening surveys inquired about participants’ social interactions (“How supported did you feel in your interactions with friends and family today?”; 1 = *not at all*, 5 = *completely*; $M = 3.86$, $SD = .99$).

Physical Symptoms. Similar to the measures included in the initial biopsy interview, participants were asked to recall if they experienced any of the listed symptoms that day ($M = .21$, $SD = .20$).

Results

Associations with Well-Being at the Biopsy Appointment

Optimism

We first examined associations between optimism and well-being as reported during the biopsy interview. We found that optimism was associated with positive factors in the context of well-being while having an inverse relationship with negative factors. Notably, participants who reported greater levels of optimism during the biopsy appointment also reported having lower levels of repetitive thoughts, $r(195) = -.23$, $p = .001$, and felt they had more social support available to them, $r(191) = .20$, $p = .005$. Although more optimistic participants reported somewhat fewer physical symptoms of stress, $r(192) = -.10$, $p = .18$, the association was not statistically significant.

In regards to specific emotions, participants who were higher in optimism reported less anxiety during the present moment, $r(191) = -.14$, $p = .05$, and predicted somewhat less anxiety during the wait for their biopsy results $r(190) = -.14$, $p = .06$. The association between optimism

and recalled anxiety since their abnormal mammogram was not significant, $r(190) = -.09, p = .19$. Participants higher in optimism also reported less sadness during the present moment of the interview $r(192) = -.20, p = .006$, and less sadness since their abnormal mammogram $r(190) = -.17, p = .02$, and predicted less sadness during the wait for their results $r(191) = -.17, p = .02$. Finally, those who were more optimistic also recalled more happiness since their mammogram $r(190) = .15, p = .04$, and anticipated greater levels of happiness during the wait for their biopsy results $r(189) = .23, p = .001$, but were not significantly happier on the day of the interview $r(192) = .08, p = .27$.

Religiosity

We then examined associations between religiosity and well-being as assessed at the biopsy interview. Surprisingly, religiosity was not significantly associated with most indicators of well-being, including repetitive or persistent thoughts, $r(194) = -.08, p = .29$, physical symptoms of stress, $r(191) = -.09, p = .20$, and social support availability, $r(190) = .07, p = .34$.

When examining emotions, religiosity was again largely unrelated to recalled, experienced, and predicted emotions. Religiosity was not significantly associated with anxiety during the day of the biopsy interview $r(190) = -.02, p = .80$, anxiety since their abnormal mammogram (although the association approached significance), $r(189) = -.13, p = .07$, or predicted feelings of anxiety during the wait for their biopsy results $r(189) = -.11, p = .13$. Similarly, religiosity was not significantly associated with sadness during their biopsy interview, $r(191) = -.05, p = .53$, sadness since their abnormal mammogram, $r(189) = -.09, p = .22$, or predicted sadness during the waiting period for their results $r(190) = -.02, p = .72$. In contrast, more religious participants reported greater levels of happiness during their biopsy interview, $r(191) = .14, p = .04$, and recalled more feelings of happiness since their mammogram, $r(189) =$

.17, $p = .02$, and anticipated somewhat greater feelings of happiness during the waiting period for their results, $r(188) = .12$, $p = .11$.

Association with Well-Being During the Wait for Results

Optimism

We also investigated associations between optimism and the measures of emotional and psychological well-being assessed during the waiting period for participants' biopsy results. We found a negative association between optimism and negative emotions during the wait, $r(102) = -.26$, $p = .008$, as well as repetitive thought, $r(101) = -.20$, $p = .05$. Optimism was positively associated with perceived social support during the wait, $r(100) = .27$, $p = .007$. Optimism was not significantly associated with physical symptoms of stress, $r(101) = -.15$, $p = .14$, positive emotions, $r(102) = .12$, $p = .24$, or sleep quality $r(102) = .11$, $p = .30$.

Religiosity

Finally, we investigated possible associations between religiosity and the measures of emotional and psychological well-being assessed during the waiting period for participants' results. Religiosity was a more consistent predictor of well-being during the wait than at the biopsy appointment. Specifically, more religious participants experienced more positive emotions, $r(101) = .25$, $p = .01$, experienced better sleep quality, $r(101) = .28$, $p = .004$, perceived more social support, $r(99) = .20$, $p = .05$, and experienced fewer physical symptoms of stress, $r(100) = -.19$, $p = .05$. Religiosity was not significantly associated with negative emotions, $r(101) = -.13$, $p = .19$, or repetitive thoughts, $r(100) = -.13$, $p = .19$.

Discussion

As hypothesized, we found strong evidence that optimism was positively associated with positive emotions and negatively associated with negative emotions, indicating that optimism

could be positively associated with overall well-being during the wait for breast biopsy results. However, our results were not statistically significant for measures such as symptoms of physical stress, sleep quality, or recalled anxiety since participants' abnormal mammograms. Additionally, we found that religiosity was also positively associated with some indicators of well-being, but the results were quite weak and inconsistent, especially at the biopsy appointment.

We hypothesized that there would be stronger associations across the board between both of these variables and our well-being measures. Although this was not the case, we felt that the results are nonetheless notable. Optimism's association with overall well-being demonstrated its potential for mitigating negative emotions and experiences during the biopsy waiting period. However, this was not necessarily the case for religiosity, with results being more inconsistent. This was seen for most of our measures, such as repetitive thoughts, physical symptoms of stress, and social support availability among others. Despite this being the case, the data extracted from this study does still demonstrate that religion can help with coping, at least to some degree, and can be further investigated at a greater depth in future studies.

Furthermore, our results suggest that there could be an alternative explanation or other moderating factors influencing these experiences due to the inconsistencies in regards to our findings with the religiosity variable. Because religiosity can be practiced in such a fluid manner, we believe that this could be a factor greatly influencing a subjective measure of personal religiosity and spirituality and how it influences individual experiences in the waiting process. While this does not dismiss the importance of our findings, our results show that religiosity can be an effective coping technique for some.

Limitations

Despite working with a relatively large sample size at the beginning of our study, a primary limitation we acknowledge is the fact that our population is limited to one local Southern California hospital. Given this, it is always possible that our data could be skewed due to the demographics of our population. Additionally, although the undergraduate researchers who took part in executing this study were well-trained, we understand that there could be discrepancies in the way questions were conveyed to participants which could result in confounding effects.

Another primary limitation we encountered was a high rate of attrition throughout the study, as we had lower numbers of recurrent participants with many fewer women participating in the waiting period surveys than those who joined in the initial biopsy interview. Additionally, there were instances where it became difficult to coordinate a time or location convenient for both the researcher and the participant to collect the binder of completed daily measures. This resulted in fewer responses in regards to the daily measures in comparison to the initial biopsy interview. Lastly, because we only included women who decided to proceed with having a biopsy done following the result of an abnormal mammogram, we miss out on examining the effects of receiving an abnormal result and deciding not to follow through with having a biopsy done.

We understand that emotions can vary across time and can also change in an instant. Because we are not constantly monitoring participants' emotional well-being, it is possible that we might not be able to grasp the full scope of their emotions throughout an entire day as accurately as possible. Given that our measures pertaining to emotion are subjective and based on the perceptions of the participants, it is always a possibility that our data could be positively

or negatively skewed in regards to what they may feel on the day of their biopsy interview, after their mammogram results, or even what they may feel on a daily basis during the waiting period.

Future Directions

To provide further depth to this study, we believe that it would be beneficial to look into individual differences between various religions to see if our findings, as well as future findings, can be generalized across a multitude of religious backgrounds. In order to do this, it is essential that future replications expand the population size of the study beyond one hospital in order to strengthen the external validity of the study, but also to truly garner a diverse population that does not lean to any specific demographic. Future research within this domain will be able to build upon the foundation that we have built and investigate further relationships and associations within our variables of interest. In doing so, we are able to gain a greater understanding of their influence on the waiting process and coping techniques as well as other possible influencing or moderating factors.

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