Patient Perspectives on the Causes of Breast Cancer: A Qualitative Study on the Relationship Between Stress, Trauma, and Breast Cancer Development

Helané Wahbeh (✉ hwahbeh@noetic.org)
Institute of Noetic Sciences  https://orcid.org/0000-0003-3650-4633

Erica Niebauer
Institute of Noetic Sciences

Nina Fry
Institute of Noetic Sciences

Lisa A. Auster-Gussman
Northwestern University

Research Article

Keywords: breast cancer, trauma, adverse childhood events

Posted Date: March 11th, 2021

DOI: https://doi.org/10.21203/rs.3.rs-312043/v1

License: ©  This work is licensed under a Creative Commons Attribution 4.0 International License. Read Full License

Version of Record: A version of this preprint was published at International Journal of Qualitative Studies on Health and Well-being on October 25th, 2021. See the published version at https://doi.org/10.1080/17482631.2021.1983949.
Patient Perspectives on the Causes of Breast Cancer: A Qualitative Study on the Relationship Between Stress, Trauma, and Breast Cancer Development

Authors:

Erica Niebauer
Nina Fry
Lisa A. Auster-Gussman
Helané Wahbeh
Abstract

Objectives
We qualitatively evaluated breast cancer survivors’ perception of the relation between breast cancer development and both childhood trauma and stressful life events in adulthood.

Methods
Women (N = 50) who have or had a positive breast cancer diagnosis completed a close-ended survey, a timeline of significant life events, and an in-depth interview. All interviews were transcribed and inductively coded using thematic analysis with an emphasis on patient perspectives of illness.

Results
Participants reported a perceived connection between breast cancer development and stressful life events, and five themes were identified: 1) major interpersonal conflict in both childhood and adulthood, 2) patterns of stressful life events in childhood and adulthood, 3) ideas about why breast cancer developed, 4) relation between emotional stress and physical disease, 5) post-traumatic growth and meaning-making.

Conclusion
Our findings suggest the need for future research evaluating the long-term sequelae of stress and childhood trauma in breast cancer development.
Background

Breast Cancer is the most common cancer diagnosis in women worldwide (WHO, 2021). The World Health Organization estimated that 2,261,419 women were diagnosed with, and 684,996 women died from breast cancer in 2020 (WHO, 2021). These statistics suggest the ever-increasing importance of understanding survivors’ perceptions of their disease as breast cancer has numerous effects on individuals’ quality of life.

Psychological, behavioral, and emotional risk factors for developing breast cancer have been previously investigated, particularly stress, trauma, and adverse life experiences. Results from a recent systematic review suggest evidence of links between stress, adverse life events, and the risk of developing breast cancer (Chiriac et al., 2018). Researchers have further suggested that stress has a “clear connection” physiologically to breast cancer (Antonova et al., 2011). For example, women who reported more adverse childhood experiences (ACES), such as emotional, sexual, or physical abuse or approximation to mental illness or addiction, had higher odds of cancer diagnosis, although this study was not limited to breast cancer specifically (Alcala et al., 2017).

Adverse life experiences and the associated stress have also been shown to be related to disease progression and symptoms. For example, experience of childhood emotional abuse is related to more intrusive breast cancer symptoms (Goldsmith et al. 2006), whereas women without stress or trauma history have been shown to have slower disease progression than those with a history of one or more incidents (Palesh et al., 2007). Moreover, childhood maltreatment is related to psychological distress symptoms and lower quality of life among women undergoing breast cancer treatment (Kuhlman et al. 2017, Fagundes et al. 2012, Janusek et al. 2012, Han et al. 2015). Finally, breast cancer patients who experienced childhood sexual abuse reported
feeling triggered and reminded of past abuse during treatment (Schnur et al. 2017, Gallo-Silver et al., 2006) and having less supportive relationships with their healthcare team (Clark et al. 2011).

Patient perspectives of the relation between stress and development of breast cancer have been previously examined. In two qualitative studies, 58.1% and 42.2% of women who cited a specific cause of their breast cancer development reported stress as this cause (Panjari et al., 2012, Stewart et al., 2001). Additionally, results from a systematic review of causal attributions of breast cancer by survivors reported 16 studies with evidence that survivors attributed their own breast cancer diagnosis to stress (Dumalaon-Canaria et al., 2014).

This study builds upon previous literature evaluating cancer survivors’ general perceptions of breast cancer etiology and extends it by examining breast cancer survivors’ perceptions of the relationship between lifetime traumatic events and breast cancer development. Specifically, we investigated whether survivors perceive childhood trauma patterns re-triggered in adulthood as related to breast cancer development. The study’s research question was, “Do survivors perceive lifetime traumatic events, including physical, emotional, and energetic trauma (of a controlling, neglectful, or abusive nature), as connected to their breast cancer development?” We hypothesized that individuals’ might perceive the triggering of childhood trauma in adulthood as precipitating their breast cancer diagnosis. To investigate this hypothesis, we conducted an exploratory qualitative research study to evaluate survivors’ perceptions of the relationship between lifetime trauma and breast cancer development.

**Methods**

**Participants**

We recruited participants through the Institute of Noetic Sciences (IONS) listserv, blogs, general eNewsletter (membership ~65,000), Community Groups-specific eNewsletter, targeted
email outreach, through IONS associated social networks (~85,000 followers), as well as our affiliate organizations’ social networks, women’s cancer centers, and social media pages. Fifty people who had or currently have breast cancer were recruited to participate in the study. Study activities were approved by the Institute of Noetic Sciences Institutional Review Board (IRB) WAHH_2018_04. All participants met the following inclusion criteria: women, ages of 35-90, breast cancer diagnosis (all other cancers were exclusions), and currently accessing (or had regular access to) mental health resources at the time of the study.

Procedure

Women who completed the screening and were eligible for the study were contacted by a research coordinator and provided with an online written Informed Consent. Consenting women completed an online questionnaire, a health and lifetime events timeline, and participated in a 1-hour phone interview. Participants who completed all three study activities received $150 for their participation in the form of a Visa Gift Card.

Materials

*Online Survey:* Participants completed an online survey through the SurveyMonkey platform ([surveymonkey.com](http://surveymonkey.com)), which allows for HIPAA compliant data collection and provides detailed tracking of invitations and survey completion. Surveys were collected between May 3, 2019, to July 17, 2019. The survey included demographic information, general health, lifestyle questions, and breast cancer history (Table 1).

*Timeline:* Each participant submitted a timeline of their life’s most important moments and any breast cancer-related events via the SurveyMonkey platform or email (See Supplemental Data A for timeline instructions).


Interview: Each participant completed a 45-60 minute structured interview conducted by one of three researchers trained in interview and qualitative research methods. Probing questions were designed to elicit conversation about the overall research question and the timeline. To this end, the interview included questions on the following topics: 1) the event they believe impacted their life the most 2) events they believe reduced their vitality (or feeling “strong, vibrant, energized and positively engaged in life”) 3) any perceived connections between their childhood and adult experiences 4) events that they believe are associated with their developing breast cancer 5) experiences that increased or diminished a sense of “feminine nature” 6) their relationship with their mother or mother figure, 7) feelings of helplessness, hopelessness, anger or rage, and 8) any experiences with post-traumatic growth (See Supplemental Data B for full interview). The interview questions also referred to the participants’ timeline.

The interviews were conducted and recorded via Free Teleconference and subsequently transcribed and uploaded to Dedoose, a qualitative analysis program (version 8.3.17, Dedoose, Inc, Hermosa Beach, CA). The recordings and transcriptions were de-identified before they were stored.

Data Processing and Analysis

One researcher (EN) analyzed the data using thematic qualitative analysis consisting of six steps (Braun et al. 2006): familiarization, coding, generating themes, reviewing themes, defining and naming themes, and reporting. The data were coded inductively, and thematic analysis was undertaken within a constructionist theoretical approach emphasizing the patient perspective of illness (Braun et al. 2006). Themes were developed across the entire dataset rather than within individual questions. Quotations from the data are included to illustrate each theme.
Participants and Recruitment

Of the 237 women who began the survey, 187 were excluded for the following reasons: less than 34 years old (12), no breast cancer diagnosis (16), other cancer diagnoses (24), no mental health care (116), did not complete the survey (19), resulting in a final sample size of 50 women, all of whom did each of the three parts of the study. Percentages, means, and standard deviations of demographic variables, lifestyle factors, and breast cancer parameters are reported in Table 1.

Table 1. Demographics, lifestyle variables, and breast cancer history

| Factor                        | Level                          | Value [% or Mean (SD)] |
|-------------------------------|--------------------------------|------------------------|
| Age, mean (SD)                |                                | 55.9 (10.8)            |
| Race                          | Non-Hispanic White/Caucasian   | 90                     |
|                               | Non-Hispanic African           | 2                      |
|                               | American/Black                 | 2                      |
|                               | Hispanic/Latina/Latino         | 4                      |
|                               | Multiple Race/Ethnicities      |                        |
| In a relationship             | Yes                            | 47                     |
| Income                        | < $75,000                      | 59                     |
|                               | $75,000-$149,999               | 28                     |
|                               | > $150,000                     | 14                     |
| Number in household           |                                | 2.4 (1.3)              |
| Setting                       | Rural                          | 18                     |
|                               | Suburban                       | 53                     |
|                               | Urban                          | 29                     |
| BMI                           |                                | 27.5 (7.1)             |
| Exercise                      | Once per week                  | 14                     |
|                               | 2 to 4 days per week           | 39                     |
|                               | 5 to 7 days per week           | 22                     |
|                               | I don’t regularly exercise     | 24                     |
| Age at first menses           |                                | 12.7 (1.6)             |
| Age at first childbirth       |                                | 29.2 (6.9)             |
| Moth took DES                 | No                             | 93                     |
| Other chronic disease         | Yes                            | 29                     |
| Breast Cancer History         |                                |                        |
| Time since diagnosis (months) |                                | 71.8 (86.4)            |
| Age at diagnosis              |                                | 50.0 (10.6)            |
Results

Five major themes were identified (see Table 2): 1) The presence of major interpersonal conflict in childhood and adulthood (childhood trauma, adult interpersonal conflict), 2) patterns of stressful life events in childhood and adulthood (childhood memories, similar feelings, behavioral patterns), 3) ideas about why breast cancer developed (cumulative stress throughout the lifetime, relationship problems, emotional experiences), 4) relation between emotional stress and physical disease (stress builds up and causes the disease to emerge, stress makes the body vulnerable), and 5) post-traumatic growth and meaning-making (“new life,” sense of community). Representative quotes for each theme are below.

Table 2. A summary of thematic analysis themes and sub-themes.

| Themes and Sub-Themes                                      | Main Theme                                                                 | Sub-Theme I                     | Sub-Theme II                         | Sub-Theme III                       |
|------------------------------------------------------------|----------------------------------------------------------------------------|--------------------------------|--------------------------------------|--------------------------------------|
| 1. The presence of major interpersonal conflict in childhood and adulthood | Childhood trauma                                                         | Adult interpersonal conflict    |                                      |                                      |
| 2. Patterns of stressful life events in childhood and adulthood | Childhood memories                                                        | Similar feelings                | Behavioral patterns                  |                                      |
| 3. Ideas about why breast cancer developed                 | Cumulative stress throughout the lifetime                                 | Relationship problems           | Emotional experiences                |                                      |
| 4. Relation between emotional stress and physical disease   | Stress builds up and causes disease                                       | Stress makes the body vulnerable|                                      |                                      |
| 5. Post-traumatic growth and meaning-making                | “New life”                                                                | Sense of community              |                                      |                                      |
Theme 1. The presence of major interpersonal conflict in childhood and adulthood

Most of the participants spoke of experiencing recurring interpersonal conflict across their lifetimes. Stressful or traumatic events in childhood and relational conflict in adulthood were experienced in varying degrees by nearly all the participants. Nearly every participant described negative events that occurred in childhood as significantly impactful to them. Various types of relational stress in childhood were discussed, from more mild stressful events such as a general feeling of low self-esteem or feeling “left out” to more extreme stressful events such as bullying, emotional, verbal, sexual, or physical abuse. In adulthood, nearly all the participants described the recurring stressful interpersonal conflict with others, primarily concerning romantic, familial, and professional relationships, significantly impacting their lives.

Childhood Trauma. The majority of participants recalled a variety of events in their childhood that they considered to be stressful. These events involved parents, family acquaintances, and peers. They included relational issues such as bullying or abuse and uncomfortable feelings of confusion and low self-esteem. For example, one participant described how they felt their parents mistreated them as a child:

“...I think it was just like... a series of events, or... the way my parents were raised was the way that they raised us, which wasn’t perfect....a lot of sort of verbally abusive comments, and some bullying...”

Another person described a feeling of low self-worth as a child:

“...Although I don’t remember experiences about a trauma as a kid, with the reflection and therapy and counseling that I’ve had throughout my lifetime I really think that sort of like... neglect... had the biggest impact of all those things... for most of my life I felt like it wasn’t in a real conscious way... like I had a low perception of my worth... And that has
been challenging... I know it just thinking that I’m not that valuable. Sort of (on) a core, subconscious level.”

Another participant described the experience of sexual assault, which significantly impacted their life:

“... I would say the biggest impact were the assaults that happened to me at age, I think I was 13. I might have been 12, but in any event, it was in junior high. That I think was huge, more than I ever realized...”

Another person remembered feeling hopeless as a child due to being bullied at school:

“...I remember, especially in junior high... I just felt very hopeless about going to school every day. I knew I was just going to get teased and tormented and feel really uncomfortable. I know I’ve had a lot of moments where I’ve just felt hopeless about making friends.”

Adult Interpersonal Conflict. Participants frequently mentioned conflict in adulthood and the present day. The majority of this conflict was interpersonal, stressful and included family, romantic partners, friends, children, and co-workers. One participant felt that issues with her ex-husband and children were stressful:

“...My children totally cut me off because they blamed me for being responsible for the divorce, and that was fueled very much by (my ex-husband’s) new wife who played on that as much as she could. So, I lost my communication with the two most important... people in my life, my children. And, you know, you think of your breast as being the source of their nourishment when they’re babies. And that’s why I think it affected me there.”
Another participant explained how feeling disconnected from her daughter was traumatic for her:

“Well, I guess just from a trauma standpoint, I do EMDR now, a type of therapy, and she says we work with ‘little t’ trauma. It’s funny, I feel like I’m one of very few women that hasn’t been sexually abused, or raped or something, and obviously those are ‘huge t’ traumas... the divorce for me, I remember having this feeling of my daughter is getting pulled away from me.... And I felt like my heart was just getting ripped out of my body. I’ve never felt anything... like I couldn’t breathe, I couldn’t cry, I just felt like I was getting ripped inside out. And that happened for a long time... it was like... a couple of years... and we just fought about custody in court for a year and... I felt like I had died during that time.”

Another person described how she felt helpless in her romantic relationships:

“I mean when my son was first born, I felt like I didn’t know how to do anything. I don’t know if that was really a feeling of helplessness as much as just floundering... just being a new parent. What really sticks out though is I had this one relationship right after my first child was born..., and it was not a very good relationship. He wasn’t a good partner. And I felt like I had nowhere to turn. Like none of my support systems were there... I really was pretty isolated. And for a while, I felt very kind of trapped, and helpless in that relationship.”

Most participants experienced significant interpersonal stress at some point in their lives, and they referred to such stress as significant life events. These conflict areas were often located within the family, in romantic relationships, or with co-workers or employers. Notably, many participants felt that these events were related to their breast cancer development. This supports
the notion that participants attribute issues within adult relationships and interpersonal conflict occurring throughout the lifespan as having a potential connection to their developing breast cancer.

**Theme 2. Patterns of Stressful Life Events in Childhood and Adulthood**

When asked, the majority of participants identified a specific adulthood experience that triggered a stressful memory or feeling from a similar childhood event. The remaining participants did not identify a trigger or answered, “not sure.” The most common events identified were childhood memories, similar feelings, and behavioral patterns that spanned childhood to adulthood, related to dysfunctional family relationships, abusive relationships, and, less often, physical illnesses or injuries.

**Childhood Memories.** Most of the triggering experiences were specific stressful events that occurred in adulthood that elicited specific and similar challenging past family or childhood memories for the participant. One participant explained that her husband’s voice triggered negative memories of her father as a child:

“... I’m remarried now, and every once in a while, my new husband, he’ll say or do something that will almost be just like a tone of voice, or an expectation with the tone of voice, and all of a sudden, I am about six, and it’s my father. And, you know, they’re very different men, but similar. ...these aren’t really bad triggers, they’re irritating, you know, like don’t talk to me that way, I’m an adult. And I don’t think he means to be talking to me that way, but it just triggers my six-year-old.”

One participant reported that hearing someone walking reminded her of negative past events related to her father:
“...Just people walking, I flash back to my childhood... my dad was heavyset. So, sometimes if I’m like halfway sleeping, and I hear somebody walking down the hall, I’ll jump. So, it’s just little things too, but -- yeah... big things that set those off.”

Another participant described that the experience of rejection in adulthood is accompanied by memories of rejection in childhood:

“...It will go right back to certain little things in my childhood... when I was four-years-old, I went to a parade with my mother.... And one of our neighbors had a horse, and was riding the horse... I waved, and I said, hey... and they didn’t hear me, and it embarrassed me so much, it made me cry. And I was probably all up in my mama’s skirt... and she said, “Don’t cry, you know, you were just embarrassed by that.”...it was like a rejection. And I don’t handle rejection well, even though intellectually I understand everything about it, but emotionally it makes me cry, and I mean ugly cry. So, any rejection that I feel makes me upset. And I don’t know if it goes back to that one experience, but that’s what I feel like anyway.”

Similar Feelings. Other participants described specific feelings triggered in adulthood that felt familiar to those from childhood. One participant discussed how her diagnosis made her feel hopeless like she did as a child:

“...As I was going through my [breast cancer] diagnosis... I felt... really sorry for myself... like again... it was my fault. Like I had done something... ... I thought it’s... the same feeling. I feel like I just can’t catch a break. I just feel as I did when I was a child. Going through everything and I have to fight for myself, and as I was going through this fighting for myself.”
Another participant described how she still carried a “dark” feeling from her childhood into her adulthood:

“...It’s more just like a visceral sort of feeling that I have inside me. Felt like a bit of a... dark feeling. Just I don’t know if it’s an emotion, sensation or some kind of combination of the two. Some sort of feeling that arises in different circumstances.”

One person felt that her feeling of neglect as a child came back as an adult when she was diagnosed:

“...I felt like it’s been more of that grief of this neglect that I couldn’t consciously see or understand as a child. And also, being in a situation where being diagnosed with Stage 4 fast growing cancer and having... a young daughter. My sister had passed away with young kids several years before, I feel like a lot of my grief about that came up. Sort of like the general stuff of just feeling scared and unprotected but then also specifically with her.”

Behavioral Patterns. Participants also explained relationships between behaviors they experienced or observed in childhood and behaviors they notice in themselves and others as adults. One participant described how her experience with her mother as a child impacted whom she dated as an adult:

“(My) childhood with the mother that birthed me was like, you know, very toxic, dysfunctional. And, you know, I wound up dating those same types of people, and being in abusive relationships, and just a very long road of dating those types of people until I finally learned to love myself.”

Another participant felt that when her partner was critical, it reminded her of her father’s criticism:
“When I was growing up, I didn’t have a very good relationship with my dad. And I think a lot of the... romantic relationships that I had in my early... 20’s kind of brought a lot of that up. He had a temper, and he was very critical. So, when I had a relationship with somebody who was that way, it kind of brought up all those feelings from my childhood.”

Another person discussed how she felt she “gravitated towards” verbally abusive bosses, which she attributed to her parents:

“I related to that in the sense of the bosses that I seemed to gravitate towards -- seemed to be verbally abusive, and hypercritical somewhat like my parents were when I was younger. So, I think maybe the way that my family... this includes my siblings, created... a(n)... emotional situation, or issue where I felt more comfortable with the people who were hypercritical, or somehow maybe when I was interviewed, they saw in me that I was somebody who would... take that kind of abuse.”

Many participants made connections between emotional states in childhood and the frequent manifestation in adulthood. Many of the adulthood feelings and memories were linked to emotionally challenging childhood experiences, suggesting the presence of unresolved or unhealed emotional stress from difficult childhood experiences. Additionally, many participants suggested that this ongoing or triggered emotional stress stemming from childhood occurring over their lifetimes was somehow related to their breast cancer development.

**Theme 3. Ideas About Why Breast Cancer Developed**

Approximately half of the participants personally attributed a specific cause to their breast cancer development related to stressful emotional or social experiences. Participants who did attribute a specific cause to their developing breast cancer cited events such as relationship
issues, general stress, negative emotions, mental health issues, a physical event, such as another illness or injury, or a culmination of stressful events time. Of the other half of participants, some were uncertain of a specific event that may have contributed to their developing breast cancer but suggested possible relevant events, while some others said they thought no specific events contributed to their developing breast cancer.

**Cumulative Stress Throughout the Lifetime.** Cumulative stress was often cited as a reason breast cancer may have developed. Instances of cumulative stress included interpersonal, career, and physical stress and featured over the lifetime from childhood to adulthood. One participant described how a series of stressful events happened for a few years before her diagnosis, which made her identify the connections between the two:

“Well, I wrote a book, and I did it in six months. I had a co-author. But, it’s kind of unheard of to write a book that fast. That was a pretty stressful experience. And that happened -- let’s see, we published in 2004, and I was diagnosed in 2006. So, you know, I had a stressful marriage. I had, you know, this book thing -- I mean I do wonder about that. I just wonder whether that was -- you know, I mean I was a newspaper reporter. I was used to being in a high-stress kind of situation, but I kind of wonder if at that particular time, that may have, you know, pushed my health over the edge in some way.”

Another participant explained how stressful relational problems throughout her lifespan caused her to get “sick over time”:

“...I was constantly having to... fight for myself (at work). A common... subtext throughout... most of my life is not being believed and having to... advocate on my behalf in a way that has been so hard on me that it caused me to get sick over time. Whereas, had I had the supportive environment at home, or supportive environment on the job, or
the support of physicians who... understood what was going on with me, things would have been different, but they weren’t.”

Another participant felt that an accumulation of stressful events coincided with her discovering a lump that turned out to be breast cancer:

“I’ve often questioned if it was brought on because of my couple of years prior to finding the lump were quite stressful, the one dealing with my fiancé’s ex and having to deal with step-kids and then also my job was just increasingly demanding. I had a specific person at work that was going out of her way to make my life difficult. Ultimately, I quit the job because of how stressful it was. I could tell that it was not good for my health... I literally found the lump the day after I quit. So, for me I feel like it was like the universe going like this is not good for you. You’re gonna have a bigger hurdle to jump over. And the timing just felt eerie. It was like I quit at 11pm the night before and at 7am my fiancé found the lump. So, it wasn’t even a 24 hour turnaround when that happened. It was crazy, yeah.”

**Relationship Problems.** Relationship stress, particularly related to romantic relationships and issues within the family, was often cited as to why someone felt they developed breast cancer. Relational abuse, illnesses within the family, and “falling out” with people were examples of specific relationship problems that participants experienced. One participant described how the “toxicity” of her marriage caused her to get cancer:

“I don’t know if there are any specific events. But, I do think for me, it’s related a lot to the toxicity of my relationship within my marriage. And there’s various events... throughout my marriage. I mean... arguments, or the way we related to each other, the way I was treated, things like that. It was like... the whole picture of my entire marriage that contributed to my breast cancer. So, it’s not one specific event. But... I do
remember... when I was going through my cancer treatment... it was one of the chemo treatments... I was feeling nauseous, and I am on the bathroom floor, and I am shaking, and I am... hugging the toilet. And my husband comes and starts yelling at me... because my daughter was crying. And I remember thinking at that moment that... there’s something wrong here... the way he is yelling at me... this shouldn’t be. And I remember thinking that that was cancer. So... that moment was the first time I saw how... the situation I’m letting myself be in is causing me to get cancer. And it was that day I took off my ring.”

Another participant explained how the stress of dealing with illness in her family contributed to her exhaustion, leading to her developing cancer:

“I had a lot of stress in the couple of years before my cancer, with school, and my dad, and that kind of stuff. I’m not sure what else I would link with it.... especially when my dad was sick, I was with him five days a week, and then I would drive -- he was about 100 miles away from here where he lived, and I would drive home on the weekends, and my sister would go take care of him. And I just felt like I wasn’t seeing my family enough, and I was always on the road, and it was very -- physically, and emotionally exhausting.”

Another person reported that arguments within her extended family contributed significantly to her stress, which may have “brought on” her breast cancer:

“...A few years before being diagnosed with breast cancer I did kind of have a big falling out with some family members, especially my husband’s family. There was a lot of stress with that relationship. And it got to the point where I didn’t see them for a year. So sometimes yes that was a very upsetting time for me. And I myself sort of maybe, it was very, very stressful, that might have brought things (breast cancer) on... there’s always
been issues with the family... I would say at that point a couple years before my breast cancer I did feel quite traumatized by it.”

Emotional Experiences. Many participants also felt that psychological or emotional events, such as depression, hopelessness, being overwhelmed, or experiencing mental illness, may have somehow been related to their developing breast cancer. One participant did not feel certain that any one event caused her breast cancer but made the connection that her diagnosis was associated with the negative experience of her depression:

“I don’t know. Let me clarify. I do think my breast cancer is genetic and environmental, with a strong psychological component. And I don’t know what that component is... I don’t know if it’s hopelessness. I don’t feel like it’s the depression. I think it’s a component of the depression. I think it’s that hopelessness. And not seeing a way out of something... I never actively wanted to kill myself, but it was like, what am I living for? I think if anything that’s the theme that I associate the breast cancer with. But I can’t connect it to one event or say, oh, I got this because my marriage or I got this because my father...”

Another participant explained how feeling overwhelmed with her life led up to her diagnosis:

“I was feeling kind of -- I mean sort of like the main stage things were pretty, my work was good, my daughter doing great, my relationship was difficult, but I had a nice -- my home environment otherwise was nice. I had a lot of friends and support. But I was feeling like I just wanted to slow everything down. I felt like life was just too fast and there’s too much happening. And I remember telling my friend, I just want to stop working. I just want to not work for a while. And I really thought about that in retrospect. That was about five, six months before I was diagnosed.”
Another participant felt her period of depression before her diagnosis was to blame for her developing breast cancer:

“...Well, the year leading up to it, I was feeling so depressed that I would think about never killing myself, but, you know, if a car were to hit me, that might be -- welcome [laughter]. This was really a dark time.... And... my mom had had breast cancer... stage one when they found it... it was a whole different kind of thing than I had. But, I always expected to have it, but I also always expected to survive it too. So, I wasn’t real surprised when I was diagnosed. And I’ve always blamed it in a way on that period of time when I was so miserable. Actually, having the breast cancer changed my life, and I’m never sad anymore.”

The majority of the participants believed that their breast cancer was caused, in part, by stress or traumatic or interpersonal issues across the lifespan. Participants perceived a relationship between stress, particularly of a social or emotional nature, and breast cancer development, which suggests that patients situate their experience with breast cancer within the larger narrative framework of their lives as a way to understand their diagnosis. Since breast cancer emerges in adulthood and is usually an emotionally challenging experience, connections between personal events and a diagnosis allow patients to draw on their personal, embodied experience of the disease to answer existential questions such as “why me?” when thinking about their breast cancer experience and the reasons why they may have developed breast cancer.

**Theme 4. Relation between Emotional Stress and Physical Disease**

The majority of participants identified a relationship between emotional stress and physical disease in the body. Specifically, the idea that emotional stress can cause physical illness alluded to the notion that there was a connection between personal life experiences and
physical effects on the body. Stress was considered to relate specifically to participants’ own experience with breast cancer. However, there was also a broader concept that stress was related to developing the disease through various mechanisms, mainly through cumulative stress causing the disease to emerge and stress making the body weaker or more vulnerable to disease.

**Stress Builds Up and Causes Disease to Emerge.** Many participants felt that stress and emotions could physically impact the body and potentially cause diseases to develop. Stress was conceptualized as something that could accumulate, both in the frequency of stressful situations and presence in the body. Many participants thought that accumulating stressful events over time could cause disease to emerge from within them. One person made connections between cumulative stressful life events as triggering various health conditions (as she otherwise considered herself to lead a healthy lifestyle):

“... it made me really think about the stress in your life and how it can impact some of your physical things. When I looked for example at my ovarian cyst... that was right around the time I was going through the divorce. And then when I looked at my migraines, I thought... I got those... at the end of moving out of my house and it ended after my divorce... my thyroid condition at age 56... that was right around the time I lost some people in my life. And I thought, wow, could some things have triggered... the stress in my life. Because I’m a very healthy person, I take really good care of myself so I always wondered why would I get breast cancer? And then I was like well you’ve been under stress almost your whole life... that timeline was very eye opening for me.”

Another participant stated that cancer had “lived” in her body since she experienced the stress of her childhood, which is where it emerged from in adulthood as a result of accumulated life experiences:
“... I think it’s a whole picture... your life experiences are your life experiences, and they add up, and what happens is what happens, and I think your health issues have something to do with that. And the other thing that I felt is that, what’s wrong, because I have a really good life now, I really do. And, you know, my bad childhood is just like, I felt it was more living in my body that I couldn’t get rid of it, rather than in my thinking mind. I understand, you know, it’s obviously both places, but I just felt like, oh, I need to do something to get rid of this, and it lived in me.”

Another person described how emotional and mental stress that had built up made her cancer worse over time:

“My cancer was probably in process for many years but the mental stress and everything that I was going through the last few years is what made it so on fire. It wasn’t about the physicality, it was about what was going on inside me mentally, emotionally, it really made it happen that way.”

Finally, another participant felt that stressful events which accumulated over time “pushed” cancer in her body into developing further:

“...what I have felt over the last three years I’d say is that I have been under such insane emotional stress, and verbal abuse from two boyfriends.... and because of the gut feeling that I had while I was being verbally abused, and what that made me feel like afterwards, and how things have triggered me since that I feel like there’s a connection... Even though I know that it’s probably likely that the cancer in my body was set up, you know, a little earlier than these particular events... one leads to another, these events were the qualifying events that pushed me over the edge, and into the zone of allowing... my body (to be) so... depleted, and so emotionally damaged, and psychically damaged... I don’t
know that I’ll ever get over those things that I heard, but I definitely feel that those had an impact on push coming to shove... I’ve been religious, and having my mammograms for 30 years, and nothing has ever been seen outside of, you know, dense breast tissue. And then, this last year was the year that something was seen, and then... that’s where push became shove.”

Stress Makes the Body Vulnerable. Participants felt that stress could cause cancer to grow faster and make the body weaker, so it cannot “fight it off” as well. The concept of the body being vulnerable to cancer due to stress is related to the idea that stress breaks down the body’s defenses, which is the point when cancer has a chance to emerge or “take hold.” One participant felt that the stress of a situation itself (being separated from her child) made her body more vulnerable, and this vulnerability made her body open to the breast cancer “taking over”:

“I haven’t had anyone die who’s close to me. But I’ve definitely experienced a huge death of being separated from my child because I was a stay at home mom, breast fed her for tons of years and very, very connected to my kid and still am. ...It was absolutely horrible. I’m surprised, like I do attribute a large part of (that to) getting cancer, but I want to say the vulnerability of my own body I think I became very vulnerable just due to that stress event, that anything could have occupied me and taken over, so I’m kind of not surprised. I think cancer is a combination of things, but I think that’s a huge contributing piece.”

Another participant explained that emotional experiences such as trauma, stress, and anxiety are “hard on the body,” which makes one more susceptible to developing cancer:

“I would say that traumatic events in your life lead to stress, and anxiety, and both stress and anxiety are very, very hard on your body, and so you’re almost allowing something
like breast cancer to happen. I’m not saying you chose it... I didn’t choose that, but I think that anytime we go through a high level of trauma, or something very significant, it’s going to have an effect on you physically as well as mentally, and emotionally. And absolutely anytime that you do something that alters your body, you’re allowing... I don’t think I’m explaining this right... I’m making myself more susceptible to getting cancer... if I don’t eat right, if I don’t exercise, if I have trauma...”

Another participant explained how stress caused her body to be less able to “fight off” cancer already present in her body:

“...I think everything was building up. I mean I think on a physical level, I had just exhausted my body to such a great degree just from the stress that I think that maybe it could have fought off if there were... the little scout cells... if the cancer was just brewing. If I had been in a better physical condition, and not so stressed, I wonder if my body could have fought it off. But... I don’t know that my father dying... I wouldn’t attribute it that much to that, but I would say mostly - I would put it more towards the health.”

Finally, one participant felt that the reason she got cancer is that stress caused her immune system to weaken and created a “terrain” for cancer to develop:

“I would say the events of my life in that last couple of years, stressful marriage, moving to Europe, moving back home, then surgery, jaw surgery, the failed hysterectomy, all the stress and all the things from that, my feeling about it is that something that might have been low grade maybe would have never even turned into anything huge, went crazy. Like (it) grew from the stress and effects on my immune system. And all the exposure, the radioactive dyes. Put the whole package together (and) it created a terrain for something that might have been mild and almost fairly undetectable to... go crazy and produce five
tumors in my breast in one year. Because I had a clean mammogram one year before my diagnosis. And then I have five tumors.”

The relationship between emotional and physical health has long been established, but the specificity of the concept of stress “building up” in and “breaking down” the body was a recurring theme among participants. Participants conceptually viewed diseases such as cancer as something that “takes root” in the body or emerges as a result of stress “building up.” The view of the patient’s own body as a site of accumulated stress points to the highly personal aspects of the disease, as participants related their cancer to their own stressful emotional and social experiences. While participants perceived the experience of stress to have a substantial impact on their well-being, the participants also attributed a relationship between their emotional life experiences and outcomes of their physical health, specifically in feeling there was a pathway between stressful events and cancer.

Theme 5. Post-traumatic Growth and Meaning-Making

Most of the participants felt that having breast cancer led them to experience post-traumatic growth. People identified connections between their experience with breast cancer and self-improvement, improving their relationships with others and giving them a larger sense of belonging to a community of other survivors, their personal medical team, and their local communities. Many participants also felt that breast cancer allowed them to re-evaluate what was important to them in their lives and allowed them to start a “new life.” Additionally, many participants felt that participating in the research brought them a sense of contributing to something larger than themselves by potentially helping others.
“New Life.” Many participants felt that having breast cancer was a learning experience for them and allowed them to change their lives. One participant described how she felt that cancer gave her a new appreciation for life:

“...I think there was definitely a silver lining to the cancer..., like most people that helped me appreciate life more knowing that... life could be taken away at any moment. I was kind of an overachiever before I got the cancer. So, I was working a full-time job... So, having the cancer... the universe is saying, “You need to slow down.” So, I got out of politics. And then, I had the time to start dating again. And that’s when I met my husband... I feel like that was a really good positive thing to happen. I think that most major stressors... once it’s over, I feel better about having... survived it, and maybe learned some lessons.”

Another participant felt that she was able to move forward with her life quickly after her experience with breast cancer:

“Well, because of all this, I moved out here... where my life has been extremely happy because of my involvement with volunteer activities... And those have all been happy, confirming experiences that I look back with such joy, and such pleasure, so much delight that I am doing those things. And I wouldn’t be if I was still back (there) in a sense, mourning because of, you know, being in familiar places with negative memories. So, I was spurred to come out here, because that was my chance to get away, and start a new life.”

Sense of Community. Many participants felt that both having breast cancer and participating in the research project gave them a sense of connecting to and helping others, leading to feeling the
benefits of pro-social behavior. One participant discussed how supporting others with a similar diagnosis helped her process her own:

“Yeah, I did something actually through... the hospital. They had something where they would connect you... and you would help support other people going through a similar diagnosis of what you had. So, you could share your experience, and be there to support them while they went through it. And I did that for a while too. So, all of those things helped me process what I was going through, but then also allowed me to help others.”

Another participant explained how her experience with cancer connected her to people she did not expect:

“In some senses it’s helped me to just see a sense of beauty within darkness. And with cancer it’s interesting because it seems like in some ways it brings people together. There’s a lot of people I’ve connected with and made friends with who I probably would never have connected with if I didn’t have cancer. And just the outpouring of support and love that people have given me throughout my process has been amazing.”

Another participant felt that her diagnosis “opened doors” to a new community of people:

“The breast cancer, what it did for me, it opened -- it sounds terrible, I don’t mean it that way, but it opened so many doors of, I would say like compassionate, a community -- just the whole community surrounding breast cancer, other women who have experienced it, the support teams, and people that help you get through it, the doors that opened, and the opportunities that opened to do volunteer work, and to work as an advocate were huge...”

Post-traumatic growth has been reported among breast cancer survivors, suggesting positive attitude changes towards oneself and life after treatment (Barthakur et al. 2016, Paredes &
Pereira 2017). The majority of participants reported that they had experienced post-traumatic growth due to their breast cancer experience. Breast cancer’s impact on participants through positively changing their worldviews implies that despite the idea that interpersonal stress or trauma may have contributed to their diagnosis, their breast cancer experience ultimately helped redefine their relationships and allows for more profound interpersonal connections. This meaning-making is valuable because it potentially helps transform the participants’ experience of the disease from interpersonally painful to positively interconnected and ultimately pro-social.

Discussion

Although cancer etiology is examined from various approaches and perspectives, this study’s purpose was to examine patient perspectives of the determinants of their cancer development and progression through qualitative, in-depth interviews. Investigating the perceived causes of breast cancer from a patient’s subjective standpoint is useful because it situates the phenomenon of breast cancer within the patient’s experience. The results suggest that breast cancer patients perceive that their stress and trauma experiences and lifetime interpersonal social conflict contributed to their breast cancer development and course. Specifically, a majority of participants did, in some regard, believed that various emotional and interpersonal factors contributed to breast cancer development above and beyond environmental or genetic factors.

Patient narratives, particularly regarding why participants thought they developed breast cancer, are essential to understanding the experience of the disease itself. According to Nordenfelt’s philosophy on “The Reverse Theory of Disease and Illness,” a patient’s subjective experience of having a cluster of symptoms not only contributes to further understanding and treatment of a specific illness but is also the necessary precursor to the identification of oneself as having a disease (Nordenfelt, 2007). Our aim in this study was to use this theoretical
framework to examine breast cancer. From this perspective, where the patient experience and self-beliefs are valued, we find that the disease known as breast cancer is often characterized by past and present stress and trauma experiences. From a traditional medical perspective, it holds that regardless of whether these experiences should or should not be part of the definition of the disease of breast cancer itself, it is clear that research that further examines the connection between stress and trauma and breast cancer would be fruitful. Since past trauma pain is perceived as pivotal to the breast cancer experience or perceived as one of the many potential causes, its relationship to disease progression should be further examined.

Through the participants’ interviews, themes surrounding stress’s impact across the lifetime were identified. Many participants felt that stress throughout their lives impacted their bodies, contributing to their developing breast cancer. These participants attributed specific types of interpersonal, social, and traumatic stress to their breast cancer diagnosis, suggesting belief in a biological pathway between emotional stress and developing cancer. Participants also identified breast cancer as a life-changing event, particularly related to improving their relationships post-treatment. Patients’ experience, particularly regarding influences of stressful, emotional, and interpersonal experiences relating to breast cancer, warrants more research and investigation. It is essential to seek a deeper understanding of the potential relationships between traumatic life experiences, interpersonal conflict, stress, and breast cancer and incorporate traumatic histories and patient narratives into psychosocial areas of treatment for breast cancer patients. Further research should consider the influence of ACES and early childhood stressful experiences on breast cancer but should look into stress occurring throughout the lifespan. Particular attention should be paid to adult relationships and long-term emotional and interpersonal issues and their potential impact on the breast cancer experience.
Limitations

There are several limitations of this study that should be considered when reviewing the results. First, the study has all the limitations inherent in qualitative research, such as researcher presence who could potentially bias answers, subjective reporting, difficulty ascertaining causality, errors in memory recall, and limits in generalizability based on a specific sample pool. Also, the interviews were structured, and thus, the specific questions being asked necessarily informed the answers given. Regardless, the results can inform future studies and therapeutic interventions.

Conclusions

Participants frequently discussed how childhood trauma, adult interpersonal conflict, and stress significantly impact their lives and breast cancer experiences. There was an overall idea from the participants that these events may have contributed to their developing breast cancer, specifically regarding lifetime stress’s effect on the body. Additionally, although childhood and adult interpersonal conflict were perceived as contributing to breast cancer development, entering remission appeared to promote feelings of increased social connection and post-traumatic growth. We recommend that providers working with breast cancer patients consider providing emotionally therapeutic resources to address trauma, stress, and interpersonal issues and processing breast cancer treatment as an overall psychological process of the self. It may also be beneficial to provide regular breast cancer screenings for people who have experienced childhood trauma or recurring interpersonal or social stress in adulthood.

Declaration of Conflicts of Interest: The authors declare that there are no conflicts of interest.
References

Alcala, H.E., Mitchell, E. & Keim-Malpass, J. (2016). Adverse childhood experiences and cervical cancer screening. *Journal of Women’s Health (Larchmont)*, 26(1), 58–63. https://doi.org/10.1089/jwh.2016.5823

Alcalá, H. E., Mitchell, E. M., & Keim-Malpass, J. (2018). Heterogeneous impacts: Adverse childhood experiences and cancer screening. *Cancer Causes & Control*, 29(3), 343–351. https://doi.org/10.1007/s10552-018-1007-2

Alcalá, H., Tomiyama, J., & Von Ehrenstein, O. (2017). Gender differences in the association between adverse childhood experiences and cancer. *Women’s Health Issues*, 27(6), 625–631. https://doi.org/10.1016/j.whi.2017.06.002

Antonova, L., Aronson, K., & Mueller, C. R. (2011). Stress and breast cancer: From epidemiology to molecular biology. *Breast Cancer Research*, 13. https://doi.org/10.1186/bcr2836

Babli, J. (2008) Epistemological and theoretical foundations of constructivist cognitive therapies: Post-rationalist developments. *Dialogues in Philosophy, Mental, and Neuro Sciences*, 1(1): 15-27

Barthakur, M. S., Sharma, M. P., Chaturvedi, S. K., & Manjunath, S. K. (2016). Post-traumatic growth in women survivors of breast cancer. *Indian Journal of Palliative Care*, 22(2), 157–162. https://doi.org/10.4103/0973-1075.179609

Bellur, Z., Aydin, A., & Alpay, E. H. (2018). Mediating role of coping styles in personal, environmental and event related factors and post-traumatic growth relationships in women with breast cancer. *Klinik Psikiyatri Dergisi*, 21(1), 38–51.
Bleiker, E. M., Hendriks, J. H., Otten, J. D., Verbeek, A. L., & Ploeg, H. M. (2008). Personality Factors and Breast Cancer Risk: A 13-Year Follow-up. JNCI: Journal of the National Cancer Institute, 100(3), 213-218. https://doi.org/10.1093/jnci/djm280

Braun, Virginia, & Clarke, Victoria. (2006). Using thematic analysis in psychology. Qualitative Research in Psychology, 3(2), 77-101. https://doi.org/10.1191/1478088706QP063OA

Breast cancer: prevention and control. (2021). Retrieved January 18, 2021, from https://www.who.int/cancer/detection/breastcancer/en/

Breast Fact Sheet. (2021). Retrieved January 18, 2021, from https://gco.iarc.fr/today/data/factsheets/cancers/20-Breast-fact-sheet.pdf

Chiriac, V., Baban, A., & Dumitrascu, D. L. (2018). Psychological stress and breast cancer incidence: A systematic review. Medicine and Pharmacy Reports, 91(1), 18-26. https://doi.org/10.15386/cjmed-924

Clark, L., Beesley, H., Holcombe, C., Salmon, P. (2011). The influence of childhood abuse and adult attachment style on clinical relationships in breast cancer care. General Hospital Psychiatry, 33(6), 579–586. https://doi.org/10.1016/j.genhosppsych.2011.07.007

Clark, L. et al., (2014). Breast cancer survivors’ perspectives on whether clinical staff should ask breast cancer patients about childhood abuse. Annals of the Royal College of Surgeons of England, 96(5), 364–368. https://doi.org/10.1308/003588414X13946184901407

Dumalaon-Canaria, J.A., Hutchinson, A.D., Prichard, I. Wilson, C. (2014) What causes breast cancer? A systematic review of causal attributions among breast cancer survivors and how these compare to expert-endorsed risk factors. Cancer Causes Control, 25, 771–785. https://doi.org/10.1007/s10552-014-0377-3
Fagundes, C. P., Lindgren, M. E., Shapiro, C. L., & Kiecolt-Glaser, J. K. (2012). Child maltreatment and breast cancer survivors: Social support makes a difference for quality of life, fatigue and cancer stress. *European Journal of Cancer, 48*(5), 728–736. https://doi.org/10.1016/j.ejca.2011.06.022

Fallah, R., Keshmir, F., Lotfi Kashani, F., Azargashb, E., & Akbari, M. E. (2012). Post-traumatic growth in breast cancer patients: A qualitative phenomenological study. *Middle East Journal of Cancer, 3*(2/3), 35–44.

Gall, Terry Lynn & Bilodeau, Cynthia, 2017. “Why me?” - women’s use of spiritual causal attributions in making sense of breast cancer. *Psychology & Health, 32*(6), 709–727. https://doi.org/10.1080/08870446.2017.1293270

Gallo-Silver, L. & Weiner, M.O. (2006). Survivors of childhood sexual abuse diagnosed with cancer: Managing the impact of early trauma on cancer treatment. *Journal of Psychosocial Oncology, 24*(1), 107–134. http://doi.org/10.1300/J077v24n01_08

Goldsmith, R. E., Jandorf, L., Valdimarsdottir, H., Amend, K. L., Stoudt, B. G., Rini, C., Hershman, D., Neugut, A., Reilly, J.J., Tartter, P.I., Feldman, S.M., Ambrosone, C.B., & Bovbjerg, D. H. (2010). Traumatic stress symptoms and breast cancer: The role of childhood abuse. *Child Abuse & Neglect, 34*(6), 465–470. https://doi.org/10.1016/j.chiabu.2009.10.007

Green B. L., Krupnick J. L., Rowland J. H., Epstein S. A., Stockton P., Spertus I., & Stern, N. (2000). Trauma history as a predictor of psychological symptoms in women with breast cancer. *Journal of Clinical Oncology, 18*(5), 1084–1093. http://doi.org/10.1200/JCO.2000.18.5.1084
Han, T. J., Felger, J. C., Lee, A., Mister, D., Miller, A. H., & Torres, M. A. (2016). Association of childhood trauma with fatigue, depression, stress, and inflammation in breast cancer patients undergoing radiotherapy. *Psycho-Oncology, 25*(2), 187–193. https://doi.org/10.1002/pon.3831

Janusek, L. W., Tell, D., Albuquerque, K., & Mathews, H. L. (2013). Childhood adversity increases vulnerability for behavioral symptoms and immune dysregulation in women with breast cancer. *Brain, Behavior, and Immunity, 30*(Suppl), S149–S162. https://doi.org/10.1016/j.bbi.2012.05.014

Kamen, C., Scheiberb, C., Janelsinsa, M., Job, B., Shenb, H., & Paleshb, O. (2017). Effects of childhood trauma exposure and cortisol levels on cognitive functioning among breast cancer survivors. *Child Abuse & Neglect, 72*, 163–171. https://doi.org/10.1016/j.chiabu.2017.07.005

Kuhlman, K.R., Boyle, C.C., Irwin, M.R., Ganz, P.A., Crespi, C.M., Asher A., Petersen, L., & Bower, J. E. (2017). Childhood maltreatment, psychological resources, and depressive symptoms in women with breast cancer. *Child Abuse & Neglect, 72*, pp.360–369. https://doi.org/10.1016/j.chiabu.2017.08.025

Lavery, J. F., & Clarke, V. A. (1996). Causal attributions, coping strategies, and adjustment to breast cancer. *Cancer Nursing, 19*(1), 20–28. https://doi.org/10.1097/00002820-199602000-00003

Liu, J.-E., Wang, H.-Y., Hua, L., Chen, J., Wang, M.-L., & Li, Y.-Y. (2015). Psychometric evaluation of the Simplified Chinese Version of the Posttraumatic Growth Inventory for assessing breast cancer survivors. *European Journal of Oncology Nursing, 19*(4), 391–396. https://doi.org/10.1016/j.ejon.2015.01.002
Paredes, A. C., & Pereira, M. G. (2018). Spirituality, distress, and post-traumatic growth in breast cancer patients. *Journal of Religion and Health, 57*(5), 1606–1617. https://doi.org/10.1007/s10943-017-0452-7

Liu, Y., Li, Y., Chen, L., Li, Y., Qi, W., & Yu, L. (2018). Relationships between family resilience and post-traumatic growth in breast cancer survivors and caregiver burden. *Psycho-Oncology, 27*(4), 1284-1290. https://doi.org/10.1002/pon.4668

김성해, & 이주희. (2017). Post-traumatic growth measures in breast cancer survivors: A systematic review. *Korean Journal of Adult Nursing, 29*(4), 343–362. https://doi.org/10.7475/kjan.2017.29.4.343

Martino, M. L., Onoratoa, R., Freda, M. F. (2015). Linguistic markers of processing trauma experience in women’s written narratives during different breast cancer phases: Implications for clinical interventions, *Europe’s Journal of Psychology, 11*(4), 651–663. https://doi.org/10.5964/ejop.v11i4.991

Michael, Y. L., Carlson, N. E., Chlebowski, R. T., Aickin, M., Weihs, K. L., Ockene, J. K., Bowen, D.J., Ritenbaugh, C. (2009). Influence of stressors on breast cancer incidence in the Women’s Health Initiative. *Health Psychology, 28*(2), 137-146. https://doi.org/10.1037/a0012982

Minami, Y., Hosokawa, T., Nakaya, N., Sugawara, Y., Nishino, Y., Kakugawa, Y., Fukao, A., & Tsuji, I. (2015). Personality and breast cancer risk and survival: The Miyagi Cohort Study. *Breast Cancer Research and Treatment, 150*(3), 675-684. https://doi.org/10.1007/s10549-015-3364-9
Morris, B. A., & Shakespeare-Finch, J. (2011). Cancer diagnostic group differences in post-traumatic growth: Accounting for age, gender, trauma severity, and distress. *Journal of Loss and Trauma, 16*(3), 229–242. https://doi.org/10.1080/15325024.2010.519292

Nordenfelt, L. (2006). The concepts of health and illness revisited. *Medicine, Health Care, and Philosophy, 10*(1), 5-10. https://doi.org/10.1007/s11019-006-9017-3

Palesh, O., Butler, L. D., Koopman, C., Giese-Davis, J., Carlson, R., & Spiegel, D. (2007). Stress history and breast cancer recurrence. *Journal of Psychosomatic Research, 63*(3), 233-239. https://doi.org/10.1016/j.jpsychores.2007.05.012

Panjari, M., Davis, S. R., Fradkin, P., & Bell, R. J. (2012). Breast cancer survivors’ beliefs about the causes of breast cancer. *Psycho-oncology, 21*(7), 724-729. https://doi.org/10.1002/pon.1949

Ports, K. A., Holman, D. M., Guinn, A. S., Pampati, S., Dyer, K. E., Merrick, M. T., Buchanan, L., & Metzler, M. (2019). Adverse childhood experiences and the presence of cancer risk factors in adulthood: A scoping review of the literature from 2005 to 2015. *Journal of Pediatric Nursing, 44*, 81–96. https://doi.org/10.1016/j.pedn.2018.10.009

Schnur, J. B., Dillon, M. J., Goldsmith, R. E., & Montgomery, G. H. (2018). Cancer treatment experiences among survivors of childhood sexual abuse: A qualitative investigation of triggers and reactions to cumulative trauma. *Palliative & Supportive Care, 16*(6), 767–776. https://doi.org/10.1017/S147895151700075X

Stewart, D. E., Cheung, A. M., Duff, S., Wong, F., McQuestion, M., Cheng, T., Purdy, L., & Bunston, T. (2001). Attributions of cause and recurrence in long-term breast cancer survivors. *Psycho-oncology, 10*(2), 179–183. https://doi.org/10.1002/pon.497
Téllez, A., Juárez-García, D. M., Jaime-Bernal, L., Sánchez, T., & Medina de la Garza, C. E. (2017). Breast cancer and adverse childhood experiences: A single case study using hypnosis. *Australian Journal of Clinical & Experimental Hypnosis, 42*, 19–27.

Wendling, C.A. (2016). Adverse childhood experiences, breast cancer, and psychotherapy. *Psycho-oncology, 10*(3), 221–226. https://doi.org/10.1007/s11839-016-0588-9

Zhang, T., Li, H., Liu, A., Wang, H., Mei, Y., & Dou, W. (2018). Factors promoting resilience among breast cancer patients: a qualitative study. *Contemporary Nurse: A Journal for the Australian Nursing Profession, 54*(3), 293–303.

https://doi.org/10.1080/10376178.2018.1502615
Thank you again for participating in this study! Below are the instructions for how to complete your timeline and how to submit it via email prior to your interview. This timeline must be completed and submitted to the Research Program Manager prior to the interview, or your interview will need to be rescheduled.

Timeline Overview
The purpose of this exercise is to give you an opportunity to record vital information about your lifetime experiences and your breast cancer health history on a timeline. This exercise should take about 15-30 minutes.

Below is an example of a completed timeline to give you a sense of what yours might look like when you have completed the process. This example of a Health Map is not related to breast cancer but other health issues. (While this example does not relate to breast cancer directly, please use this as a guide of how to track major life experiences and breast cancer experiences on your own timeline). Please read all the instructions below before beginning.

Step 1: Preparation
Gather the following items:
- Markers, pen or pencil
- Several sheets of paper (8x11 or larger)
Step 2: Draw a Time/Life-Line
Draw a line horizontally across the page and start with age 0 (when you were born) on the far left and your current age on the far right. You may want to create marks on the timeline for the time periods we ask about in this study (ages 0-7, 8-18, 19 - now).

Step 3: Enter Lifetime and Health Events
In this step, you will put your important life and health experiences in chronological order of your age on the timeline:
- Draw a short vertical line on your timeline for each of the key events that you feel impacted you (lifetime and health) – allowing ample space between events so that you can write in details.
  - As on the timeline example above, place your breast cancer health events above the timeline and your lifetime events below the timeline.
  - Allow ample space as recording one event can trigger a memory of another.
  - Remain open to adding events as you complete the timeline; it’s natural for one event to trigger a memory of another.

Step 3: Submit to IONS Research Time Prior to Your Interview
Once you have completed your Timeline, please upload either a photo or a scan of your timeline and email to Nina Fry, the Research Project Manager, at nfry@noetic.org. In the subject line of this email please include the unique study ID that you were provided to complete the study. If you cannot remember your study ID, please contact Nina at the email above or at (707)779-8293 for that information or any other questions.

This is a confidential email address and your timeline will not be seen by anyone other than the Project Manager, the interviewer and the Director of Research. Your timeline must be submitted prior to your interview.

Thank you so much for completing this Timeline Exercise! Please keep your timeline for when we complete our interview. We will be in touch with you shortly to schedule your interview.
Life Experiences and Breast Cancer - Interview Questions

Interview Script
Thank you so much being part of this study. As you read in the consent form, we are doing these interviews to find out more about how your life events may be related to your breast cancer experience. Before we begin, please know that you can skip any question you don’t want to answer, take a break or stop the interview at any time, and there are no right or wrong answers to these questions. We are on an exploration to understand the relationships, if any, between events in our lives and health. For your participation, you will receive $75 of compensation in the form of a Visa Gift Card regardless of what your answers are on this interview, if you complete all three activities, the survey, timeline and the interview. Since you completed your questionnaire and timeline before June 21st, you will also receive an additional $75 Visa Gift card.

Do you have any questions before we get started?

Timeline Check-In
Ok, great. I see that you have completed your timeline. Do you have that in front of you right now? (if not, please take a moment to get your timeline so that you have it during the interview)

You can reference your timeline as we go through our questions. You will also have time at the end to talk about any other events on your timeline that we don’t directly ask you about.

Interview Questions
Ok, here is the first question:

As you reflect on your timeline experiences, are there any events that you feel impacted your life the most?

- If yes, how old were you?

- Can you share more about the event, and how it affected you?

- [If participant seems stressed in any way..”Are you okay if we move on to the next question, or do you need a break?”]
2) About the events on your timeline again, are there any events that you feel reduced your vitality in some way? What we mean by vitality is feeling strong, vibrant, energized and positively engaged in your life. You can take a minute to think about that.

- If yes, how old were you?
- Can you tell me more about the event and how it affected you?

Thank you for sharing your experience. Is there another event on your timeline that you feel reduced your vitality? Note to interviewer: Repeat Question #2 (sub-questions for Events 2 -3 - limit to 3 responses)

Thank you for sharing about your experiences. [If participant seems stressed in any way or the previous section was long and/or emotional…”Are you ok if we keep going, or would you like to take a break?”]

3) In looking at your timeline, I see [describe event - look at timeline for any events before diagnosis]. Can you tell me more about the event and how it affected you?

(Note to Interviewer: This question is exactly the same as the one before but is trying to get at any events that happened right before their diagnosis. If they already talked about this, you wouldn’t ask this question. If they had one on the timeline that they didn’t talk about that was right before their diagnosis you would ask about it).

Thank you for sharing about your timeline events.

4) I’m going to switch gears a bit here and ask about some connections others have reported and see if they are true for you, although they may not be, which is totally fine.

- Some people feel that very difficult circumstances or traumatic events in their adulthood can unlock, trigger, or bring back traumatic experiences from childhood. Do you think this might be true for you? If so, can you explain more about how you experience this?
- Some women who have experienced breast cancer associate some events in their life to their breast cancer in some way. Is this true for you? If so, can you share more about that?

5) Thank you so much for sharing about that potential connection. We are going to change topics again for the next few questions.

- We all have a masculine and feminine aspects to us. For example, we all can be gentle and nurturing to children, which would typically be considered a feminine aspect. And
we all can take physical action in the world like building a house, which would typically be considered a masculine aspect. Some qualities associated with the feminine are unconditional love, kindness, intuition, wisdom, and patience. I’d now like to ask you a few questions about how you have experienced the feminine nature in your life.

5) Can you please share about any experiences that you feel have increased or expanded your feminine nature?

Thank you for sharing.

6) How about any experience(s) that you feel have reduced, diminished, or shut down your feminine nature?

7) How would you describe your relationship with your mother or mother figure?

8) Is there anything else you would like to share about this topic of masculine and feminine natures?

[If participant seems stressed in any way or the previous section was long and/or emotional…”Are you ok if we keep going, or would you like to take a break?”]

9) Thank you for sharing about that. In this final section, I’d like to ask about your experience with specific emotions.

- Have you ever experienced feelings of helplessness or hopelessness about something in your life?
  - If so, can you please share about that experience?
    [If they are not sure what these words mean...helplessness, which is a feeling like you were not able to defend yourself or to act effectively in your life or feelings of hopelessness, which is a feeling a sense of despair about something in your life]

- Have you ever experienced the emotion of intense anger or rage towards someone or something specific in your life, or about the world in general?
  - If yes, can you please share more about that?

Thank you so much for sharing about your emotions, I know these can be challenging to discuss and share openly. [If participant seem stressed in any way…”Would you like to take a break, or shall we continue?”]

We are almost done with the interview.
This last question is about posttraumatic growth.

10) **Posttraumatic growth** is defined as positive change experienced as a result of the struggle with a major life crisis or a traumatic event. We are all incredibly resilient and can be changed by encounters with life challenges, sometimes in radically positive ways. Are there any ways you feel your experience with breast cancer or other challenging events have positively changed or affected your life?

Is there anything else that you feel we should have asked or that you want to share about that you think we should know.

**Closing**
Thank you so much for answering these questions openly and honestly. That was my final interview question and I’d like to ask you to take a moment and close your eyes. Take a few deep breaths and check in with yourself about how you are doing right now.

How are you feeling after the interview? Is there anything you would like to ask me?

We are very grateful for your support of the study. Please know that the results from this study will directly contribute to IONS programs in health and healing in the future.

**Logistics for getting paid:**
I’m now going to move on to the logistics of your study compensation. You will be receiving your gift card(s) in the mail with a gift card receipt form and a self-addressed, stamped envelope. Please sign the gift card receipt and send it back to us as soon as you can.

**Follow-up Script:**
*(Note to Interviewer: at the end of the call schedule a time in your calendar to call the person the next day and check in)*.

The last thing I’d like to do today is let you know that I will be calling in about 24 hours or so to see if you have any questions or need support in any way. We know sometimes talking about these things can be challenging, so we wanted to check in with you. If I don’t happen to reach you, is it ok if I leave a VM?
If you are doing fine and don’t have any questions there is no need to reply. If you have any questions or need support please reach out to us with the study contact information.

Follow up script: “We talked about a lot yesterday, I’m just checking in to see if you feel ok and if you have any questions.”

(ONLY IF ASKED - 6-9 months, study will be published and you can get copy of results then)
- Check in about their contact with their mental health provider, if it seems necessary

*Provide a list of mental health support services if necessary.*

**Free Crisis Hotline Numbers**

- **National Suicide Prevention Lifeline**: 1-800-273-TALK (8255)
  This 24-hour hotline is available to anyone in crisis and provides free and confidential emotional support and crisis intervention.
- **Crisis Text Line**: Text “home” to 741741
  This unique hotline is available via text message to anyone experiencing mental health difficulties or an emotional crisis. Highly trained counselors offer support and guidance to calm you down and make sure you are safe.
- **Substance Abuse and Mental Health Services Administration (SAMHSA) National Helpline**: 1-800-662-HELP (4357)
  SAMHSA’s helpline and web-based behavioral health treatment services locator can help you find information about treatment providers, therapists, counselors, support groups, and community resources in your area.
- **National Alliance on Mental Illness (NAMI) Helpline**: 1-800-950-NAMI (6264)
  The NAMI Helpline is available Monday through Friday, 10 a.m. to 6 p.m. EST to answer your general questions about mental health issues and treatment options.
Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- SupplementalDataBLifeExperiencesBreastCancerInterviewQuestions62119.pdf
- CancerTraumaQualitativeManuscriptFinal.docx
- SupplementalDataATimelineInstructions.docx