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UNIVERSITY OF CALIFORNIA SAN DIEGO

SAN DIEGO STATE UNIVERSITY

Examining Associations with Intentions to Obtain Surveillance Mammography Utilizing an
Integrated Behavioral Model Among Latina Breast Cancer Survivors

A Dissertation submitted in partial satisfaction of the requirements

for the degree Doctor of Philosophy

in

Clinical Psychology

by

Manuel Gonzales IV

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2026

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Chair

University of California San Diego
San Diego State University

2026

DEDICATION

This dissertation is dedicated to all the friends, family, and mentors that have supported me throughout this journey we call life. Thank you to Dr. Kristen Wells for guiding and supporting me. I owe a lot of my success to your kindness, understanding, and thoughtfulness. Most importantly, thank you Katie, for always being right by my side. You have been such a supportive wife and have also had to sacrifice a lot for us. I am excited and looking forward to starting parenthood with you. Baby Bella, this is all for you!

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ABSTRACT OF THE DISSERTATION

Examining Associations with Intentions to Obtain Surveillance Mammography Utilizing an Integrated Behavioral Model Among Latina Breast Cancer Survivors

by

Manuel Gonzales IV

Doctor of Philosophy in Clinical Psychology

University of California San Diego, 2026
San Diego State University, 2026

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Rationale: Surveillance mammography (SM) plays a critical role in early detection of breast cancer (BC) recurrence or second primary cancers. Disparities in receipt of surveillance mammography exist among Latina breast cancer survivors (BCS). No known studies have used the Integrated Behavioral Model (IBM) to evaluate or predict intentions to obtain SM among Latina BCS. **Design:** This cross-sectional study used the IBM to examine relationships between constructs in the IBM (attitudes, perceived norms, personal agency), psychosocial variables (fear of cancer recurrence, depressive symptoms), cultural variables (spirituality, familism), and intentions to obtain SM within the next 12 months using correlations and path analytic models (PAMs). Latina BCS (N=127, $M_{age} = 58.7$ years, $SD = 10.9$) were recruited through convenience

sampling in the United States. Pearson correlations and PAMs examined the relationship between constructs in the IBM, psychosocial variables, cultural variables, and intentions. Five unadjusted and one adjusted (for income) comprehensive PAMs were examined. An alpha level of .05 was used to determine statistical significance across analyses. **Results:** Latina BCS reported high intention to seek SM ($M = 4.82$ on a 5-point scale, $SD = 0.62$). As suggested by the IBM, more positive attitudes towards SM were significantly correlated with higher intentions ($p < .05$). Higher income was significantly positively correlated with intentions ($p < .05$). IBM constructs of attitudes, perceived norms, and personal agency were significantly correlated with each other ($ps < .001$) in bivariate analyses. Four PAMs had poor statistical and descriptive fit and two were just identified. However, higher spirituality was significantly associated with more positive attitudes toward SM in one unadjusted PAM ($ps < .05$) and was significantly positively associated with personal agency in two unadjusted PAMs and one adjusted PAM ($ps < .05$) despite poor model fit. Exploratory analyses were conducted to examine additional simplified PAMs with IBM variables. **Conclusion:** Latina BCS have a strong intention to obtain SM. Given the low variability in intentions, the IBM did not fit the data well, suggesting limitations in applying this theoretical model to research or interventions focused on SM in this population.

Introduction

Breast Cancer Among Latinas in The United States

Breast cancer (BC) is one of the most common cancers diagnosed in women (Miller et al., 2019) and is the second leading cause of cancer death in women in the United States (U.S.) (Giaquinto et al., 2022). It is estimated that there were 4.1 million BC survivors in the U.S. and 43,250 deaths among women due to BC in the year 2022 (Giaquinto et al., 2022). Additionally, there were an estimated 287,850 new cases of invasive BC in the United States in 2022 (Giaquinto et al., 2022). Thus, there is a significant public health burden of BC in the U.S.

One group that may be disproportionately impacted by BC is Latina individuals. For example, Latina women are less likely to be diagnosed with earlier stage BC compared to non-Latina White women, and BC is the leading cause of cancer death among Latina women (Miller et al., 2021). Latina women also have higher recurrence rates of BC compared to their White counterparts and are also 20% more likely to die from BC within 5 years compared to White individuals of the same age and same stage of diagnosis (Greenlee et al., 2016; Smith-Gagen et al., 2013). Therefore, Latina individuals are a particularly vulnerable group to experience poor BC-related outcomes.

Disparities in Treatment of Breast Cancer

When an individual is diagnosed with BC, they typically undergo a series of treatments that can include surgery, chemotherapy, and/or radiation. For example, individuals who are diagnosed with early stage and non-metastatic BC can be treated with lumpectomy, mastectomy, radiation therapy, chemotherapy, immunotherapy, endocrine therapy, or likely a combination of treatments based on the stage and type of cancer (i.e., hormone-receptor positive; Traves &

Cokenakes, 2021). Primary care physicians are often the first point of contact for individuals who are newly diagnosed with BC due to most BCs being identified via mammography or physical examination; however, a multidisciplinary team of specialists in medical, surgical, and radiation oncology is often needed for treatment (Ruddy & Ganz, 2019; Traves & Cokenakes, 2021). The American Society of Clinical Oncology (ASCO) states that cancer survivorship begins once an individual has been diagnosed with cancer (Cancer.Net Editorial Board, 2021). Previous findings suggest that Latina women are less likely to receive recommended treatment regimens, have a higher likelihood of receiving inappropriate treatment, and have higher odds of receiving inappropriate primary surgical and radiation BC treatment compared to non-Latina White women (Chen & Li, 2015; Ooi et al., 2011). Furthermore, Latina women have reported higher risk for delay of adjuvant chemotherapy compared to White women and the longest times to surgery, radiation, and chemotherapy compared to non-Latina women (Fedewa et al., 2010; Sukniam et al., 2022).

Disparities in Breast Cancer Survivorship Care

Once an individual completes BC treatment, they may seek follow-up care with one or more oncologists or a combination of oncologists and their primary care provider (Kerrigan et al., 2014; Runowicz et al., 2016). However, a majority of BC survivors will likely end up receiving their follow-up care from their primary care provider (Runowicz et al., 2016). The American Cancer Society (ACS) and ASCO have developed guidelines for BC survivorship care (Runowicz et al., 2016). These extensive guidelines provide recommendations for regular care that those who have survived BC should receive to optimize their health for the remainder of their lives following treatment. Examples of guidelines include surveillance for BC recurrence, screening for secondary primary cancers, and assessment and management of long-term and late

physical and psychosocial effects of BC and its treatment. Additionally, it is recommended that BC survivors attend a visit with their primary care provider and receive a detailed cancer-related history and physical examination every 3-6 months for the first 3 years after treatment, every 6-12 months for the following 2 years, and annually after that (Runowicz et al., 2016). If an individual moves, changes doctors, or changes insurances, there could likely be a disruption in survivorship care, or a ceasing of survivorship care altogether. Thus, it is imperative to understand factors associated with adherence to the ACS/ASCO guidelines among BC survivors in order to improve long-term health outcomes.

Surveillance Mammography

One of the most important recommendations for BC survivors who still have breast tissue is surveillance mammography. Surveillance mammography plays a critical role in early detection of BC recurrence or second primary cancers (Lash et al., 2007). More specifically, surveillance mammography has been associated with early detection of BC recurrence and decreased mortality from BC (Doubeni et al., 2006; Houssami et al., 2009; Lu et al., 2009). Surveillance mammography is similar to screening mammography in that both are utilized to identify BCs. However, screening mammography is utilized as an early detection approach for BC among individuals who have never had a previous history of BC, while surveillance mammography is recommended to BC survivors who still have breast tissue and have completed treatment of the primary BC. Diagnostic mammography is typically utilized after a problem has been identified or if a person identifies a potential cancer symptom (i.e., lump, pain). Additionally, diagnostic mammography utilizes more detailed films and a more in depth focus on the area potentially impacted by a malignancy compared to screening mammography. The ACS/ASCO survivorship

care guidelines (Runowicz et al., 2016) recommend that BC survivors with remaining breast tissue obtain surveillance mammography annually.

Factors Associated with Surveillance Mammography

Understanding factors associated with surveillance mammography may help improve adherence to surveillance mammography among BC survivors. Jang and colleagues (2019) conducted a review and identified 19 factors that were associated with adherence to surveillance mammography among BC survivors. Of the 19 factors, 16 factors were categorized as individual factors (i.e., sociodemographic, clinical, psychological, and health behavior characteristics) and three factors were categorized as healthcare system factors related to access and availability.

Within individual factors, four sociodemographic factors associated with adherence to surveillance mammography were identified (i.e., age, ethnicity, socioeconomic status, and marital status). For example, being younger than age 50 years and older than age 70 years was associated with low rates of adherence to mammography (Carcaise-Edinboro et al., 2010; Doubeni et al., 2006; Etim et al., 2006; Field et al., 2008; Giuliani et al., 2016; Keating et al., 2006; Lu et al., 2011; Onega et al., 2012; Sabatino et al., 2012; Wirtz et al., 2014), while rates among those in the middle of the age continuum increase with increasing age (Enewold et al., 2013; Geller et al., 2003; Shelby et al., 2012). Additionally, African American women had lower adherence rates compared to non-Hispanic White women (Advani et al., 2014; Etim et al., 2006; Keating et al., 2006; Mandelblatt et al., 2006; Nurgalieva et al., 2013). Furthermore, living in a low-income neighborhood (Giuliani et al., 2016; Keating et al., 2006), having public insurance (Sabatino et al., 2012), and being unmarried (Keating et al., 2006) were associated with lower adherence to surveillance mammography.

Seven clinical factors associated with adherence to surveillance mammography were identified (i.e., number of years since diagnosis or treatment completion, type of surgery with or without radiation therapy, cancer stage, comorbid conditions, lymphedema, hormonal therapy, and positive lymph node stage findings). For example, further time since diagnosis or treatment completion, receiving endocrine therapy, higher-stage cancer at diagnosis, and having comorbidities/more severe comorbidities were associated with lower adherence to mammography, while women who received radiation therapy were more likely to adhere to mammography (Buist et al., 2013; Carcaise-Edinboro et al., 2010; Doubeni et al., 2006; Enewold et al., 2013; Etim et al., 2006; Field et al., 2008; Geller et al., 2003; Giuliani et al., 2016; Keating et al., 2006; Lu et al., 2011; Mandelblatt et al., 2006; Onega et al., 2012; Sabatino et al., 2012; Schapira et al., 2000; Shelby et al., 2012; Wirtz et al., 2014). However, the included studies did not include a good proportion of Latina women, suggesting that Latina women were largely left out of this research. Four psychological factors associated with adherence to surveillance mammography were identified (i.e., distress specific to BC, fear of cancer recurrence, mammography-related anticipatory anxiety, and worry about mammography pain). For example, one study (Kelly et al., 2015) found that higher distress specific to BC was associated with higher adherence to mammography, while another study (Thewes et al., 2012) found that higher levels of fear of cancer recurrence were associated with lower adherence to mammography. Furthermore, a third study found that higher mammography-related anticipatory anxiety and worry about mammography pain were associated with lower rates of adherence to mammography (Shelby et al., 2012). Therefore, findings suggest that there may not be a linear relationship between worries and concerns related to recurrence and impacts of mammography and adhering to mammography recommendations.

One health behavior factor associated with adherence to surveillance mammography was identified (i.e., current smoking status), such that current smokers report lower rates of adherence compared to those who do not currently smoke (Wirtz et al., 2014). However, the study sample did not include Latina women. Within the healthcare system factors, visiting a healthcare provider, enrollment in a medical home program, and travel time to access health care (defined as traveling longer than 30 minutes) were identified as factors associated with adherence to surveillance mammography. Illuminating the influences of these factors may help identify characteristics of BC survivors who are likely to adhere/not adhere to recommendations for surveillance mammography.

Disparities for survivorship care, including receipt of surveillance mammography, exist among Latina BC survivors when compared to White BC survivors or non-Latina BC survivors. For example, recent systematic review findings suggest that Latina BC survivors were less likely to receive a timely surveillance mammogram compared to White BC survivors (Advani et al., 2022). Additionally, Latina BC survivors have been shown to have less survivorship care knowledge, greater dissatisfaction with care-related information, and a lack of social support compared to survivors who are non-Latina (Nápoles et al., 2019; Olagunju et al., 2018). Furthermore, Latina BC survivors have identified financial barriers, perceptions of poor quality of care, unmet physical symptom management, and fear of being told of recurrence when going to follow-up appointments as barriers to adhering to survivorship care guidelines (Tisnado et al., 2017). Given that adhering to annual surveillance mammograms has a significant impact on health and overall survival (Doubeni et al., 2006; Houssami et al., 2009; Lu et al., 2009), more theory-based research is needed that focuses entirely on the needs of Latina BC survivors.

Integrated Behavioral Model

One theory that may help predict receipt of surveillance mammography is the Integrated Behavioral Model (IBM). The IBM is a theoretical framework that incorporates constructs from the Theory of Reasoned Action (TRA; Fishbein, 1975), the Theory of Planned Behavior (TPB; Ajzen, 1991), as well as other major behavioral theories (Montaño & Kasprzyk, 2015). IBM states that the intention to engage in a behavior is the most important determinant of the actual behavior. Additionally, IBM proposes that attitudes (i.e., experiential attitude, instrumental attitude), perceived norms (i.e., injunctive norms, descriptive norms), and personal agency (i.e., perceived control, self-efficacy) are direct determinants of behavioral intentions, which can also be influenced by other external variables (i.e., demographic factors, personality traits, other individual differences). The IBM also includes four other variables, including environmental constraints, which is an exploratory focus of the current study (for full IBM see *Figure 1*). See Table 1 for definitions of IBM and other constructs included in the current study. It is recommended to better understand the relative importance of attitudes, perceived norms, and personal agency for intentions across different behaviors and populations in order to develop effective interventions targeting behavioral intentions (Montaño & Kasprzyk, 2015).

To the best of our knowledge, no studies have used the IBM to evaluate or predict intentions to obtain surveillance mammography in any population. One benefit of using IBM is that it may be particularly useful for examining associations with the intention to obtain surveillance mammography among Latinas, given its incorporation of cultural and other external variables (e.g., psychosocial, environmental). Ritchie and colleagues (2021) conducted a systematic review and meta-analysis examining the use of the Health Belief Model (HBM; Rosenstock, 1974) and TPB (Ajzen, 1991) in relation to screening mammography and intentions

to obtain a screening mammogram. The HBM and TPB have some similarities to the IBM. Specifically, the TPB posits that attitudes, subjective norms, and perceived behavioral control determine intentions to engage in a behavior, which is the most proximal predictor of behavior (Ajzen, 1991). Of the 15 included studies that examined the TPB for screening mammography and intentions to obtain screening mammography, 3 studies included samples of exclusively Latina women (Cadet, 2015; Lopez-McKee et al., 2008; Teran et al., 2007). Systematic review findings indicated that intentions had the strongest associations with screening mammography, subjective norms were positively associated with intentions to obtain a screening mammogram, and perceived behavioral control and attitudes toward screening mammography were negatively associated with screening mammography (Ritchie et al., 2021). However, it is unclear how the authors operationally defined perceived behavioral control and attitudes towards screening mammography, and they included only one study in their meta-analysis for the attitudes construct. Therefore, it is difficult to interpret the specific directions of these two variables included in their meta-analysis.

With regards to findings presented by Ritchie and colleagues (2021), it is important to consider the differences between screening and surveillance mammography. While the behaviors are similar, the experience of obtaining screening mammography can differ from that of obtaining surveillance mammography. For example, BC survivors may experience trauma-related symptoms due to their cancer diagnosis or experience from cancer treatment (Abbey et al., 2015; Cordova et al., 2017) and report that fear of cancer recurrence is their most common need or concern (Martínez Arroyo et al., 2019), which could negatively impact adherence to surveillance mammography. Women at average risk of BC who are recommended to have screening mammography would not have experienced diagnosis or treatment of cancer.

Moreover, ACS/ASCO survivorship care guidelines (Runowicz et al., 2016) include recommendations for care coordination, so fragmentation of survivorship care (e.g., receiving different types of survivorship care from different health care providers) is likely to negatively impact a BC survivor's ability to adhere to surveillance mammography. Lastly, screening mammography is recommended biennially for women at average risk who are between the ages of 40-74 years (U.S. Preventative Services Task Force, 2024), while surveillance mammography is recommended annually (Runowicz et al., 2016) for BC survivors at any age. Surveillance mammography is recommended more frequently compared to screening mammography, as the risk of BC recurrence among hormone receptor-positive BC remains constant, the risk of BC recurrence for hormone receptor-negative BC is high during the first two years after the initial diagnosis, the fact that early recurrences of BC have worse prognosis than late ones, and the goal of being able to provide support for BC survivors to return to normal life (De Rose et al., 2022; Park et al., 2012; Pedersen et al., 2022). The increased frequency of recommended mammography for BC survivors may make it more difficult to adhere to guidelines, when compared to biennial screening mammography for women at average risk of BC.

The proposed study will examine associations between the following constructs within the IBM: intention to obtain surveillance mammography, attitudes towards surveillance mammography, perceived norms for surveillance mammography, personal agency for obtaining surveillance mammography, environmental constraints, cultural variables, and psychosocial variables. The following section provides additional information regarding these constructs, along with prior research on them related to mammography.

Constructs of the IBM

Intention to Obtain Surveillance Mammography

According to IBM, intention can be defined as the perceived likelihood of performing a specific behavior (Fishbein et al., 2007). Given that Latina BC survivors who have remaining breast tissue are recommended to get surveillance mammography at least annually (Runowicz et al., 2016), the proposed study focuses on intention to obtain mammography within the next 12 months. Within the context of IBM, intention is expected to be associated with actual behavior and is expected to be positively associated with attitudes, perceived norms, and personal agency (Montaño & Kasprzyk, 2015). Only one study has examined the association between intention to obtain surveillance mammography and receipt of surveillance mammography among Black and White/Other long-term young BC survivors, and the findings suggest a positive association (Jones et al., 2018). However, meta-analytic and previous findings support a positive association between intentions to obtain screening mammography and receipt of screening mammography (Murphy et al., 2014; Ritchie et al., 2021). In sum, little research has examined the relationship between intentions to obtain surveillance mammography and receipt of surveillance mammography in any population.

Attitudes towards Surveillance Mammography

Attitudes towards a specific behavior are defined as a person's overall favorableness or unfavorableness toward performing the behavior (Montaño & Kasprzyk, 2015). According to IBM, experiential attitude is the overall emotional evaluation of a specific behavior, and instrumental attitude is the overall evaluation of that behavior (Fishbein et al., 2007). Within the context of IBM, attitudes are expected to be positively associated with intention to engage in a behavior (Montaño & Kasprzyk, 2015). Previous research has examined the relationship between attitudes towards screening mammography and intentions to obtain screening mammography. For example, attitudes towards screening mammography have been found to be positively

associated with intentions to obtain screening mammography (Bowie et al., 2004; Steele & Porche, 2005; Tolma et al., 2006; Tolma et al., 2003). One study reported nonsignificant associations between attitudes and intentions to maintain screening mammography adherence (O'Neill et al., 2008). However, O'Neill and colleagues (2008) utilized pros and cons of mammography as a measure of attitudes, which includes some items that may capture knowledge as opposed to exclusively examining attitudes. No known research has been conducted to evaluate the relationship between attitudes towards and intentions to obtain surveillance mammography in any population.

Perceived Norms for Surveillance Mammography

Perceived norms are defined as the social pressure one feels to perform or not perform a particular behavior (Montaño & Kasprzyk, 2015). According to IBM, injunctive norms are beliefs about whether most people approve or disapprove of a specific behavior, and descriptive norms are beliefs about whether most people perform the behavior (Fishbein et al., 2007). Within the context of IBM, perceived norms are expected to be positively associated with intention to engage in a behavior (Montaño & Kasprzyk, 2015). Previous findings have primarily focused on the relationship between perceived/subjective norms and intentions to obtain screening mammography. Several studies have identified positive associations with perceived/subjective norms and intentions to obtain screening mammography (Godin et al., 2001; Naito et al., 2009; Othman et al., 2012; Steel & Porche, 2005; Tolma et al., 2006; Tolma et al., 2003). Additionally, Allen and colleagues (1998) found that social influence positively predicted intention to obtain screening mammography. Some studies also reported a nonsignificant association between subjective norms and intentions to obtain screening mammography (Bowie et al., 2004; Murphy

et al., 2014; O'Neill et al., 2008). There is a lack of research examining the relationship between perceived norms and the intention to obtain surveillance mammography in any population.

Personal Agency for Obtaining Surveillance Mammography

Personal agency is defined as bringing one's influence to bear on one's own functional and environmental events (Bandura, 2006). According to IBM, perceived behavioral control can be defined as the overall measure of perceived control over the behavior, and self-efficacy can be defined as the overall measure of the ability to perform a specific behavior (Bandura, 2006). Within the context of the IBM, personal agency is expected to be positively associated with intention to engage in a behavior (Montaño & Kasprzyk, 2015). Research has examined the relationship between personal agency and intentions to obtain screening mammography. More specifically, findings support a positive association between perceived behavioral control and intentions to obtain screening mammography (Bowie et al., 2004; Godin et al., 2001; O'Neill et al., 2008; Steel and Porche, 2005; Tolma et al., 2006; Tolma et al., 2003). Moreover, findings also support a positive association between self-efficacy and intention to obtain screening mammography (Allen et al., 1998; Ham, 2006; Ivanova & Kvalem, 2021; Othman et al., 2012; Tolma et al., 2006; Tolma et al., 2003). There is a paucity of research examining the relationship between personal agency and the intention to obtain surveillance mammography in any population.

Environmental Constraints

As reported by IBM, a factor important in determining whether behavioral intentions are likely to lead to behavioral performance is whether environmental constraints make behavioral performance very difficult or impossible (Montaño & Kasprzyk, 2015; Triandis, 1979). Jerome D'Emilia (2015) conducted a systematic review examining barriers and facilitators to screening

mammography among Latina women and reported that income, education, having health insurance, and having a usual source of care were positively associated with screening mammography (Banegas et al., 2012; Buki et al., 2007; Coronado et al., 2009; Cronan et al., 2008; Gonzalez & Borrayo, 2011; Graves et al., 2008; Guerra et al., 2005; Martínez-Donate et al., 2013; Nuno et al., 2011; Pagán et al., 2012; Palmer et al., 2005; Sheppard et al., 2008). Living in a low-income neighborhood, having public insurance, and travel time to access health care (defined as traveling longer than 30 minutes) were associated with lower adherence to surveillance mammography (Giuliani et al., 2016; Keating et al., 2006; Sabatino et al., 2012).

Several studies have examined the relationship between environmental constraints and intentions to obtain screening mammography. For example, results indicate that having zero barriers (compared to two or more barriers) predicted stronger behavioral intentions (O'Neill et al., 2008), barriers were negatively associated with intentions to obtain screening mammography (Murphy et al., 2014), and lower perceived barriers were associated with more positive intentions for future screening mammography (Ham, 2006). However, one study reported a nonsignificant relationship between barriers and intention to obtain screening mammography (Savage & Clarke, 1996). Research is needed to explore the relationship between environmental constraints and intentions to obtain surveillance mammography across populations.

Other Variables

The IBM states that external variables, or “other variables” (e.g., demographic variables, other individual-difference variables), likely influence constructs within the IBM but do not necessarily independently affect the likelihood of performing a behavior (Montaño & Kasprzyk, 2015). Cultural factors (i.e., familism) have been shown to influence cancer screening behaviors and screening mammography among Latina women (Espinosa de Los Monteros & Gallo, 2011;

Jerome-D’Emilia, 2015; Moreno et al., 2019). However, there is a lack of research examining the relationship between cultural variables and both attitudes towards and perceived norms regarding intentions to obtain surveillance mammography across populations, indicating that the proposed research is warranted. The following two cultural variables that are important among Latino/a populations will be included in the proposed research: familism and spirituality (see Table 1).

Familism is a cultural factor that can be defined as the sense of support, belonging, identity, and purpose obtained from the immediate and extended family (Teran et al., 2007). Systematic review findings identified one study that reported a positive association between familism and screening mammography among adherent Latina women, but reported that distorted familism can be a negative factor influencing screening mammography among nonadherent Latina women (Jerome-D’Emilia, 2015; Teran et al., 2007). There has been no research examining the relationship between familism and constructs from the IBM (e.g., perceived norms towards surveillance mammography, and self-efficacy towards surveillance mammography) in any population.

Spirituality is a cultural factor that can be defined as a personal search for meaning and one's existence in the universe, which may or may not be related to religion (Tanyi, 2002). Spirituality is a significant part of Latino/a culture and has been reported through qualitative interviews to be a central part of recovery and coping with BC (Allen et al., 2014; Ashing-Giwa et al., 2006; Campesino & Schwartz, 2006; Deavenport et al., 2010; Wallace et al., 2014). Cadet and colleagues (2021) and Lopez (2009) reported that Latina women with higher religiosity were more likely to have had screening mammography, while Melvin and colleagues (2016) reported that individuals with greater levels of religious or spiritual values had higher odds of being nonadherent to screening mammography among a sample of non-Latino White,

non-Latina Black, and Latina women. There is a growing literature that has examined the relationship between spirituality and self-efficacy among cancer survivors. For example, one study reported a positive association between spirituality and health care-related self-efficacy among cancer survivors (Miller et al., 2017), and another study reported a positive association between spirituality and self-efficacy for coping with BC treatment among Latina BC survivors (Chacón et al., 2021). To date, no study has examined the relationship between spirituality and personal agency within the context of intention to obtain surveillance mammography among Latina BC survivors.

Psychosocial factors (i.e., depression, fear of cancer recurrence) have also been shown to influence screening and surveillance mammography (Demb et al., 2018; Jang et al., 2019; Katz et al., 2018; Mitchell et al., 2014; Montagna et al., 2020; Park et al., 2020; Yazgan & Chagpar, 2022; Zhang et al., 2020). Incorporating psychosocial variables into the IBM is warranted, and examining their relationships with constructs within the IBM may help better understand the influences on personal agency related to intentions to obtain surveillance mammography among Latina BC survivors.

Major depressive disorder (MDD), as defined in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) and by the World Health Organization (American Psychiatric Association, 2013; World Health Organization, 2023), is a psychosocial factor that can be characterized by discrete episodes of at least 2 weeks with symptoms of depressed mood, anhedonia, significant unintentional weight loss/gain, decrease/increase in all activities, sleep disturbance, psychomotor changes, fatigue/low energy, a sense of worthlessness or excessive guilt, difficulty thinking or making decisions, and recurrent thoughts of death. Theoretically, one could predict a negative association between depression and surveillance mammography given

that individuals could likely experience depressed mood, loss of interest in almost all activities, fatigue/low energy, and difficulty thinking or making decisions, which could interfere with one's ability (or motivation) to obtain surveillance mammography. However, mixed findings regarding the impact of depression on screening mammography exist. For example, some studies have identified negative associations between depression and screening mammography (Katz et al., 2018; Mitchell et al., 2014; Zhang et al., 2020), while other studies have reported nonsignificant associations between depression and screening mammography (Demb et al., 2018; Park et al., 2020; Yazgan & Chagpar, 2022), two of which were nonsignificant after controlling for demographic characteristics (Park et al., 2020; Yazgan, & Chagpar, 2022). One study reported that women in Switzerland with moderate to severe depression reported higher rates of screening mammography compared to women with no to low depression (Montagna et al., 2020).

Bandura (1977) described that people's beliefs in their efficacy are developed by four primary sources of influence: 1) mastery experiences; 2) vicarious experiences; 3) social persuasion; and 4) emotional states. It can then be hypothesized that self-efficacy is likely to be impacted by emotions, including the physiology of fear and depression. Previous findings have identified a negative association between various aspects of self-efficacy and depression among cancer survivors (Foster et al., 2015; Giesler & Weis, 2021; Philip et al., 2013). Also, meta-analytic findings indicate a very strong negative association between self-efficacy for cancer coping and distress (which included depression and anxiety dimensions; Chirico et al., 2017). There is a lack of literature that has examined the relationship between depression and personal agency among Latina BC survivors within the context of intentions to obtain surveillance mammography.

Fear of cancer recurrence is a psychosocial factor that can be defined as the worry that cancer will return or progress in the same or another part of the body and is one of the most commonly reported concerns of cancer survivors (Simard et al., 2010). As previously mentioned, fear of cancer recurrence has been found to be negatively associated with adherence to surveillance mammography (Thewes et al., 2012). Zhang and colleagues (2022) conducted a meta-analysis of factors correlated with fear of cancer recurrence among cancer survivors and reported that fear of cancer recurrence was negatively associated with self-efficacy for preventing a cancer recurrence and general self-efficacy (Cessna Palas et al., 2021; Melchior et al., 2013). Other studies have also reported that BC survivors who had lower coping self-efficacy were more likely to be in the higher fear of cancer recurrence group, and identified a negative association between fear of cancer recurrence and general self-efficacy (Lyu et al., 2024; McGinty et al., 2016). There is a lack of literature that has examined the relationship between fear of cancer recurrence and personal agency among Latina BC survivors within the context of intentions to obtain surveillance mammography.

Summary and Hypotheses

Latina BC survivors are disproportionately impacted by BC compared to their non-Latina White counterparts, and disparities in survivorship care and receipt of surveillance mammography exist, with Latinas being less likely to receive this care compared to non-Latina white individuals (Advani et al., 2022; Greenlee et al., 2016; Miller et al., 2021; Nápoles et al., 2019; Olganju et al., 2018; Smith-Gagen et al., 2013). Limited research has focused on the needs of Latina BC survivors and on understanding factors associated with or improving adherence to surveillance mammography among this population. Furthermore, there has been little application of theoretical models to study intentions to obtain surveillance mammography

among Latina women, and to the best of our knowledge, no known studies have applied the IBM to surveillance mammography. Given that intention to obtain surveillance mammography is the most proximal predictor, using an IBM that incorporates cultural and psychosocial factors may explain more variance in intentions to obtain surveillance mammography. Thus, the use of this model may provide a richer understanding of the factors that influence Latina BC survivors' intentions to obtain a surveillance mammogram and aid in the development of future interventions aimed at improving adherence to surveillance mammography in this population. Thus, the purpose of the current study was to utilize a comprehensive IBM to evaluate intentions to obtain a surveillance mammogram within the next 12 months among Latina BC survivors. Because this is an understudied area, we are unable to include multiple measures of each construct, as no such measures exist. Our hypotheses are as follows:

Hypothesis 1

Hypothesis 1 focused on examining correlations between three constructs in the Integrated Behavioral Model and intentions to obtain surveillance mammography within the next 12 months (See Figure 2).

Hypothesis 1A

It was hypothesized that attitudes toward surveillance mammography would be positively associated with intentions to obtain surveillance mammography in the next 12 months, such that individuals with more positive attitudes would report higher intentions to obtain surveillance mammography.

Hypothesis 1B

It was hypothesized that perceived norms towards surveillance mammography would be positively associated with intentions to obtain surveillance mammography within the next 12

months, such that individuals who report greater perceived norms would report higher levels of intentions to obtain surveillance mammography within the next 12 months.

Hypothesis 1C

It was hypothesized that personal agency towards surveillance mammography would be positively associated with intentions to receive surveillance mammography within the next 12 months, such that individuals with greater personal agency would report higher levels of intention to receive surveillance mammography in the next 12 months.

Hypothesis 2

Hypothesis 2 examined correlations between the cultural variables of spirituality and familism and constructs within the Integrated Behavioral Model.

Hypothesis 2A

It was hypothesized that familism would be positively correlated with perceived norms to obtain surveillance mammography, such that individuals with higher levels of familism would report higher perceived norms.

Hypothesis 2B

It was hypothesized that spirituality would be positively correlated with personal agency, such that individuals with higher levels of spirituality would report higher levels of personal agency to obtain surveillance mammography within the next 12 months.

Hypothesis 3

Hypothesis 3 focused on examining correlations between the psychosocial variables of depression and fear of cancer recurrence and constructs within the Integrated Behavioral Model.

Hypothesis 3A

It was hypothesized that fear of cancer recurrence would be negatively

correlated with personal agency, such that individuals with higher levels of fear of cancer recurrence would report lower levels of personal agency to obtain surveillance mammography within the next 12 months.

Hypothesis 3B

It was hypothesized that depression would be negatively correlated with personal agency, such that individuals with higher depressive symptoms would report lower levels of personal agency.

Hypothesis 4

Hypothesis 4 used path-analytic models to explore the relationships between spirituality, familism, attitudes towards surveillance mammography, perceived norms towards surveillance mammography, personal agency towards surveillance mammography, and intentions to obtain surveillance mammography in the next 12 months (see Figure 3). Based on the IBM and previous research, it was hypothesized that 1) familism would be positively associated with perceived norms, 2) spirituality would be positively associated with personal agency, and 3) attitudes towards surveillance mammography, perceived norms towards surveillance mammography, and personal agency towards surveillance mammography would each be positively associated with intentions to obtain surveillance mammography. Given the paucity of research, exploratory pathways between familism and attitudes, familism and personal agency, spirituality and attitudes, and spirituality and perceived norms, were also examined.

Hypothesis 5

Hypothesis 5 used path-analytic models to explore the relationships between fear of cancer recurrence, depression, attitudes towards surveillance mammography, perceived norms towards surveillance mammography, personal agency towards surveillance mammography, and

intentions to obtain surveillance mammography in the next 12 months (see Figure 4). Based on the IBM and previous research, it was hypothesized that 1) fear of cancer recurrence would be negatively associated with personal agency, 2) depression would be negatively associated with personal agency, and 3) attitudes towards surveillance mammography, perceived norms towards surveillance mammography, and personal agency towards surveillance mammography would each be positively associated with intentions to obtain surveillance mammography. Given the paucity of research, exploratory pathways between fear of cancer recurrence and attitudes, fear of cancer recurrence and perceived norms, depression and attitudes, and depression and perceived norms were also examined.

Hypothesis 6

Hypothesis 6 used unadjusted and adjusted path-analytic models to explore the relationships among spirituality, familism, fear of cancer recurrence, depression, attitudes towards surveillance mammography, perceived norms towards surveillance mammography, personal agency towards surveillance mammography, and intentions to obtain surveillance mammography in the next 12 months (see Figure 5). For the adjusted model (Hypothesis 6B), we controlled for demographic variables and clinical characteristics that are shown to be significantly correlated with intentions (see Figure 6).

Hypothesis 6A

Based on the IBM and previous research, it was hypothesized that 1) familism would be positively associated with perceived norms, 2) spirituality would be positively associated with personal agency, 3) fear of cancer recurrence would be negatively associated with personal agency, 4) depression would be negatively associated with personal agency, and 5) attitudes towards surveillance mammography, perceived norms towards surveillance mammography, and

personal agency towards surveillance mammography would each be positively associated with intentions to obtain surveillance mammography. Given the paucity of research, exploratory pathways between familism and attitudes, familism and personal agency, spirituality and attitudes, spirituality and perceived norms, fear of cancer recurrence and attitudes, fear of cancer recurrence and perceived norms, depression and attitudes, and depression and perceived norms were also examined.

Hypothesis 6B

Based on the IBM and previous research, it was hypothesized that 1) familism would be positively associated with perceived norms, 2) spirituality would be positively associated with personal agency, 3) fear of cancer recurrence would be negatively associated with personal agency, 4) depression would be negatively associated with personal agency, and 5) attitudes towards surveillance mammography, perceived norms towards surveillance mammography, and personal agency towards surveillance mammography would each be positively associated with intentions to obtain surveillance mammography after controlling for demographic variables and clinical characteristics. Given the paucity of research, exploratory pathways between familism and attitudes, familism and personal agency, spirituality and attitudes, spirituality and perceived norms, fear of cancer recurrence and attitudes, fear of cancer recurrence and perceived norms, depression and attitudes, and depression and perceived norms were also examined.

Hypothesis 7

Hypothesis 7 focused on examining the correlation between environmental constraints and intentions to obtain surveillance mammography within the next 12 months (see Figure 7). It was hypothesized that environmental constraints would be negatively associated with intentions

to obtain surveillance mammography, such that individuals who reported greater barriers to care would be less likely to intend to do so.

Method

Overview

This cross-sectional study aimed to examine factors associated with intentions to obtain surveillance mammography among post-treatment Latina BC survivors. Prior to data collection, the study was approved by the San Diego State University Institutional Review Board (IRB-24-0387).

Participants and Procedures

Participants were 127 Latina BC survivors ($M_{\text{age}} = 58.7$ years, $SD = 10.9$) recruited via nonprobability sampling between December 3rd, 2025 and May 25th, 2026. Multiple approaches were used for recruitment, including from social media (i.e., publicizing study via Meta Facebook posts and ads), by YouGov, and by other methods (i.e., emailing flyers to BC support groups). Inclusion criteria for the study were as follows: 1) were able to read in English or Spanish; 2) had female sex assigned at birth; 3) identified as Hispanic or Latina; 4) were 18 years of age or older; 5) had not have undergone a double mastectomy; 6) have been diagnosed with stage 0-3 BC; and 7) have completed all recommended BC treatment.

The plan for study recruitment and data collection had to be significantly altered from the proposed approach, which called for Qualtrics Panels to conduct all recruitment and data collection activities. Qualtrics Panels initially indicated they could recruit the entire sample and provided a quote covering all recruitment and data collection procedures. However, a representative from Qualtrics Panels later contacted the study team and indicated that it would not be feasible for them to recruit the entire study sample. This led to a change in approaches,

including recruitment by another panel company, YouGov, which provided an estimate for recruitment and data collection for 200 participants. As this estimate would not have been sufficient to reach the sample size planned, the research team also launched recruitment efforts via social media and other methods to complement YouGov's recruitment processes.

YouGov is a custom research scientific research group. YouGov sent participants who were registered through its proprietary U.S. panel and appeared to meet the inclusion criteria based on their YouGov profiles. To determine eligibility, participants were asked: 1) Are you able to read in English or Spanish?; 2) What sex were you assigned on your original birth certificate?; 3) Do you identify yourself as Hispanic or Latina?; 4) What is your age?; 5) Have you ever been diagnosed with breast cancer; 6) At what stage was your breast cancer when you were first diagnosed?; 7) What type(s) of treatment did you first obtain to treat your breast cancer?; and 8) Have you completed all surgery, radiation, and chemotherapy treatment for breast cancer, except for endocrine (anti-hormone) therapy?. If participants responded no to item 1, male or intersex to item 2, no to item 3, reported being under the age of 18 years for item 4, responded no to item 5, reported stage 4 or metastatic for item 6, reported having a double mastectomy for item 7, or responded no to item 8, they were excluded from the study. Participants were excluded from the study if they had had a double mastectomy given that they do not have any remaining breast tissue. A surveillance mammogram is recommended for those with residual breast tissue (Runowicz et al., 2016). The screening survey also included items used to detect fraudulent response patterns (e.g., questions about their cancer treatment experience and other open-ended questions). Those who met the criteria and who did not appear to be fraudulent were sent an invitation stating that they were eligible to participate in a study. This invitation included a link to the consent form and study survey. Participants were able to

read the consent form and select the “I consent” box to indicate consent to participate in the study. Participants recruited through YouGov were provided with 1500 points credited to their YouGov account and a \$20 gift card (see Appendix for measures).

For recruitment through social media posts, a member of the study team posted Facebook ads on Meta targeting Latina individuals in the U.S. using two Facebook accounts to advertise the study. One Facebook account was in English, and one account was in Spanish. A holistic approach was used to determine the authenticity of potential participants contacted through Meta Facebook. In each post, interested participants were asked to send a message to the study team. A study team member reviewed publicly available information about potential participants' accounts to assess authenticity and the likelihood of meeting study inclusion criteria (e.g., appeared to be female, appeared to live in the US). If a potential participant was found to have limited concerns about their authenticity during the account screening process, they were contacted via Meta Facebook Messenger and were sent a link to the screener survey in Qualtrics. The Qualtrics screener included items that assessed eligibility and items used to detect fraudulent response patterns (e.g., questions about their cancer treatment experience and other open-ended questions). To reduce the risk of sharing personal information, if a participant did not meet one of the eligibility criteria, the screening survey was terminated (before they were allowed to enter their contact information). If a participant met the inclusion criteria based on their screener data, did not appear fraudulent, and their screener matched information from their Meta Facebook account (e.g., location, name), they were emailed a personalized link to complete a 15-20 minute survey. Those who did not complete the survey within one week were sent reminders via email and/or Meta Facebook Messenger. Participants who were recruited via social media posts were provided with a \$20 gift card to a merchant of their choice. All participants recruited via social

media posts and completed the survey were sent a copy of the consent form, provided with a study flyer, and were asked to share the flyer with anyone they know who may also be interested in participating in the study.

For recruitment through other methods, a member of the study team identified online support groups that serve Latina breast cancer survivors and breast cancer survivors more broadly. Support groups that were identified were emailed information about the study and were sent a study flyer in English and Spanish requesting interested participants to contact the study team via email. If a participant recruited through online support groups contacted the study team via email, they were sent a link to the same Qualtrics screener survey used for participants recruited from social media. If a participant met the inclusion criteria based on their screener data and did not appear fraudulent, they were emailed a personalized link to complete a 15-20 minute survey. Participants recruited via other methods were provided with a \$20 gift card to a merchant of their choice.

All participants who met the inclusion criteria completed one study survey. The survey was comprised of constructs included in the IBM (i.e., attitudes towards mammography, perceived norms, personal agency, environmental constraints), cultural constructs (i.e., spirituality, familism), and psychosocial constructs (i.e., fear of cancer recurrence, depression). Demographic items (e.g., age, income) and clinical characteristics (e.g., stage of BC, type of BC treatment) were collected to describe the sample. The entire survey was provided in English or all in Spanish and was taken based on the participant's preferred language. All measures and items that had not been previously developed in Spanish were professionally translated using a dual panel translation process (see Figure 8).

Data Management and Data Quality

Data Collection through YouGov

The data management and data quality plan for working with YouGov was based on a previous study that used Qualtrics Online Panels (Cobian Aguilar, 2021) and ongoing projects in our lab. Prior to data collection, YouGov assigned a project manager to oversee the entire data collection process. The project manager worked collaboratively with the study team to oversee participant screening and data collection ensuring completeness of the data and the quality of the final data set. YouGov uses Research Defender, a series of internal quality checks to which all panel respondents who complete the survey are subjected. Research Defender reviewed respondents on a variety of measures, such as IP address, VPN usage, and browser settings. Any participant who scored with a high or medium risk on Research Defender was removed from the survey. In addition to Research Defender, YouGov also utilized cleaning processes post-survey completion, such as checking for any speeding or skipping behaviors. The data from respondents who engaged in these practices were removed, if necessary. For the screening survey, YouGov used the aforementioned cleaning practices and removed respondents flagged by their internal quality measures and provided the study team with a dataset of respondents who completed the screening survey and did not have any quality concerns using their approaches. Two members of the SDSU study team then reviewed the data provided by YouGov to determine whether participants met the eligibility criteria and whether there was evidence of fraudulent responses (e.g., duplicate or unusual responses). Participants who did not meet eligibility criteria or whose response patterns appeared fraudulent based on their screener responses were flagged and removed. The SDSU study team sent a dataset to YouGov with participants who met eligibility

criteria and appeared to have valid screening data. YouGov then sent the study survey to these individuals.

For YouGov participants who were sent the study survey, the YouGov project manager conducted initial data quality checks periodically throughout the data collection process. Since YouGov only invited respondents who had already been cleaned and vetted in the screening survey, during survey data collection they reviewed the data using Research Defender and removed participants' data from the dataset if they scored medium or high on threat detection. YouGov also developed an item to assess straightlining and patterning to flag respondents for the SDSU study team. At each data quality check, the YouGov project manager removed the data from any participants who scored medium or high risk in threat detection and sent the remaining dataset to the SDSU study team who also reviewed the data for completeness and quality. If any data quality issues were identified, the SDSU project team notified the YouGov project manager. YouGov then provided the research team with data on participants who were sent the informed consent and survey link in batches. The study team also identified participants who started the survey but did not complete it, or who completed it too quickly.

Two members of the SDSU study team engaged in additional procedures to ensure the completeness and quality of the final YouGov dataset. The YouGov project manager periodically sent batches of survey data to review. This allowed the SDSU study team to review the completeness and quality of data while data collection was ongoing. A number of different approaches were taken to ensure data quality. In the first step, the study team evaluated whether participants correctly answered all 3 attention-check items (described in the measures section). If participants did not correctly answer all 3 attention-check items, a member of the SDSU study team reviewed the remaining data for completeness, timing of completion, and patterned

responding. If participants had additional data quality concerns in combination with missing an attention check item, the SDSU study team flagged the data as poor quality in a spreadsheet. If participants missed two of the attention check items, the SDSU study team flagged the data as of poor quality in a spreadsheet. Next, one member of the SDSU study team reviewed survey responses to ensure that participants completed an adequate amount of the included measures and demographic items. If participants' responses indicated significant missing data (>5%), their data were flagged by the SDSU study team in the spreadsheet. Additionally, if duplicate responses were suspected (i.e., same IP address, same demographic information, and survey completion within a short time frame), the SDSU study team flagged their data in the spreadsheet. The SDSU study team also compared responses on the study survey to responses on the screener to identify duplicate or fraudulent responses. When these were identified, the SDSU study team flagged their data in the spreadsheet. The SDSU study team also identified any unusual response patterns (e.g., straight-lining, patterning) in the data by having a single team member review the completed survey data within Qualtrics. If unusual response patterns were identified, their data were flagged in the spreadsheet. The SDSU research team sent spreadsheets containing flagged data to the YouGov project manager, who removed them from the final dataset. This process happened over time, and in batches. Screening and recruitment continued until YouGov concluded it was unlikely that additional valid participants would complete the screening survey. This iterative process was meant to ensure that participants provided valid responses, met eligibility criteria, reported complete responses, responded attentively, were not duplicate responders, and did not have unusual responses. A total of 137 participants completed the study screener through YouGov; 78 were screened and subsequently sent the study survey;

and 52 completed the survey. Of those who completed the survey, 41 participants provided complete and valid data.

Data Collection through Social Media and Other Methods

Several steps were taken to ensure the completeness and quality of the data collected from participants recruited through social media and other methods. Completeness and quality of data were reviewed from each participant while data collection was ongoing. First, it was determined whether each participant correctly answered all 3 attention-check items (described in the measures section). If a participant did not correctly answer all 3 attention-check items, the rest of their data were reviewed for completeness, time of completion, and patterned responding. If participants had additional data-quality concerns in combination with missing an attention-check item, their data were removed from the analysis. If participants missed two attention-check items, their data were also removed from the analysis. Second, all survey responses were carefully reviewed to ensure that participants completed an adequate amount of the included measures and demographic items. If participants had significant missing data ($> 5\%$), their data were removed from the analysis. If a participant did not have significant missing data ($< 5\%$), but did not answer some items, an email was sent to the participant asking if they meant to leave the answers blank, and if they did not, to please provide a response to the items they missed. Missing data were replaced by responses if a participant provided them via email. If a participant did not respond to the first email, they were sent a follow-up email asking whether they intended to leave the answers blank and, if not, to please provide responses to the items they had missed. If they did not respond after the second contact, we did not make any corrections to their data. Additionally, if duplicate responses were suspected (i.e., same IP address, same demographic information, and survey completion within a short time frame), their data were flagged and

removed. Third, data were screened for any unusual response patterns (i.e., straight lining, patterning) in the data. If unusual response patterns were identified, their data were flagged and removed. This process concluded once 85 participants with complete and valid data were recruited. This iterative process was meant to ensure valid responses from participants and ensure that they met eligibility criteria, reported complete responses, responded attentively, were not duplicate responders, and did not have unusual responses. A total of 204 individuals completed the study screener through social media and other methods, 152 were screened and subsequently sent the study survey, and 91 participants completed the survey. Of those who completed the survey, 86 participants provided complete and valid data. This resulted in a sample of 127 participants across all recruitment strategies with complete and valid data.

To prepare for the proposed analyses, the data were further cleaned. Descriptive statistics, including means, standard deviations, frequencies, and percentages for included items and measures were analyzed via SPSS version 29. Additionally, all variables in the dataset were appropriately labeled, and a codebook comprising of all included items and measures with the matching labels was created. Next, each included item/measure was scored as described in the measures section (i.e., sum score, mean score). If a participant completed at least 80% of a specific measure, their data were included in the calculation of a sum score or mean score. Following data preparation, the cleaned and scored SPSS data were exported as a CSV file, and subsequently used in *Mplus* version 8 for the proposed analyses.

Full information maximum likelihood (FIML; Allison, 2012) was used to manage missing data. FIML is a commonly used method for addressing missingness in path analysis and can yield unbiased parameter estimates without requiring multiple imputation to create a new

dataset (Enders & Bandalos, 2001). As part of the data collection process, responses with more than 5% missing data were not included in the final dataset.

Measures

Intentions to Get a Mammogram

Behavioral intentions to get a mammogram in the next 12 months were assessed utilizing three items: 1) “What is the likelihood of you getting a mammogram in the next 12 months?”, which is adapted from Lee et al. (2016); 2) “Do you think you will get a mammogram in the next 12 months?”; and 3) “I intend to get a mammogram in the next 12 months.” The intentions to get a mammogram items were professionally translated for the current study using a dual-panel translation process. The items in Spanish include “Cual es la probabilidad de que te vayas a hacer una mamografía dentro de los próximos 12 meses?”, “Tengo intenciones de que me hagan una mamografía dentro de los próximos 12 meses”, and “Cree que le harán una mamografía dentro de los próximos 12 meses?”. Response options for item 1 range on a 5-point Likert scale from 1 (very unlikely) to 5 (very likely). Response options for item 2 are Yes, No, and Unsure. Response options for item 3 range from 1 (Strongly Disagree) to 5 (Strongly Agree). After a review of data from the three items (see Exploratory Examination of Intention Variables section in the Results), only the data from item 3 were used in all further analyses.

Scheduled Mammogram

Two items assessed whether a participant had scheduled a mammogram in the next 12 months and the date of the next scheduled mammogram. These items are: “Do you have a mammogram scheduled in the next 12 months?” and “When is your next mammogram scheduled?”. The scheduled mammogram items were professionally translated for the current study using a dual panel translation process. The items in Spanish include, “Tiene una

mamografía programada dentro de los próximos 12 meses?” and “Para cuando está programada su próxima mamografía?”. Response options for the first item were No (0), Yes (1), and Unsure (2). The second item was administered with an open response format and was provided to participants who indicated that they have a mammogram scheduled in the next 12 months.

Attitudes Towards Surveillance Mammography

Attitudes towards surveillance mammography were assessed using a newly developed measure, the Attitudes Towards Surveillance Mammography Scale (ATSMS), which modified items from various surveys assessing attitudes towards screening mammography. We created a new measure given that there are no existing measures of attitudes towards surveillance mammography. Prior measures of attitudes towards screening mammography (Dibble et al., 1997; Lopez-McKee & Bader, 2011; Rakowski et al., 1997) do not include questions focused on the context of surveillance mammography; thus, those measures are inappropriate to use in their current format for the current study. Our new measure of attitudes towards surveillance mammography adapted items from the Attitude Toward Breast Cancer Screening Procedures Scale (Dibble et al., 1997), the Mammography Beliefs and Attitudes Questionnaire (Lopez-McKee & Bader, 2011), and the Pros and Cons of Mammography Scales developed by Rakowski and colleagues (1997) and included additional items that we developed, for a total of 13 items. Sample items in English include, “Having a mammogram is embarrassing” and “Having a regular mammogram will help the doctor treat me”. The ATSMS was professionally translated for the current study using a dual panel translation process. Sample items in Spanish include, “Ir a hacerme una mamografía es vergonzoso.” and “Ir a hacerme una mamografía de rutina ayudará a que el doctor me de tratamiento”. Response options range on a 5-point Likert scale from 1 (Strongly agree) to 5 (Strongly disagree). Items 1, 4, 7, 8, 10, 11, and 13 are reverse

coded. We evaluated the new survey prior to analysis by examining item descriptives, internal consistency, and item-to-total correlations to identify poorly performing items. No poorly performing items were identified. A sum score was calculated, with a possible range between 13 and 65, with lower scores indicating more positive attitudes towards surveillance mammography. Internal consistency (as assessed by McDonald's ω) for the current study was 0.79.

Perceived Norms

The construct perceived norms was assessed utilizing a single injunctive norm item ("Do most people who are important to you think you should or should not get a mammogram within the next year?") and a single descriptive norm item ("How many of the people who are most similar to you got a mammogram in the past year?"; Lee et al., 2016). The perceived norms items (Lee et al., 2016) were professionally translated for the current study using a dual panel translation process. The items in Spanish include, "¿La mayoría de las personas que son importantes para usted piensan que debería o no debería hacerse una mamografía dentro del próximo año?" and "¿Cuántas de las personas como similares a usted se hicieron una mamografía en este último año?". Response options for the injunctive norm and descriptive norm items range from 1 (definitely should not) to 4 (definitely should) and 1 (none or very few) to 4 (all or almost all), respectively. A single "perceived norms" sum variable was created by summing the responses to the injunctive norm and descriptive norm items, with a possible range of 2 to 8. Higher scores indicate more positive norms towards surveillance mammography. These items have been previously administered to a nationally representative sample of U.S. adults between the ages of 40 and 70 years (Lee et al., 2016).

Personal Agency

Personal agency was assessed utilizing the Mammography-Specific Self-Efficacy Scale (MSSES; Champion et al., 2005). The MSSES is a 10-item scale measuring self-efficacy for obtaining a mammogram. Sample items include, “You can arrange transportation to get a mammogram” and “You can get a mammogram even if you are worried”. The MSSES has also been validated in Spanish among a sample of low-income Latina individuals from New Jersey (Jerome-D’Emilia et al., 2015). Sample items in Spanish include, “Yo cuento con un medio de transporte para obtener una mamografía” and “Puedo obtener una mamografía así este preocupada”. Response options are on a Likert-type scale ranging from 1 (Strongly disagree) to 5 (Strongly agree). A sum score was calculated for an overall score of generality of perceived efficacy, with a possible range from 10 to 50. Higher scores indicate higher self-efficacy. Previous research has found an internal consistency (as assessed by Cronbach’s α) of 0.87 and 0.94 for the English and Spanish versions of the MSSES, respectively (Champion et al., 2005; Jerome-D’Emilia et al., 2015). Internal consistency (as assessed by McDonald’s ω) for the current study was 0.92.

Spiritual Well-Being

Spiritual well-being was assessed utilizing the Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being Scale (FACIT-SP; Peterman et al., 2002). The FACIT-SP is a 12-item scale measuring aspects of spirituality and/or faith that contribute to quality of life in persons with cancer within the past seven days, which consists of two subscales: Meaning/Peace and Faith. Sample items include, “I have a reason for living” and “My illness has strengthened my faith or spiritual beliefs”. Sample items in Spanish include, “Tengo una razón para vivir” and “Encuentro fuerza en mi fe o mis creencias”. Response options range from 0 (Not at all) to 4 (Very much), with higher scores indicating higher levels of spirituality and/or faith. Item 4 “I

have trouble feeling peace of mind” and item 8 “My life lacks meaning and purpose” are reverse coded. A total score was calculated by summing all responses. There are also two subscales: Meaning/Peace and Faith. The possible range for the total score is 0 to 48, while the possible ranges for the Meaning/Peace subscale and Faith subscale are 0 to 32 and 0 to 16, respectively. Previous research has found an internal consistency (as assessed by Cronbach’s α) of 0.87, 0.81, and 0.88, for the total score, Meaning/Peace subscale, and Faith subscale, respectively (Peterman et al., 2002). Internal consistency (as assessed by McDonald’s ω) for the total score in the current study was 0.89.

Attitudinal Familism

Attitudinal familism was assessed utilizing the Attitudinal Familism Scale (Steidel & Contreras, 2003). The Attitudinal Familism Scale is an 18-item scale measuring various components of attitudinal familism, which consists of four subscales: Familial support; Familial interconnectedness; Familial honor; and subjugation of self for family. Sample items include, “A person should live near his or her parents and spend time with them on a regular basis” and “Children should help out around the house without expecting an allowance”. The Attitudinal Familism Scale was translated in Spanish by a translation expert and back translated into English by a bilingual professional (Steidel & Contreras, 2003). Sample items in Spanish include, “Los hijos siempre deben ayudar a sus padres con el sostén de sus hermanos menores, por ejemplo, ayudar con las tareas escolares, ayudar a cuidarlos, etc.” and “Los padres de edad avanzada deben vivir con sus parientes”. Response options are on a Likert-type scale ranging from 1 (Strongly disagree) to 10 (Strongly agree). A mean score was calculated for the total and subscale scores, with a possible score ranging from 1-10 and higher scores indicating higher endorsement of familism. Previous research has found an internal consistency (as assessed by

Cronbach's α) for the overall scale, familial support subscale, familial interconnectedness subscale, familial honor subscale, and subjugation of self for family subscale of 0.83, 0.72, 0.69, 0.68, and 0.56, respectively (Steidel & Contreras, 2003). However, only the total score was utilized due to low factor loadings on a few of the subscales. Internal consistency (as assessed by McDonald's ω) for the full scale for the current study was .90.

Fear of Cancer Recurrence

Fear of cancer recurrence was assessed utilizing the Fear of Cancer Recurrence Inventory Short Form (FCRI-SF; Simard & Savard, 2009). The FCRI-SF is a 9-item scale that assesses the severity of intrusive thoughts related to fear of cancer recurrence over the previous month. Sample items include, "I am worried or anxious about the possibility of cancer recurrence" and "I believe it is normal to be worried or anxious about the possibility of recurrence". The FCRI-SF (Simard & Savard, 2009) was professionally translated for the current study using a dual panel translation process. Sample items in Spanish include, "Estoy preocupado o ansiosa acerca de la posibilidad de la recurrencia del cáncer" and "creo que es normal estar preocupada o ansiosa de la posibilidad de recurrencia". Response options range from 0 (not at all) to 4 (a great deal) for items 1-5. Response options for item 6 range from 0 (not at all) to 4 (A great deal at risk). Response options for item 7 range from 0 (Never) to 4 (Several times a day). Response options for item 8 range from 0 (I don't think about it) to 4 (Several hours). Response options for item 9 range from 0 (I don't think about it) to 4 (Several years). Item 5 "I believe that I am cured and that the cancer will not come back" is reverse coded. A sum score was calculated with a possible range from 0 to 36 and higher scores indicating greater levels of fear of cancer recurrence (Simard & Savard, 2015). Previous research has found an internal consistency (as

assessed by Cronbach's α of 0.89 (Simard & Savard, 2015). Internal consistency (as assessed by McDonald's ω) for the current study was 0.90.

Depressive Symptoms

Symptoms of depression were assessed utilizing the Patient Health Questionnaire-8 (PHQ-8; Kroenke & Spitzer, 2002). The PHQ-8 is an 8-item scale that assesses symptoms of major depressive disorder. Sample items include, "Over the last 2 weeks, how often have you been bothered by little interest or pleasure in doing things?" and "Over the last 2 weeks, how often have you been bothered by feeling tired or having little energy?". The PHQ-8 has also been previously translated in Spanish (accessible at www.phqscreeners.com/images/sites/g/files/g10060481/f/201412/PHQ-8_Spanish-Spain.pdf). Sample items in Spanish include, "Poco interés o placer en hacer cosas" and "Se ha sentido cansado(a) o con poca energía". Response options range from 0 (not at all) to 3 (nearly every day). A sum score was calculated by adding all responses with a possible range of 0-24, with higher scores indicating higher number of depressive symptoms. A cutoff score of 10 or greater is indicative of a probable diagnosis of major depressive disorder based on the DSM-4 (Kroenke & Spitzer, 2002). Internal consistency (as assessed by McDonald's ω) for the current study was 0.88.

Environmental Constraints

Environmental constraints were assessed using a version of the Barriers to Care Scale (BACS; Heckman et al., 1998) that was modified to examine barriers for BC survivors (Kaur et al., 2024). The modified BACS is a 28-item scale measuring barriers to cancer care that BC survivors experienced based on in-depth interviews. The items assess barriers related to geography/distance, medical and psychological issues, community stigma, and personal

resources. Sample items include, “I lack money to pay for health care” and “There is a lack of health information available to me”. The modified BACS has been professionally translated into Spanish and backtranslated into English. Sample items in Spanish include, “Me falta dinero para pagar por los cuidados médicos” and “Hace falta información sobre la salud que esté a mi disposición”. Response options range from 1 (Strongly agree) to 5 (Strongly disagree) and were summed to obtain a total score with a possible range from 28 to 140. Lower scores indicate more barriers. Internal consistency (as assessed by McDonald’s ω) for the current study was 0.94.

Social Desirability

Social desirability was assessed utilizing the Balanced Inventory of Desirable Responding Short Form (BIDR-16; Hart et al., 2015). The BIDR-16 is a 16-item scale measuring socially desirable responding, which consists of two subscales: Self Deceptive Enhancement (SDE); and Impression Management (IM). Sample items include, “I have not always been honest with myself” and “I sometimes tell lies if I have to”. The BIDR-16 (Hart et al., 2015) was professionally translated for the current study using a dual panel translation process. Sample items in Spanish include, “No siempre he sido honesto/a conmigo mismo/a” and “A veces miento si tengo que hacerlo”. Response options range from 1 (Totally disagree) to 8 (Totally agree). Items 1, 3, 5, 8, 9, and 11-13 are reverse scored and a total score is calculated for each subscale by summing the items. The possible range of scores on each subscale is 8 to 64. Higher scores on the SDE subscales indicate greater unconscious, positively biased self-reporting style, while higher scores on the IM subscale indicate greater conscious, positively biased self-reporting style. The BIDR-16 was translated into Spanish for the study using a dual panel translation process. Previous research has found an internal consistency (as assessed by Cronbach’s α) ranging from .64-.82 and .66-.73 for the SDE and IM subscales, respectively (Hart

et al., 2015). Internal consistency (as assessed by McDonald's ω) for the SDE subscale was 0.70. One item on the IM subscale (I never cover up my mistakes) had very poor item-to-total correlation of .020, which led to difficulties calculating McDonald's ω . However, given that data from the BIDR-16 were only used to describe the sample and were not included in any hypothesis testing or exploratory analyses, we retained the item and the original scoring of the BIDR-16.

Demographic Characteristics

Age

Age was assessed with the following two items: "What is your age?" (English) and "¿Cuántos años tiene?" (Spanish).

Race

Race was assessed with the following two items: "What is your race?" (English) and "¿Cuál es su raza?" (Spanish). Response options include White/Blanco, Black/African American/Negra/Afro-Americana, Asian/Asiática, Native Hawaiian/Other Pacific Islander/Nativa de Hawái/de las Islas del Pacífico, Native American/Alaskan Native/Indígena Americana/Nativa de Alaska, and other/otra.

Ethnicity

Ethnicity was assessed with the following two items: "Do you identify yourself as Hispanic or Latina?" (English) and "¿Usted se identifica como Hispana o Latina?" (Spanish). Response options include No (0) and Yes/Si (1).

Nationality/Heritage

Nationality/heritage was assessed with the following two items: "Which of the following best describes your Hispanic/Latino/a/x heritage?" (English) and "¿Cuál de las siguientes mejor

describe su origen hispano/latino?” (Spanish). Response options include Mexican or Mexican descent/Mexicano o de origen mexicano, Salvadoran or Salvadoran descent/Salvadoreño o de origen salvadoreño, Guatemalan or Guatemalan descent/Guatemalteco o de origen guatemalteco, Argentinean or Argentinean descent/Argentino o de origen argentino, Chilean or Chilean descent/Chileno o de origen chileno, Colombian or Colombian descent/Colombiano o de origen colombiano, Costa Rican or Costa Rican descent/Costarricense o de origen costarricense, Cuban or Cuban descent/Cubano o de origen Cubano, Dominican (Dominican Republic) or Dominican descent/Dominicano[República Dominicana] o de origen dominicano, Ecuadorian or Ecuadorian descent/Ecuatoriano o de origen ecuatoriano, Honduran or Honduran descent/Hondureño o de origen hondureño, Nicaraguan or Nicaraguan descent/Nicaragüense o de origen nicaragüense, Panamanian or Panamanian descent/Panameño o de origen panameño, Peruvian or Peruvian descent/Peruano o de origen peruano, Puerto Rican or Puerto Rican descent/Puertorriqueño o de origen puertorriqueño, Spaniard/Spanish or Spanish descent/Español o de origen español, Venezuelan or Venezuelan descent/Venezolano o de origen venezolano, More than one Hispanic/Latino heritage/Más de un origen hispano/latino, Other Hispanic/Latino heritage, please specify:/Otra herencia hispana/Latina, por favor especifique:.

Sex Assigned at Birth

Sex assigned at birth was assessed with the following two items: “What sex were you assigned on your original birth certificate?” (English) and “¿Qué sexo se le asignó en su acta de nacimiento?” (Spanish). Response options include Male/Masculino (1), Female/Femenino (2), and Intersex/Intersexual (3).

Marital Status

Marital status was assessed with the following two items: “What is your marital status?” (English) and “¿Cuál es su estado civil?” (Spanish). Response options include single/never married/soltera/nunca casada, legally married/casada, divorced/separated/divorciada o separada, and widowed/viuda.

Annual Household Income

Annual household income was assessed with the following two items: “What is your annual household income?” (English) and “¿Cuáles son los ingresos anuales de su hogar?” (Spanish). Response options include \$0, \$1 to \$9,999, \$10,000 to \$19,999, \$20,000 to \$29,999, \$30,000 to \$39,999, \$40,000 to \$49,999, \$50,000 to \$74,999, \$75,000 to \$99,999, and \$100,000 or more.

Education

Education was assessed with the following two items: “What is the highest level of education you have completed?” (English) and “¿Cuál es el nivel escolar más alto que ha terminado?” (Spanish). Response options include No diploma/Sin diploma, Primary school diploma/Certificado de primaria, Regular high school diploma, GED, or equivalent credential/Certificado de preparatoria, GED, o grado equivalente, Associate’s degree (For example, AA, AS)/Título de universidad de 2 años o Asociado [por ejemplo, AA, AS], Bachelor’s degree (For example, BA, BS)/Título de Licenciatura [por ejemplo, BA, BS], Master’s degree (For example, MA, MS, MEng, MEd, MSW, MBA, MPH)/Maestría [Por ejemplo, MA, MS, MEng, MEd, MSW, MBA, MPH], Doctorate (For example, PhD, EdD) or Professional degree (For example, MD, DDS, DVM, JD)/Doctorado [por ejemplo, PhD, EdD] Título profesional avanzado [por ejemplo, MD, DDS, DVM,JD].

Clinical Characteristics

Stage of Breast Cancer Diagnosis

Stage of BC diagnosis was assessed with the following two open response items: “At what stage was your breast cancer when you were first diagnosed?” (English) and “¿En qué etapa estaba su cáncer de mama cuando la diagnosticaron por primera vez?” (Spanish). If participants reported stage 0, ductal carcinoma in situ (DCIS), or lobular carcinoma in situ (LCIS), they were categorized as stage 0. If participants reported stage 1A or 1B, they were categorized as stage 1. If participants reported stage 2A or 2B, they were categorized as stage 2. If participants reported stage 3A, 3B, or 3C, they were categorized as stage 3. If participants reported stage 4 or metastatic, they were excluded from the study.

Breast Cancer Recurrence

Breast cancer recurrence was assessed with the following two items: “Did you have a breast cancer recurrence?” (English) and “¿Tuvo una recurrencia del cáncer de mama?” (Spanish). Response options included No (0) and Yes/Si (1).

Diagnosis of a Secondary Primary Cancer

Diagnosis of a secondary primary cancer was assessed with the following two items: “Were you diagnosed with a secondary primary cancer?” (English) and “¿Le diagnosticaron un segundo cáncer primario?” (Spanish). Response options included No (0) and Yes/Si (1).

Type of Breast Cancer Treatment

The first type(s) of treatment obtained to treat BC was assessed with the following two items: What type(s) of treatment did you first obtain to treat your breast cancer? (*please check all that apply*)” (English) and “¿Qué tipo(s) de tratamiento obtuvo primero para tratar su cáncer de mama? (por favor marque todos los que correspondan)” (Spanish). Response options included single mastectomy/mastectomía simple o unilateral, double mastectomy/mastectomía doble o

bilateral, lumpectomy/tumorectomía (en inglés: lumpectomy), another type of surgery/Otro tipo de cirugía, radiation/radiación, chemotherapy/quimioterapia, immunotherapy/inmunoterapia, and other/otro. If participants selected double mastectomy, they were excluded from the study.

Completion of BC Treatment

Completion of BC treatment was assessed with the following two items: “Have you completed all surgery, radiation, and chemotherapy treatment for breast cancer, except for endocrine (anti-hormone) therapy?” (English) and “¿Ya terminó todo el tratamiento de cirugía, radiación y quimioterapia para el cáncer de mama, excepto para terapia endocrina (hormonal)?” (Spanish). Response options included No (0) and Yes/Si (1). If participants reported that they have not completed all surgery, radiation, and chemotherapy treatment, they were excluded from the study.

Years Since Diagnosis

Years since diagnosis was assessed with the following two items: “How many years has it been since you were first diagnosed with breast cancer?” (English) and “¿Hace cuántos años que le diagnosticaron cáncer de mama por primera vez?” (Spanish). This item used an open ended response and was converted into months since diagnosis for analysis.

Endocrine Therapy Prescription

Prescriptions for endocrine therapy were assessed with the following two items: “Were you prescribed anti-hormone therapy medication by your doctor or oncologist?” (English) and “¿Su doctor u oncólogo le recetó medicamento para terapia hormonal?” (Spanish). Response options included No (0) and Yes/Si (1).

Attention Checks

Attention checks were assessed with the following 6 items: “Please select strongly agree,” “Please select agree,” and “Please select disagree.” (English) and “Por favor seleccione totalmente de acuerdo,” “Por favor seleccione de acuerdo,” and “Por favor seleccione en desacuerdo” (Spanish). The three attention check items were scattered throughout the middle and end of the survey. Participants were required to get at least two out of three attention check items correct for their data to be included in the study. If a participant got two out of the three attention check items correct, a holistic approach to screening their data was conducted, where their data were screened for any other indications of inattentive responding (i.e., patterning, straightlining). If no other concerns were identified, their data were included in the study dataset. If additional concerns were identified, their data were removed from the study dataset. The data of participants who answered all three items incorrectly were removed from the study.

Power and Sample Size

Prior to initiating the study, sample size for the path analyses was determined using the $N:q$ rule (Jackson, 2003), which utilizes a ratio of the number of cases (N) to the number of parameters included in the model (q). Based on recommendations by Kline (2023), 20 times as many cases as parameters is recommended to determine an adequate sample size for assessing significance. As seen in the path-analytic model equations for Hypotheses 4 and 5, there are 13 parameters total for each path-analytic model. So, at a ratio of 20:1, the study was planned with a sample size of 260. As mentioned previously, at the time the proposal was developed, Qualtrics Panels indicated they could recruit the entire sample, but later communicated that they were not confident that they could identify and recruit BC survivors for the study. YouGov also estimated costs for the recruitment of 200 participants, but many of their participants were found to be duplicates or provided low quality data. The research team also employed recruitment strategies

based on prior projects. With all approaches to recruitment, there were significant challenges in recruiting valid participants who provided high quality data. Thus, despite significant effort across multiple methods, the study was only able to recruit 127 participants.

Statistical Analysis

All data were analyzed via the Statistical Package for the Social Sciences (SPSS) version 29 and *Mplus* version 8. All descriptive statistics for the study sample and included items/measures were computed to assess missingness and normality of the data. As previously mentioned, if >5% of data were missing, FIML would be used to account for it. All variables included in our hypotheses for the current study were continuous; therefore, we analyzed descriptive statistics via means and standard deviations. Demographic items that are categorical were analyzed via frequencies and percentages. All descriptive statistics were analyzed in SPSS.

All scales were evaluated for internal consistency using McDonald's Omega coefficient (ω). McDonald's Omega coefficient (ω) is recommended over Cronbach's Alpha (α) given that McDonald's Omega coefficient (ω) relies on fewer and more realistic assumptions, can better reflect true population estimates of reliability if item removal is necessary, and can provide a more accurate degree of confidence in the consistency of a scale compared to Cronbach's Alpha (α ; Bonniga & Saraswathi, 2020). McDonald's Omega coefficient (ω) values above .70 are considered adequate internal consistency (Hayes & Coutts, 2020; Kalkbrenner, 2023).

Hypothesis Testing

Hypothesis 1

It was hypothesized that three constructs in the IBM would be significantly associated with intentions to obtain surveillance mammography within the next 12 months (Figure 2).

Hypothesis 1A

Based on the IBM and previous literature suggesting positive associations between attitudes and screening mammography (Bowie et al., 2004; Montaña & Kasprzyk, 2015; Steele & Porche, 2005; Tolma et al., 2006; Tolma et al., 2003), it was hypothesized that attitudes toward surveillance mammography would be significantly associated with intentions to obtain surveillance mammography within the next 12 months, such that individuals with more positive attitudes toward surveillance mammography would report higher levels of intentions to obtain surveillance mammography within the next 12 months.

Hypothesis 1B

Based on the IBM and previous literature suggesting positive associations between perceived norms and screening mammography (Godin et al., 2001; Montaña & Kasprzyk, 2015; Naito et al., 2009; Othman et al., 2012; Steel & Porche, 2005; Tolma et al., 2006; Tolma et al., 2003), it was hypothesized that perceived norms towards surveillance mammography would be significantly associated with intentions to obtain surveillance mammography within the next 12 months, such that individuals that report greater perceived norms would report higher levels of intentions to obtain surveillance mammography within the next 12 months.

Hypothesis 1C

Based on the IBM and previous literature suggesting positive associations between personal agency and screening mammography (Allen et al., 1998; Bowie et al., 2004; Godin et al., 2001; Ham, 2006; Ivanova & Kvalem, 2021; Montaña & Kasprzyk, 2015; O'Neill et al., 2008; Othman et al., 2012; Steel and Porche, 2005; Tolma et al., 2006; Tolma et al., 2003), it was hypothesized that personal agency towards surveillance mammography would be significantly associated with intentions to receive surveillance mammography within the next 12 months, such that individuals with greater personal agency towards surveillance mammography

would report higher levels of intentions to receive surveillance mammography in the next 12 months.

To examine these hypotheses, the statistical significance of Pearson correlations between attitudes on intentions (**1A**), perceived norms on intentions (**1B**), and personal agency on intentions (**1C**) was evaluated for significance using an alpha of .05. If results demonstrated statistical significance, correlation coefficients were examined for strength of association and directions of the relationships. Per Akoglu (2018), correlation coefficients with an absolute value below .30 are considered weak, correlation coefficients with absolute values ranging from .30 to .49 are considered moderate, and correlation coefficients with an absolute value at .50 and greater are considered strong.

Hypothesis 2

It was hypothesized that cultural variables of spirituality and familism would be significantly correlated with constructs within the IBM.

Hypothesis 2A

Based on previous findings of a positive association between familism and screening mammography (Teran et al., 2007), it was hypothesized that familism would be positively correlated with perceived norms to obtain surveillance mammography, such that individuals with higher levels of familism would report higher perceived norms.

Hypothesis 2B

Based on previous findings of a positive association between spirituality and personal agency (Chacón et al., 2021; Miller et al., 2017), it was hypothesized that spirituality would be positively correlated with personal agency, such that individuals with higher levels of spirituality

would report higher levels of personal agency to obtain surveillance mammography within the next 12 months.

To examine these hypotheses, the statistical significance of Pearson correlations between familism and perceived norms (**2A**) and spirituality and personal agency (**2B**) were evaluated using an alpha of .05. If results demonstrated statistical significance, correlation coefficients were examined for strength of association and directions of the relationships.

Hypothesis 3

It was hypothesized that psychosocial variables of fear of cancer recurrence and depression would be significantly correlated with constructs within the IBM.

Hypothesis 3A

Based on previous findings of a negative association between fear of cancer recurrence and personal agency (Cessna Palas et al., 2021; Lyu et al., 2024; McGinty et al., 2016; Melchior et al., 2013), it was hypothesized that fear of cancer recurrence would be negatively correlated with personal agency, such that individuals with higher levels of fear of cancer recurrence will report lower levels of personal agency to obtain surveillance mammography within the next 12 months.

Hypothesis 3B

Based on previous findings of a negative association between depression and personal agency among cancer survivors (Foster et al., 2015; Giesler & Weis, 2021; Philip et al., 2013), it was hypothesized that depressive symptoms would be negatively correlated with personal agency, such that individuals with higher depressive symptoms would report lower levels of personal agency to obtain surveillance mammography within the next 12 months.

To examine these hypotheses, the statistical significance of Pearson correlations between fear of cancer recurrence and personal agency (**3A**) and depression and personal agency (**3B**) were evaluated using an alpha of .05. If results demonstrated statistical significance, correlation coefficients were examined for strength of association and directions of the relationships.

Hypothesis 4

Based on the IBM (Montaño & Kasprzyk, 2015), previous findings of associations between cultural factors and constructs in the IBM (Chacón et al., 2021; Miller et al., 2017; Teran et al., 2007), and positive associations between constructs in the IBM and intention to obtain screening mammography (Allen et al., 1998; Bowie et al., 2004; Godin et al., 2001; Ham, 2006; Ivanova & Kvalem, 2021; Naito et al., 2009; O'Neill et al., 2008; Othman et al., 2012; Steel and Porche, 2005; Tolma et al., 2006; Tolma et al., 2003), Hypothesis 4 focused on examining a path-analytic model to explore the relationships between spirituality, familism, attitudes towards surveillance mammography, perceived norms towards surveillance mammography, personal agency towards surveillance mammography, and intentions to obtain surveillance mammography in the next 12 months (Figure 3).

To examine this hypothesis, we reported the model chi-square goodness of fit test with its degrees of freedom and *p*-value and model fit indices such as the Steiger-Lind Root Mean Square Error of Approximation (RMSEA; Steiger, 1990), an absolute index of overall model fit, and its associated 90% confidence interval (CI), the Bentler Comparative Fit Index (CFI; Bentler, 1990), and the Standardized Root Mean Square Residual (SRMSR; Hu & Bentler, 1999), an absolute index of overall model fit, as suggested by Kline (2023). The path analysis was conducted using maximum likelihood estimation with (5,000 resamples) biased-corrected bootstrapped 99% CIs (99% CI). This approach does not assume normality in the sampling

distribution of direct and indirect effects (Preacher & Hayes, 2008). Standardized beta coefficients were calculated using maximum likelihood robust (MLR). MLR accounts for the degree of non-normality, producing more reliable standard errors and chi-square statistics for non-normal data (Finney & DiStefano, 2013). Overall model fit was determined using the recommendations of Hooper and colleagues (2008). If 1) the chi-square goodness of fit test is greater than a p value of .05, then the model suggests an adequate fit for the data; 2) A RMSEA value between .08 and .10 is indicative of mediocre model fit and a value $< .08$ is indicative of good fit; 3) A CFI value ≥ 0.90 is needed in order to ensure that misspecified models are not accepted (Hu and Bentler, 1999) and a CFI value ≥ 0.95 is indicative of good model fit; and 4) A SRMSR value $< .08$ is indicative of acceptable model fit and a SRMSR value $< .05$ is indicative of good model fit. Direct and indirect effects were examined using an alpha of .01 to reduce the risk of type 1 error given that there are multiple comparisons being examined within the path-analytic model.

Hypothesis 5

Based on the IBM (Montaño & Kasprzyk, 2015), previous findings of associations between psychosocial factors and constructs in the IBM (Cessna Palas et al., 2021; Foster et al., 2015; Giesler & Weis, 2021; Lyu et al., 2024; McGinty et al., 2016; Melchior et al., 2013; Philip et al., 2013), and positive associations between constructs in the IBM and intention to obtain screening mammography (Allen et al., 1998; Bowie et al., 2004; Godin et al., 2001; Ham, 2006; Ivanova & Kvalem, 2021; Naito et al., 2009; O'Neill et al., 2008; Othman et al., 2012; Steel and Porche, 2005; Tolma et al., 2006; Tolma et al., 2003), Hypothesis 5 focused on examining a path-analytic model to explore the relationships between fear of cancer recurrence, depression, attitudes towards surveillance mammography, perceived norms towards surveillance

mammography, personal agency towards surveillance mammography, and intentions to obtain surveillance mammography in the next 12 months (Figure 4).

To examine this hypothesis, we reported the model chi-square goodness of fit test with its degrees of freedom and p -value and model fit indices such as the RMSEA (Steiger, 1990), an absolute index of overall model fit, and its associated 90% CI, the CFI (Bentler, 1990), and the SRMSR (Hu & Bentler, 1999), an absolute index of overall model fit, as suggested by Kline (2023). The path analysis was conducted using maximum likelihood estimation with (5,000 resamples) biased-corrected bootstrapped 99% CIs (99% CI). This approach does not assume normality in the sampling distribution of direct and indirect effects (Preacher & Hayes, 2008). Standardized beta coefficients were calculated using MLR. MLR accounts for the degree of non-normality, producing more reliable standard errors and chi-square statistics for non-normal data (Finney & DiStefano, 2013). Overall model fit was determined using the recommendations of Hooper and colleagues (2008). If 1) the chi-square goodness of fit test is greater than a p value of .05, then the model suggests an adequate fit for the data; 2) A RMSEA value between .08 and .10 is indicative of mediocre model fit and a value $< .08$ is indicative of good fit; 3) A CFI value ≥ 0.90 is needed in order to ensure that misspecified models are not accepted (Hu and Bentler, 1999) and a CFI value ≥ 0.95 is indicative of good model fit; and 4) A SRMSR value $< .08$ is indicative of acceptable model fit and a SRMSR value $< .05$ is indicative of good model fit. Direct and indirect effects were examined using an alpha of .01 to reduce the risk of type 1 error given that there are multiple comparisons being examined within the path-analytic model.

Hypothesis 6

Based on the IBM (Montaño & Kasprzyk, 2015), previous findings of associations between cultural and psychosocial factors and constructs in the IBM (Cessna Palas et al., 2021;

Chacón et al., 2021; Foster et al., 2015; Giesler & Weis, 2021; Lyu et al., 2024; McGinty et al., 2016; Melchior et al., 2013; Miller et al., 2017; Philip et al., 2013; Teran et al., 2007), positive associations between constructs in the IBM and intention to obtain screening mammography (Allen et al., 1998; Bowie et al., 2004; Godin et al., 2001; Ham, 2006; Ivanova & Kvalem, 2021; Naito et al., 2009; O'Neill et al., 2008; Othman et al., 2012; Steel and Porche, 2005; Tolma et al., 2006; Tolma et al., 2003), and demographic and clinical characteristics that have been shown to be significantly associated with surveillance mammography (Jang et al., 2019), Hypothesis 6 focused on examining unadjusted (Figure 5) and adjusted (Figure 6) path-analytic models to explore the relationships between spirituality, familism, fear of cancer recurrence, depression, attitudes towards surveillance mammography, perceived norms towards surveillance mammography, personal agency towards surveillance mammography, and intentions to obtain surveillance mammography within the next 12 months.

To examine this hypothesis, we reported the model chi-square goodness of fit test with its degrees of freedom and *p*-value and model fit indices such as the RMSEA (Steiger, 1990), an absolute index of overall model fit, and its associated 90% CI, the CFI (Bentler, 1990), and the SRMSR (Hu & Bentler, 1999), an absolute index of overall model fit, as suggested by Kline (2023). The path analysis was conducted using maximum likelihood estimation with (5,000 resamples) biased-corrected bootstrapped 99% CIs (99% CI). This approach does not assume normality in the sampling distribution of direct and indirect effects (Preacher & Hayes, 2008). Standardized beta coefficients were calculated using MLR. MLR accounts for the degree of non-normality, producing more reliable standard errors and chi-square statistics for non-normal data (Finney & DiStefano, 2013). Overall model fit was determined using the recommendations of Hooper and colleagues (2008). If 1) the chi-square goodness of fit test is greater than a *p* value of

.05, then the model suggests an adequate fit for the data; 2) A RMSEA value between .08 and .10 is indicative of mediocre model fit and a value $< .08$ is indicative of good fit; 3) A CFI value ≥ 0.90 is needed in order to ensure that misspecified models are not accepted (Hu and Bentler, 1999) and a CFI value ≥ 0.95 is indicative of good model fit; and 4) A SRMSR value $< .08$ is indicative of acceptable model fit and a SRMSR value $< .05$ is indicative of good model fit. Direct and indirect effects were examined using an alpha of .01 to reduce the risk of type 1 error given that there are multiple comparisons being examined within the path-analytic model.

For the adjusted model, we first examined the relationships between demographic variables/clinical characteristics and intentions. Based on previous literature, we examined the relationships between age, income, education, cancer stage, recurrence, years since diagnosis, endocrine therapy prescription, and intentions (based on item "I intend to get a mammogram in the next 12 months"; Jang et al., 2019). For continuous demographic variables/clinical characteristics, we examined the correlations between each variable and intentions using Pearson correlations (r). For binary categorical demographic variables/clinical characteristics, we utilized point-biserial correlation (r_{pb}) to examine the relationships between demographic variables/clinical characteristics and intentions. For categorical demographic variables/clinical characteristics that contained more than two groups, we utilized Analysis of Variance (ANOVA) to examine the relationships between demographic variables/clinical characteristics and intentions. The statistical significance of Pearson correlations, Point-biserial correlations, and ANOVA were evaluated using an alpha of .05. Demographic variables/clinical characteristics that demonstrated statistical significance were included in the adjusted path model. Demographic variables/clinical characteristics that did not demonstrate statistical significance were not included in the adjusted path model.

Hypothesis 7

Based on previous findings of a negative association between environmental constraints and intentions to obtain screening mammography (Ham, 2006; Murphy et al., 2014; O'Neill et al., 2008), it was hypothesized that environmental constraints would be significantly negatively associated with intentions to obtain surveillance mammography within the next 12 months, such that individuals who report greater barriers to care would be less likely to intend to obtain surveillance mammography (Figure 7).

To examine this hypothesis, the statistical significance of Pearson correlations between environmental constraint on intentions was evaluated for significance using an alpha of .05. If results demonstrated significance, correlation coefficients were examined for strength of association and directions of the relationships.

Results

Sample Characteristics

A total of 127 participants were included in the study (see Table 2 for participant demographics). Participants were primarily White (60.3%), of Mexican (40.9%) or Puerto Rican (26.8%) descent, legally married (58.3%), and had a post-secondary education (70.0%). Mean age of participants was 58.7 years (SD = 10.9), and mean months since BC diagnosis was 99.3 months (SD = 108.7). Participants had a range of stages of cancer at the time of the initial BC diagnosis. Most participants did not have a BC recurrence (91.3%), were not diagnosed with a secondary primary cancer (90.5%), reported receiving lumpectomy (70.9%) and radiation (75.6%) as treatments, were prescribed endocrine therapy medication (68.5%), and reported

having a mammogram scheduled in the next 12 months (72.4%). A majority of participants completed the survey in English (66.9%) compared to in Spanish (33.1%).

For descriptive statistics of all summed and mean variables included in the current analysis see Table 3. Participants reported high intentions to obtain surveillance mammography within the next 12 months ($M = 4.83$ [out of a possible high score of 5], $SD = 0.61$). In fact, 96.1% indicated that they strongly agreed (90.6%) or agreed (5.5%) with the statement that “I intend to get a mammogram in the next 12 months”, while 2.4% of participants indicated neither agree nor disagree, and 1.6% indicated that they strongly disagreed with the statement. Participants had high levels of personal agency for obtaining surveillance mammography ($M = 44.65$, $SD = 6.54$), high perceived norms ($M = 6.66$, $SD = 1.12$), moderate attitudes towards surveillance mammography ($M = 23.52$, $SD = 6.56$), high levels of spirituality ($M = 37.02$, $SD = 8.98$), moderate levels of attitudinal familism ($M = 6.82$, $SD = 1.47$), moderate levels of fear of recurrence ($M = 15.65$, $SD = 8.12$), low levels of depressive symptoms ($M = 5.66$, $SD = 5.11$), and moderate levels of environmental constraints ($M = 107.61$, $SD = 18.28$). All measures were internally consistent (McDonald’s Omega = .789-.938; see Table 3). Participants in the current study reported moderate levels of SDE ($M = 41.12$, $SD = 10.07$) and IM ($M = 46.60$, $SD = 9.37$) on a measure of social desirability.

Per recommendations by Kim (2013), skewness was used to assess normality of the data by calculating a z-score. The z score was calculated by dividing the skew value by the standard error of the skew value. An absolute value larger than 3.29 in a medium sample ($50 < n < 300$) is indicative of a non-normal distribution in the sample (Kim, 2013). Intentions to obtain surveillance mammography, attitudes towards surveillance mammography, personal agency towards surveillance mammography, spirituality, and depressive symptoms all had absolute z-

score values > 3.29 , suggesting non-normal distribution of these variables in the sample. As previously mentioned, MLR was used to account for the degree of non-normality in all path analytic models, producing more reliable standard errors and chi-square statistics for non-normal data (Finney & DiStefano, 2013). Eight participants were removed from the final dataset for having $> 5\%$ of missing data on the entire survey. Only one participant was removed from path-analytic model analyses due to completing less than 80% of the perceived norms toward surveillance mammography sum variable.

Results for Hypothesis 1

Hypothesis 1 focused on examining correlations between three constructs in the IBM and intentions to obtain surveillance mammography within the next 12 months (See Figure 2). All bivariate correlations between constructs in the IBM and intentions to obtain surveillance mammography within the next 12 months are presented in Table 4.

Hypothesis 1A

It was hypothesized that attitudes toward surveillance mammography would be positively associated with intentions to obtain surveillance mammography in the next 12 months, such that individuals with more positive attitudes would report higher intentions to obtain surveillance mammography. Attitudes towards surveillance mammography were significantly, weakly negatively correlated with intentions to obtain surveillance mammography within the next 12 months ($r = -.219, p = .014$). Given that low scores on the measure of attitudes were associated with more positive attitudes, the results indicate that participants with more positive attitudes (lower score) reported higher levels of intentions to obtain surveillance mammography within the next 12 months.

Hypothesis 1B

It was hypothesized that perceived norms towards surveillance mammography would be positively associated with intentions to obtain surveillance mammography within the next 12 months, such that individuals who report greater perceived norms would report higher levels of intentions to obtain surveillance mammography within the next 12 months. Although the correlation was positive, the variable perceived norms to obtain surveillance mammography was not statistically significantly correlated with intentions to obtain surveillance mammography within the next 12 months ($r = .172, p = .054$).

Hypothesis 1C

It was hypothesized that personal agency towards surveillance mammography would be positively associated with intentions to receive surveillance mammography within the next 12 months, such that individuals with greater personal agency towards surveillance mammography would report higher levels of intentions to receive surveillance mammography in the next 12 months. Although the correlation was positive, personal agency was not statistically significantly correlated with intentions to obtain surveillance mammography within the next 12 months ($r = .122, p = .173$).

Results for Hypothesis 2

Hypothesis 2 focused on examining correlations between cultural variables of spirituality and familism and constructs within the IBM. All bivariate correlations between constructs in the IBM and cultural factors can be seen in Table 4.

Hypothesis 2A

It was hypothesized that familism would be positively correlated with perceived norms to obtain surveillance mammography, such that individuals with higher levels of familism would report higher perceived norms. Although the correlation was positive, familism was not

statistically significantly correlated with perceived norms to obtain surveillance mammography ($r = .123, p = .169$).

Hypothesis 2B

It was hypothesized that spirituality would be positively correlated with personal agency, such that individuals with higher levels of spirituality would report higher levels of personal agency to obtain surveillance mammography within the next 12 months. Spirituality was significantly, weakly positively correlated with personal agency ($r = .249, p = .005$), such that participants who reported higher levels of spirituality reported higher levels of personal agency.

Results for Hypothesis 3

Hypothesis 3 focused on examining correlations between the psychosocial variables of depression and fear of cancer recurrence and constructs within the IBM. All bivariate correlations between constructs in the IBM and psychosocial factors are shown in Table 4.

Hypothesis 3A

It was hypothesized that fear of cancer recurrence would be negatively correlated with personal agency, such that individuals with higher levels of fear of cancer recurrence would report lower levels of personal agency to obtain surveillance mammography within the next 12 months. Fear of cancer recurrence was not significantly correlated with personal agency ($r = -.015, p = .870$).

Hypothesis 3B

It was hypothesized that depression would be negatively correlated with personal agency, such that individuals with higher depressive symptoms would report lower levels of personal

agency. The depressive symptoms variable was not significantly associated with personal agency ($r = -.046, p = .607$).

Results for Hypothesis 4

Hypothesis 4 used path-analytic models to explore the relationships between spirituality, familism, attitudes towards surveillance mammography, perceived norms towards surveillance mammography, personal agency towards surveillance mammography, and intentions to obtain surveillance mammography in the next 12 months (see Figure 3). Based on the IBM and previous research, it was hypothesized that 1) familism would be positively associated with perceived norms, 2) spirituality would be positively associated with personal agency, and 3) attitudes towards surveillance mammography, perceived norms towards surveillance mammography, and personal agency towards surveillance mammography would each be positively associated with intentions to obtain surveillance mammography. Given the paucity of research, exploratory pathways between familism and attitudes, familism and personal agency, spirituality and attitudes, and spirituality and perceived norms, were also examined.

The path-analytic model examining the relationships between spirituality, familism, attitudes towards surveillance mammography, perceived norms towards surveillance mammography, personal agency towards surveillance mammography, and intentions to obtain surveillance mammography in the next 12 months did not have validity in the overall sample of Latina BCS. The path analytic model had poor statistical fit and poor descriptive fit ($\chi^2 = 50.932, DF = 5, p < .001$; CFI = .298, SRMR = .124, RMSEA = .270, 90% CI [.206, .340]). Results showed that spirituality was significantly associated with attitudes towards surveillance mammography (Estimate = -0.212, $p = .003$), such that higher levels of spirituality were associated with more positive attitudes towards surveillance mammography. There were no other

statistically significant findings. Figure 9 presents the full path model with unstandardized and standardized estimates. Exploratory analyses were conducted using simplified models. See exploratory path analysis section.

Results for Hypothesis 5

Hypothesis 5 used path-analytic models to explore the relationships between fear of cancer recurrence, depression, attitudes towards surveillance mammography, perceived norms towards surveillance mammography, personal agency towards surveillance mammography, and intentions to obtain surveillance mammography in the next 12 months (see Figure 4). Based on the IBM and previous research, it was hypothesized that 1) fear of cancer recurrence would be negatively associated with personal agency, 2) depression would be negatively associated with personal agency, and 3) attitudes towards surveillance mammography, perceived norms towards surveillance mammography, and personal agency towards surveillance mammography would each be positively associated with intentions to obtain surveillance mammography.

The path-analytic model examining the relationships between fear of cancer recurrence, depressive symptoms, attitudes towards surveillance mammography, perceived norms towards surveillance mammography, personal agency towards surveillance mammography, and intentions to obtain surveillance mammography in the next 12 months did not have validity in the overall sample of Latina BCS. The path analytic model had poor statistical fit and poor descriptive fit ($\chi^2 = 54.791$, $DF = 5$, $p < .001$; $CFI = .128$, $SRMR = .132$, $RMSEA = .281$, 90% CI [.217, .351]). There were no statistically significant direct or indirect effects. Figure 10 presents the full path model with unstandardized and standardized estimates. Exploratory analyses were conducted using simplified models. See exploratory path analysis section.

Results for Hypothesis 6

Hypothesis 6 used unadjusted and adjusted path-analytic models to explore the relationships between spirituality, familism, fear of cancer recurrence, depression, attitudes towards surveillance mammography, perceived norms towards surveillance mammography, personal agency towards surveillance mammography, and intentions to obtain surveillance mammography in the next 12 months (see Figure 5).

The unadjusted path-analytic model examining the relationships between spirituality, familism, fear of cancer recurrence, depressive symptoms, attitudes towards surveillance mammography, perceived norms towards surveillance mammography, personal agency towards surveillance mammography, and intentions to obtain surveillance mammography in the next 12 months did not have validity in the overall sample of Latina BCS. The path analytic model had poor statistical fit and poor descriptive fit ($\chi^2 = 54.729$, $DF = 7$, $p < .001$; CFI = .277, SRMR = .099, RMSEA = .233, 90% CI [.178, .292]). There were no statistically significant direct or indirect effects. Figure 11 presents the full path model with unstandardized and standardized estimates. Exploratory analyses were conducted using simplified models. See Exploratory Path Analyses section.

All relationships between demographics/clinical characteristics and intentions to obtain surveillance mammography within the next 12 months can be seen in Table 5 and Table 6. Income was significantly positively correlated with intentions to obtain surveillance mammography within the next 12 months ($r = .190$, $p = .032$), such that participants with higher annual household incomes reported higher levels of intentions to obtain surveillance mammography within the next 12 months. Age was not significantly correlated with intentions to obtain surveillance mammography within the next 12 months ($r = -.091$, $p = .308$). Education

was not significantly correlated with intentions to obtain surveillance mammography within the next 12 months ($r = .055, p = .542$). Months since diagnosis was not statistically significantly correlated with intentions to obtain surveillance mammography within the next 12 months ($r = -.053, p = .575$). Having a BC recurrence was not significantly correlated with intentions to obtain surveillance mammography within the next 12 months ($r_{pb} = -.008, p = .932$). Having an endocrine therapy prescription was not significantly correlated with intentions to obtain surveillance mammography within the next 12 months ($r_{pb} = -.017, p = .849$). A one-way ANOVA was used to examine the association between stage of BC diagnosis and intentions to obtain surveillance mammography within the next 12 months. Results indicate that stage of BC diagnosis was not significantly associated with intentions to obtain surveillance mammography within the next 12 months ($F(3, 102) = 1.331, p = .268, \eta^2 = .038$). Thus, only income was included in the adjusted model.

The adjusted path-analytic model examining the relationships between spirituality, familism, fear of cancer recurrence, depressive symptoms, attitudes towards surveillance mammography, perceived norms towards surveillance mammography, personal agency towards surveillance mammography, and intentions to obtain surveillance mammography in the next 12 months, controlling for income, did not have validity in the overall sample of Latina BCS. The path analytic model had poor statistical fit and poor descriptive fit ($\chi^2 = 59.927, DF = 10, p < .001$; CFI = .298, SRMR = .094, RMSEA = .199, 90% CI [.152, .249]). There were no statistically significant direct or indirect effects. Figure 12 presents the full path model with unstandardized and standardized estimates. Exploratory analyses were conducted using simplified models. See Exploratory Path Analyses section.

Results for Hypothesis 7

Hypothesis 7 focused on examining the correlation between environmental constraints and intentions to obtain surveillance mammography within the next 12 months (see Figure 7). It was hypothesized that environmental constraints would be negatively associated with intentions to obtain surveillance mammography, such that individuals who reported greater barriers to care would be less likely to intend to obtain surveillance mammography. The variable environmental constraints was not significantly correlated with intentions to obtain surveillance mammography within the next 12 months ($r = .160, p = .072$; Table 4).

Results for Exploratory Analyses

Exploratory Examination of Intention Variables

In addition to the item initially proposed to examine intentions to obtain surveillance mammography (I intend to get a mammogram in the next 12 months) with responses on a 5-point Likert scale ranging from 1 = Strongly agree to 5 = Strongly disagree, two other measures of intentions were included in the survey. The second intention variable was “What is the likelihood of you getting a mammogram in the next 12 months?” and had responses on a 5-point Likert scale ranging from 1 = Very unlikely to 5 = Very likely. The third intentions variable was “Do you think you will get a mammogram in the next 12 months?” with responses of 0 = No, 1 = Yes, and 2 = Unsure. A cross-tabulation table was examined to assess similarities in response patterns across all three intentions variables. Participants who selected strongly agree or agree to the intention variable used to evaluate all study hypotheses (I intend to get a mammogram in the next 12 months) responded in similar ways to the third intention item (Do you think you will get a mammogram in the next 12 months?) by selecting “Yes.” However, there were slightly different results when comparing responses the second intention item (What is the likelihood of

you getting a mammogram in the next 12 months?) and the third intention item (Do you think you will get a mammogram in the next 12 months?). For example, there were 9 participants who selected “very unlikely” to the second intention item (What is the likelihood of you getting a mammogram in the next 12 months?) and yes to the third intention item (Do you think you will get a mammogram in the next 12 months?), indicating that participants may have misunderstood the intention item that asked participants to estimate the likelihood of getting a mammogram. As a result of these analyses, a decision was made to use only the data collected with the intention item “I intend to get a mammogram in the next 12 months” with responses on a 5-point Likert scale ranging from 1 = Strongly agree to 5 = Strongly disagree, in all analyses evaluating study hypotheses, as previously described, and in all subsequent exploratory analyses.

Exploratory Bivariate Correlations

IBM Variables. Exploratory bivariate correlations were also examined between the IBM variables of attitudes, personal agency, and perceived norms. The three variables were statistically significantly correlated with each other, with attitudes towards obtaining surveillance mammography being negatively moderately correlated with both perceived norms ($r = -.395, p < .001$) and personal agency ($r = -.451, p < .001$), indicating that those who have low scores on the measure of attitudes towards surveillance mammography (indicating they have positive attitudes) had high scores on the measures of perceived norms and personal agency for surveillance mammography. Furthermore, perceived norms was statistically significantly and moderately positively correlated with personal agency ($r = .326, p < .001$), indicating that those who have more positive perceived norms also had more positive personal agency for obtaining surveillance mammography.

Cultural Variables. Exploratory bivariate correlations between cultural variables and all other study variables that were not hypothesized were also examined. Spirituality was significantly, weakly negatively correlated with attitudes towards surveillance mammography ($r = -.272, p = .002$), such that participants who reported higher levels of spirituality reported more positive attitudes towards surveillance mammography. Spirituality was not correlated with perceived norms towards surveillance mammography ($r = .056, p = .531$). Spirituality was significantly, weakly positively correlated with familism ($r = .210, p = .018$), such that participants who reported higher levels of spirituality reported higher levels of familism. Spirituality was significantly, moderately negatively correlated with fear of cancer recurrence ($r = -.329, p < .001$), such that participants who reported higher levels of spirituality reported lower levels of fear of cancer recurrence. Spirituality was significantly negatively correlated with depressive symptoms ($r = -.452, p < .001$), such that participants who reported higher levels of spirituality reported lower levels of depressive symptoms.

Psychosocial Variables. Exploratory bivariate correlations between psychosocial variables and all other study variables that were not hypothesized were also examined. Fear of cancer recurrence was significantly, weakly positively correlated with attitudes towards surveillance mammography ($r = .183, p = .039$), such that participants who reported higher levels of fear of cancer recurrence reported more negative attitudes towards surveillance mammography. Similarly, depressive symptoms were significantly, weakly positively correlated with attitudes towards surveillance mammography ($r = .203, p = .022$), such that participants who reported higher levels of depressive symptoms reported more negative attitudes towards surveillance mammography. On the other hand, there were no statistically significant correlations between either fear of cancer recurrence or depression and perceived norms. Fear of

cancer recurrence was also significantly, strongly positively correlated with depressive symptoms ($r = .526, p < .001$), such that participants who reported higher levels of fear of cancer recurrence reported higher levels of depressive symptoms.

Environmental Constraints. Exploratory bivariate correlations between environmental constraints and all other study variables that were not hypothesized were also examined. The variable environmental constraints was significantly, moderately negatively correlated with attitudes towards surveillance mammography ($r = -.407, p < .001$), such that participants who reported few barriers to care (high total scores) reported more positive attitudes towards surveillance mammography (low total scores). The variable environmental constraints was significantly, weakly positively correlated with perceived norms towards surveillance mammography ($r = .285, p = .001$), such that participants who reported less barriers to care (high total scores) reported higher levels of perceived norms towards surveillance mammography. The variable environmental constraints was significantly, moderately positively correlated with personal agency ($r = .358, p = .001$), such that participants who reported less barriers to care (high total scores) reported higher levels of personal agency towards surveillance mammography. Environmental constraints was significantly, moderately positively correlated with spirituality ($r = .413, p < .001$), such that participants who reported less barriers to care (high total scores) reported higher levels of spirituality. Environmental constraints was significantly, weakly positively correlated with familism ($r = .184, p = .038$), such that participants who reported less barriers to care (high total scores) reported higher levels of familism. Environmental constraints was significantly, weakly negatively correlated with fear of cancer recurrence ($r = -.253, p = .004$), such that participants who reported less barriers to care (high total scores) reported lower levels of fear of cancer recurrence. Environmental constraints

was significantly, moderately negatively correlated with depressive symptoms ($r = -.459, p < .001$), such that participants who reported less barriers to care (high total scores) reported lower levels of depressive symptoms.

Exploratory Path Analyses

As previously mentioned, there was a lack of model fit in the path analyses for Hypotheses 4-6. Considering the IBM and results of significant bivariate correlations between constructs in the IBM found in the current study, a simplified path-analytic model examining the relationships between attitudes towards surveillance mammography, perceived norms towards surveillance mammography, personal agency towards surveillance mammography, and intentions to obtain surveillance mammography within the next 12 months was examined. As shown in Figure 13, this model retains the same direct paths as is suggested by the IBM and described in Hypotheses 4-6 (e.g., Attitudes $\rightarrow$ Intention; Perceived Norms $\rightarrow$ Intention; and Personal Agency $\rightarrow$ Intention). However, based on the findings from bivariate correlations, this path model also included paths indicating the correlations between the three IBM variables of attitudes towards surveillance mammography, perceived norms towards surveillance mammography, and personal agency towards surveillance mammography.

When examining overall model fit, if a path model has the same number of observations as free parameters, meaning $df = 0$; this model would be characterized as a just-identified model. A just-identified model in statistical modeling occurs when there is just enough information to determine the model parameters (Barbeau et al., 2019). However, a just-identified model still possesses sufficient information to estimate and interpret parameters to evaluate overall model fit. The results of the Chi-square goodness of fit test are not interpretable to assess model fit due to the model being just-identified ($\chi^2 = .000, DF = 0, p < .001$). Other model fit indices were

also not evaluated as the model was just-identified. There were no statistically significant direct effects. Figure 13 presents the full path model with unstandardized and standardized estimates.

Given the lack of variability in intentions to obtain surveillance mammography within the next 12 months, a binary intentions item was created with participants who selected “Strongly agree” ($n = 115$) coded as “1” and participants who selected “Agree” to “Strongly disagree” ($n = 12$) coded as “0”. All Point-biserial correlations between constructs in the IBM and the binary intentions to obtain surveillance mammography within the next 12 months variable are shown in Table 7. The variable attitudes towards surveillance mammography was significantly, moderately negatively correlated with intentions to obtain surveillance mammography within the next 12 months ($r_{pb} = -.324, p < .001$), such that participants with more positive attitudes reported higher levels of intention to obtain surveillance mammography within the next 12 months. Perceived norms to obtain surveillance mammography were significantly, weakly positively correlated with intentions to obtain surveillance mammography within the next 12 months ($r_{pb} = .240, p = .007$), such that participants who reported higher levels of perceived norms to obtain surveillance mammography reported higher levels of intention to obtain surveillance mammography within the next 12 months. Personal agency was significantly, weakly positively correlated with intention to obtain surveillance mammography within the next 12 months ($r_{pb} = .181, p = .042$), such that participants who reported higher levels of personal agency reported higher levels of intention to obtain surveillance mammography in the next 12 months.

In light of the IBM and considering the lack of model fit in the path analytic models for Hypotheses 4-6 as well as the statistically significant bivariate correlations between constructs in the IBM and the binary intentions variable, a simplified path-analytic model examining the

relationships between attitudes towards surveillance mammography, perceived norms towards surveillance mammography, personal agency towards surveillance mammography, and the binary intentions to obtain surveillance mammography within the next 12 months variable was examined. This model retains the same direct paths as in those suggested by IBM and described in Hypotheses 4-6 (e.g., Attitudes → Binary Intention; Perceived Norms → Binary Intention; and Personal Agency → Binary Intention). However, based on the findings from bivariate correlations, this path model also included paths indicating correlations among the three IBM variables: attitudes towards surveillance mammography, perceived norms towards surveillance mammography, and personal agency towards surveillance mammography.

The current path-analytic model was also characterized as a just-identified model. The results of the Chi-square goodness of fit test are not interpretable to assess model fit due to the model being just-identified ($\chi^2 = .000$, $DF = 0$, $p < .001$). Other model fit indices were also not evaluated as the model was just-identified. There were no significant direct effects. Figure 14 presents the full path model with unstandardized and standardized estimates.

Discussion

The purpose of the current study was to utilize a comprehensive IBM to predict intentions to obtain a surveillance mammogram within the next 12 months among Latina BC survivors. To the best of our knowledge, few studies have examined intentions to obtain surveillance mammography among Latinas in the U.S., and no studies have used the IBM to evaluate or predict these intentions among Latina BC survivors. Results show that Latina BC survivors reported extremely high levels of intentions to obtain surveillance mammography within the next 12 months and were well adjusted from a psychosocial perspective.

When examining the bivariate correlations between the main constructs in the IBM (i.e., attitudes, personal agency, and perceived norms) and intentions to obtain surveillance mammography within the next 12 months (Hypothesis 1), all correlations were in the expected direction suggested by the IBM. Also, as hypothesized, there was a statistically significant association between attitudes towards surveillance mammography and intentions to obtain surveillance mammography within the next 12 months. In prior research, attitudes towards screening mammography have also been found to be positively associated with intentions to obtain screening mammography (Bowie et al., 2004; Steele & Porche, 2005; Tolma et al., 2006; Tolma et al., 2003) and have been suggested as one of the strongest predictors of receipt of screening mammography (Griva et al., 2010), but the current study is the first to find this association in the context of surveillance mammography in any population. Surveillance mammography is similar to screening mammography in that both are utilized to identify BCs. However, screening mammography is utilized as an early detection approach for BC among individuals who have never had a previous history of BC, while surveillance mammography is recommended to BC survivors who still have breast tissue and have completed treatment of the primary BC. Diagnostic mammography is typically utilized after a problem has been identified or if a person identifies a potential cancer symptom (i.e., lump, pain). Additionally, diagnostic mammography utilizes more detailed films and a more in depth focus on the area potentially impacted by a malignancy compared to screening mammography. On the other hand, hypothesized path analyses predicting intention had poor fit and the direct path from attitudes to intention to receive surveillance mammography was not significant in either of the simplified (just-identified) exploratory path analyses which only included the most proximal predictors of

intentions in the IBM, indicating limited support for the IBM model as a whole as applied to surveillance mammography.

The other two (perceived norms, personal agency) bivariate correlations of IBM variables with intentions to obtain surveillance mammography were not statistically significant, and the direct paths between these variables in the simplified (just identified) exploratory path analyses, which only included the most proximal predictors of intentions in the IBM, were also not significant. This is not surprising given the lack of variability in intentions, but the analyses may have also been affected by a smaller sample size. These findings do not align with prior research which found associations between both self-efficacy (Allen et al., 1998; Ham, 2006; Ivanova & Kvalem, 2021; Othman et al., 2012; Tolma et al., 2006; Tolma et al., 2003) and perceived norms (Godin et al., 2001; Naito et al., 2009; Othman et al., 2012; Steel & Porche, 2005; Tolma et al., 2006; Tolma et al., 2003) and intention to obtain screening mammography. However, this is the first known study to evaluate the relationships between both the two variables of personal agency and perceived norms and intentions to obtain surveillance mammography in any population.

Exploratory bivariate correlation analyses also determined that attitudes, perceived norms, and personal agency were all correlated with each other (and demonstrated some of the strongest correlations of all bivariate associations examined) so that more positive attitudes, more supportive perceived norms, and higher personal agency were all positively associated. While these findings are not predicted by the IBM (Montaño & Kasprzyk, 2015; see Figure 1), prior research that has focused on screening mammography has noted the same pattern of associations (Griva et al., 2013; Rutter, 2000; Tolma et al., 2006; Wang et al., 2019).

As IBM indicates that other factors can impact attitudes, perceived norms, and personal agency (see Figure 1), we examined the correlations between two cultural variables (familism

and spirituality) and these constructs (Hypothesis 2). It was hypothesized that familism would be significantly positively correlated with perceived norms towards obtaining surveillance mammography, which was not supported in the current study, although the relationship was in the expected direction. Familism was significantly positively associated with spirituality and no other variables included in the study. Path analysis models that included the familism variable had a poor fit. While there has been one prior study that reported a positive association between familism and screening mammography among adherent Latina women (Jerome-D'Emilia, 2015; Teran et al., 2007), this is the first known study to examine the relationship between familism and constructs from the IBM (e.g., perceived norms towards surveillance mammography, and self-efficacy towards surveillance mammography) in any population. Findings from the study indicate that this cultural variable may be of limited use in predicting any IBM variable associated with surveillance mammography.

Based on IBM, it was hypothesized that a second cultural variable, spirituality, would be significantly and positively correlated with personal agency towards obtaining a surveillance mammogram, a finding supported in the current study. In exploratory bivariate correlation analyses, spirituality was not correlated with perceived norms, but was negatively correlated with attitudes towards surveillance mammography, such that participants who reported higher levels of spirituality reported more positive attitudes towards surveillance mammography. In general, the finding that spirituality was correlated with personal agency and attitudes, in the expected direction, aligns with the IBM and with prior research that indicates the importance of spirituality among Latinas in coping with and recovering from BC (Allen et al., 2014; Ashing-Giwa et al., 2006; Campesino & Schwartz, 2006; Deavenport et al., 2010; Wallace et al., 2014), including studies that have found relationships between spirituality and health care related self-

efficacy among cancer survivors (Miller et al., 2017). However, path analysis models that included the spirituality variable had poor fit.

Based on the IBM, it was hypothesized that two psychosocial factors, fear of cancer recurrence and depressive symptoms, would both be significantly negatively associated with personal agency towards surveillance mammography, which was not supported in the current study. However, the relationships were in the expected direction. In exploratory bivariate correlation analyses, fear of cancer recurrence and depressive symptoms were both significantly associated with attitudes towards surveillance mammography but not significantly correlated with perceived norms. To the best of our knowledge, this is the first known study to identify these relationships among Latina BC survivors in the context of surveillance mammography. Of note, fear of cancer recurrence and depressive symptoms were correlated with each other. Path analysis models that included these two psychosocial variables had poor fit. While there has been no prior research examining the association between personal agency and depression in the context of surveillance mammography, these null findings do not align with prior research which has documented a negative association between various aspects of self-efficacy and depression among cancer survivors (Foster et al., 2015; Giesler & Weis, 2021; Philip et al., 2013). Similarly, while there has been no known prior research examining the association between personal agency and fear of cancer recurrence in the context of surveillance mammography, these null findings do not align with prior research that indicates fear of cancer recurrence was negatively associated with self-efficacy for preventing a cancer recurrence and general self-efficacy (Cessna Palas et al., 2021; Melchior et al., 2013; Zhang et al., 2022).

We examined the correlation between environmental constraints and intentions to obtain surveillance mammography within the next 12 months (Hypothesis 7). It was hypothesized that

environmental constraints would be significantly negatively correlated with intentions to obtain surveillance mammography within the next 12 months, but this was not supported in the current study. In exploratory analyses, the variable environmental constraints was significantly correlated with a majority of study variables examined, suggesting that environmental constraints may play a significant role in the experience of obtaining surveillance mammography. The finding that environmental constraints was not correlated with intentions to obtain surveillance mammography is different than three studies which indicated a relationship between these two variables for screening mammography (Ham, 2006; Murphy et al., 2014, O'Neill et al., 2008), but is similar to a third finding which found a nonsignificant relationship between barriers and intention to obtain screening mammography (Savage & Clarke, 1996). However, this study is the first known to examine the relationship between environmental constraints and intentions to obtain surveillance mammography among any population.

In considering the findings overall, there was minimal support for the use of the IBM to predict intentions to obtain surveillance mammography among the current sample of Latina BC survivors, given that nearly the entire sample indicated that they agreed or strongly agreed with an item assessing intentions to get a mammogram in the next 12 months. In hypothesized and exploratory bivariate correlation analyses, there were a few associations that aligned with the IBM (the correlation between attitudes and intentions; the correlations between spirituality and both perceived norms and personal agency; the correlations between depressive symptoms and both personal agency and perceived norms; and the correlation between fear of cancer recurrence and attitudes). The three main constructs in the IBM (perceived norms, personal agency, and attitudes) were significantly correlated with each other. When a binary variable was created for intention (strongly agree versus everything else), all three main constructs were associated with

the binary intention variable in the expected direction suggested by the IBM. Despite the aforementioned support for the use of the IBM found in bivariate correlations, path analytic model findings suggest that the IBM generally is not a valid theoretical model for examining intentions to obtain surveillance mammography in the current sample of Latina BC survivors due to poor model fit. Even when two simplified path analytic models with the primary intentions variable and the binary intentions variable were examined, there were not any statistically significant direct paths between the three main constructs in the IBM (perceived norms, personal agency, and attitudes) and intentions, which is likely due to a lack of variability in intentions to obtain surveillance mammography within the next 12 months.

Another explanation for the lack of support for the IBM is that intention may not predict receipt of surveillance mammography in this population. Few studies have examined whether intentions predict cancer screening/surveillance behaviors among Latina women. One study examined whether intentions at baseline predicted recent screening mammography at 2-year follow-up in an ethnically diverse sample of women and found that intentions significantly predicted mammography in the overall sample and among White participants, but not among Latina participants (Steward et al., 2009). They postulated that they may not have been able to detect differences among other ethnic groups due to the majority of participants reporting high levels of agreement with intentions and other variables included in their study. On the other hand, another study found that intentions predicted receipt of cervical cancer screening among Latinas (Roncancio et al., 2015). It may be that the three main constructs in the IBM (attitudes, perceived norms, personal agency) and environmental constraints are more predictive of receipt of surveillance mammography than intention to get surveillance mammography. One study found that having perceived benefits towards a surveillance mammogram was associated with a

greater likelihood of reporting a surveillance mammogram in the past 12 months (Edmonds et al., 2022). However, there is also no known research in any population that has examined whether attitudes towards surveillance mammography, perceived norms towards surveillance mammography, and personal agency towards surveillance mammography directly predict receipt of surveillance mammography.

When examining environmental constraints, previous research has identified that having public insurance and travel time to access health care (defined as traveling longer than 30 minutes) were associated with lower adherence to surveillance mammography (Giuliani et al., 2016; Sabatino et al., 2012). Moreover, Edmonds and colleagues (2022) found that health insurance coverage and provider communication about surveillance guidelines were predictive of receiving a surveillance mammogram, and lack of transportation, medical cost/financial barriers, feeling ignored by providers, and medical mistrust were identified barriers to obtaining surveillance mammography during qualitative interviews among a sample of Black and White BC survivors. More research is needed in order to identify barriers that are predictive of receipt of surveillance mammography among Latina BC survivors. Future research may also benefit from examining the impact of environmental constraints on constructs in the IBM, excluding intentions to obtain surveillance mammography, as well as examining the associations between demographic/clinical characteristics and environmental constraints.

Another important consideration in evaluating study findings is the aforementioned difficulties with recruitment for the study. Some of the recruitment challenges may have been related to the current sociopolitical environment in the U.S. that were not anticipated at the time of the development of this study. There are policies enforced by the current U.S. Presidential administration related to immigration status that have resulted in mass deportation and detention.

There were numerous participants who were recruited via social media and other methods who completed the Qualtrics screener, were told they may be eligible to participate in the study, and decided not to provide any of their contact information to the study team in order for us to send the link to the study consent form and survey. It is possible that bias could have been introduced into the study recruitment process related to the current sociopolitical environment in that not every Latina BC survivor was willing to share their contact information. In fact, fewer people who might fear the government may have participated due to concerns about sharing their contact information. However, it is unclear if there would have been any significant impact on intentions or any other measures included in the current study.

The current findings have significant clinical and public health implications. Given that this study is the first of its kind, early evidence suggests limitations in applying this theoretical model to research or interventions focused on surveillance mammography in this population. Future research is needed to examine the direct relationships between intentions and receipt of surveillance mammography, as well as constructs in the IBM and receipt of surveillance mammography, which may better inform our understanding of factors that directly influence receipt of surveillance mammography and aid in the development of intervention efforts. Systematic review findings have supported the efficacy of patient navigation interventions at improving rates of surveillance mammography (Baik et al., 2016). Patient navigators may be able to help increase rates of surveillance mammography among Latina BC survivors based on factors that are shown to directly influence receipt of surveillance mammography.

The current study is the first known study to apply the IBM to the experience of surveillance mammography among Latina BCS. Understanding factors associated with intention to obtain surveillance mammography is understudied in the field, and there has been little

research that has focused on the needs of Latina BC survivors. The study has a number of strengths including sampling of participants across the United States; the fact that it was a non-clinical sample of diverse Latina BC survivors; the detailed and rigorous recruitment, screening, and data collection strategies; and the use of several valid and/or reliable measures.

The current study is not without limitations. Firstly, there was a lack of variability in the intentions to obtain surveillance mammography within the next 12 months variable, with participants reporting extremely high levels of intentions to obtain surveillance mammography within the next 12 months. Due to the lack of variability, we were unable to identify adequate predictors of intentions to obtain surveillance mammography within the next 12 months. However, results suggest that a much larger sample may still not be able to detect differences in intentions to obtain surveillance mammography. Future research may benefit from collecting data on receipt of surveillance mammography and using intentions (and other IBM constructs) as predictors of receipt to further clarify the usefulness of the IBM in predicting receipt among Latina BC survivors. Secondly, we faced numerous challenges with participant recruitment, which led to having a smaller sample than expected, as well as reduction in statistical power. While a sample size of 127 should have been sufficient to detect a medium effect size in the bivariate correlations, with power = .80 and alpha = .05, it may be inadequate at detecting a small effect size (Cohen, 1992), and the hypothesized path analysis models, which all had poor fit, may have been impacted by the size of the sample. Despite the challenges in recruitment, we spent extensive time ensuring the data we received were of high quality. Future research may benefit from utilizing additional recruitment strategies not used in the current study (e.g., cancer registry). Thirdly, there were insufficient measures for each IBM construct, so we were unable to include multiple measures. Despite this limitation, we were able to develop a new measure of

attitudes towards surveillance mammography and were able to translate several of the measures/items using a dual panel approach. Although all measures used in the current study were internally consistent, future research may focus on further development and validation of measures for constructs included in the IBM, particularly Spanish language measures. Fourthly, participants who contained significant amounts of missing data were removed from the final dataset, thus reducing overall sample size. Future research may benefit from including these participants in all analysis and using alternative statistical techniques to account for missingness (e.g., multiple imputation). Lastly, study participants were required to use technology and must have been able to read, therefore, results may not generalize to all Latina BC survivors in the U.S.

In conclusion, Latina BC survivors have strong intentions to obtain surveillance mammography. Given the low variability in intentions, the IBM did not fit the data well, suggesting limitations in applying this theoretical model to research or interventions focused on surveillance mammography in this population. Future research should examine whether IBM constructs are associated with the receipt of surveillance mammography.

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Table 1*Definitions of Integrated Behavioral Model Constructs, Cultural Factors, and Psychosocial Factors*

Construct	Definition
Intention	The perceived likelihood of performing a specific behavior (Fishbein et al., 2007)
Attitude	
Experiential Attitude	The overall emotional evaluation of a specific behavior (Fishbein et al., 2007).
Instrumental Attitude	The overall evaluation of a specific behavior (Fishbein et al., 2007).
Perceived Norms	
Injunctive Norm	The belief about whether most people approve or disapprove of a specific behavior (Fishbein et al., 2007).
Descriptive Norm	The belief about whether most people perform a specific behavior (Fishbein et al., 2007).
Personal Agency	
Perceived Behavioral Control	The overall measure of perceived control over the behavior (Fishbein et al., 2007). Perceived control will not be assessed in the proposed project due to limited accessibility of valid and reliable measures.
Self-Efficacy	The overall measure of ability to perform a specific behavior (Bandura, 2006). Self-efficacy will be utilized as the measurement of personal agency.
Environmental Constraints	Constraints that make behavioral performance very difficult or impossible (e.g., lack of transportation, limited clinic hours; Triandis, 1979).
Selected Cultural Factors	
Familism	The sense of support, belonging, identity, and purpose obtained from the immediate and extended family (Teran et al., 2007).
Spirituality	A personal search for meaning and one's existence in the universe, which may or may not be related to religion (Tanyi, 2002).
Selected Psychosocial Factors	
Depression	Characterized by low mood and/or loss of pleasure or interest in activities for long periods of time. Depressed periods last for most of the day, nearly every day, for at least a two-week period. Other common symptoms include poor concentration, feelings of excessive guilt or low self-worth, hopelessness about the future, thoughts about dying or suicide, disrupted sleep, changes in appetite or weight, and feeling very tired or low in energy (American Psychiatric Association, 2013; World Health Organization, 2023).

Table 1

Definitions of Integrated Behavioral Model Constructs, Cultural Factors, and Psychosocial Factors, continued

Construct	Definition
Fear of Cancer Recurrence	The worry that cancer will return or progress in the same or another part of the body (Simard et al., 2010).

Table 2*Demographic and Clinical Characteristics of Sample*

Variable		N (%)
Race (N = 126)		
	White	76 (60.3%)
	Black/African American	2 (1.6%)
	Asian	1 (0.8%)
	Native American/Alaskan Native	3 (2.4%)
	Other	44 (34.9%)
Ethnicity (N = 127)		
	Hispanic/Latino	125 (98.4%)
	Not Hispanic/Latino ^a	2 (1.6%)
Nationality/Heritage (N = 127)		
	Mexican or Mexican Descent	52 (40.9%)
	Salvadoran or Salvadoran Descent	2 (1.6%)
	Colombian or Colombian Descent	6 (4.7%)
	Cuban or Cuban Descent	6 (4.7%)
	Dominican (Dominican Republic) or Dominican Descent	1 (0.8%)
	Honduran or Honduran Descent	1 (0.8%)
	Peruvian or Peruvian descent	3 (2.4%)
	Puerto Rican or Puerto Rican Descent	34 (26.8%)
	Spaniard/Spanish or Spanish Descent	11 (8.7%)
	Venezuelan or Venezuelan Descent	4 (3.1%)
	More than one Hispanic/Latino Heritage	5 (3.9%)
	Other Hispanic/Latino Heritage ^b	2 (1.6%)
Sex Assigned at Birth (N = 127)		
	Female	127 (100%)
Marital Status (N = 127)		
	Single/Never Married	19 (15.0%)
	Legally Married	74 (58.3%)
	Divorced	29 (22.8%)
	Widowed	5 (3.9%)
Annual Household Income (N = 127)		
	\$0	2 (1.6%)
	\$1 to \$9,999	8 (6.3%)
	\$10,000 to \$19,999	15 (11.8%)
	\$20,000 to \$29,999	9 (7.1%)
	\$30,000 to \$39,999	16 (12.6%)
	\$40,000 to \$49,999	15 (11.8%)
	\$50,000 to \$74,999	22 (17.3%)
	\$75,000 to \$99,999	16 (12.6%)
	\$100,000 or more	24 (18.9%)

Table 2*Demographic and Clinical Characteristics of Sample, continued*

Variable		N (%)
Education (N = 127)		
	No Diploma	3 (2.4%)
	Primary School Diploma	3 (2.4%)
	Regular High School Diploma GED, or Equivalent Credential	32 (25.2%)
	Associate's degree	22 (17.3%)
	Bachelor's degree	39 (30.7%)
	Master's degree	24 (18.9%)
	Doctorate or Professional degree	4 (3.1%)
Stage of BC Diagnosis (N = 106)		
	Stage 0	17 (16.0%)
	Stage 1	35 (33.0%)
	Stage 2	35 (33.0%)
	Stage 3	19 (17.9%)
BC Recurrence (N = 126)		
	Yes	11 (8.7%)
	No	115 (91.3%)
Diagnosis of a Secondary Primary Cancer (N = 126)		
	Yes	12 (9.5%)
	No	114 (90.5%)
Type of BC Treatment (N = 126) ^c		
	Single Mastectomy	31 (24.4%)
	Lumpectomy	90 (70.9%)
	Another type of surgery	10 (7.9%)
	Radiation	96 (75.6%)
	Chemotherapy	57 (44.9%)
	Immunotherapy	17 (13.4%)
	Other	21 (16.5%)
Completion of BC Treatment (N = 126)		
	Yes	119 (94.4%)
	No	7 (5.6%)
Endocrine Therapy Prescription (N = 127)		
	Yes	87 (68.5%)
	No	40 (31.5%)
Age in years (N = 127)		M (SD)
		58.7 (10.9)
Months Since BC Diagnosis (N = 116)		
		99.3 (108.7)

Table 2

Demographic and Clinical Characteristics of Sample, continued

Variable
<i>Note.</i> N = Number of participants; GED = General education development; BC = Breast cancer; M = Mean; SD = Standard deviation.
^a Two participants who did not report being Hispanic/Latino indicated that they were of Mexican Heritage in the subsequent question.
^b Responses for “other” category included Chicano and Portugal.
^c Item was select all that apply.

Table 3*Descriptive Statistics of Study Variables*

Variable	N	M (SD)	Range	Skewness	Kurtosis	McDonald's Omega
Intentions	127	4.83 (0.61)	1-5	-4.694	24.418	-
Attitudes	127	23.52 (6.56)	13-47	.864	1.664	.79
Perceived Norms	126	6.66 (1.12)	4-8	-.441	-.667	-
Personal Agency	127	44.65 (6.54)	10-50	-2.502	8.903	.92
Spirituality	127	37.02 (8.98)	8-48	-.949	.466	.89
Attitudinal Familism	127	6.82 (1.47)	3.22-9.61	-.366	-.469	.90
Fear of Cancer Recurrence	127	15.65 (8.12)	0-35	-.007	-.770	.90
Depressive Symptoms	127	5.66 (5.11)	0-24	1.432	2.421	.88
Environmental Constraints	127	107.61 (18.28)	59-140	-.469	-.128	.94
SDE	127	41.12 (10.09)	8-64	-.293	-.178	.70
IM	127	46.60 (9.37)	8-64	-.235	-.554	-

Note. N = number of participants; M = mean; SD = standard deviation; SDE = self-deceptive enhancement; IM = impression management.

Table 4

Pearson Correlations with Study Variables and Intentions to Obtain Surveillance Mammography Within the Next 12 Months

Variable Name	1	2	3	4	5	6	7	8	9
1. Intentions	-								
2. Attitudes ^a	-.219*	-							
3. Perceived Norms	.172	-.395***	-						
4. Personal Agency	.122	-.451***	.326***	-					
5. Spirituality	.032	-.272**	.056	.249**	-				
6. Attitudinal Familism	-.066	-.028	.123	.105	.210*	-			
7. Fear of Cancer Recurrence	-.090	.183*	-.060	-.015	-.329***	.117	-		
8. Depressive Symptoms	-.156	.203*	-.136	-.046	-.452***	.013	.526***	-	
9. Environmental Constraints ^b	.160	-.407***	.285**	.358***	.413***	.184*	-.253**	-.459***	-

Note.

^alower scores indicate more positive attitudes.

^blower scores indicate more barriers.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 5

Pearson and Point-Biserial Correlations with Demographic Variables/Clinical Characteristics and Intentions to Obtain Surveillance Mammography Within the Next 12 Months

Variable Name	1
1. Intentions	-
2. Age	-.091
3. Income	.190*
4. Education	.055
5. BC recurrence ^a	-.008
6. Months since diagnosis	-.053
7. ET prescription ^b	-.017

Note. BC = breast cancer; ET = endocrine therapy.

^aBC recurrence was coded as 0 = No, 1 = Yes.

^bET was coded as 0 = No, 1 = Yes.

* $p < .05$.

Table 6

Means, Standard Deviations, and One-Way Analysis of Variance in Stage of Breast Cancer Diagnosis and Intentions to Obtain Surveillance Mammography Within the Next 12 Months

Measure	Stage 0	Stage 1	Stage 2	Stage 3	F(3, 102)	η^2
	M (SD)	M (SD)	M (SD)	M (SD)		
Intentions	4.82 (.393)	4.97 (.169)	4.89 (.404)	4.68 (1.003)	1.331	.038

Note. M = Mean; SD = Standard deviation.

Table 7

Point-Biserial Correlations with Study Variables and Intentions to Obtain Surveillance Mammography Within the Next 12 Months (Binary Variable)

Variable Name	1
1. Intentions	-
2. Attitudes ^a	-.324***
3. Perceived Norms	.240**
4. Personal Agency	.181*
5. Spirituality	.007
6. Attitudinal Famillism	-.038
7. Fear of Cancer Recurrence	-.041
8. Depressive Symptoms	-.097
9. Environmental Constraints ^b	.136

Note.

^alower scores indicate more positive attitudes

^blower scores indicate more barriers

* $p < .05$.

** $p < .01$.

*** $p < .001$.

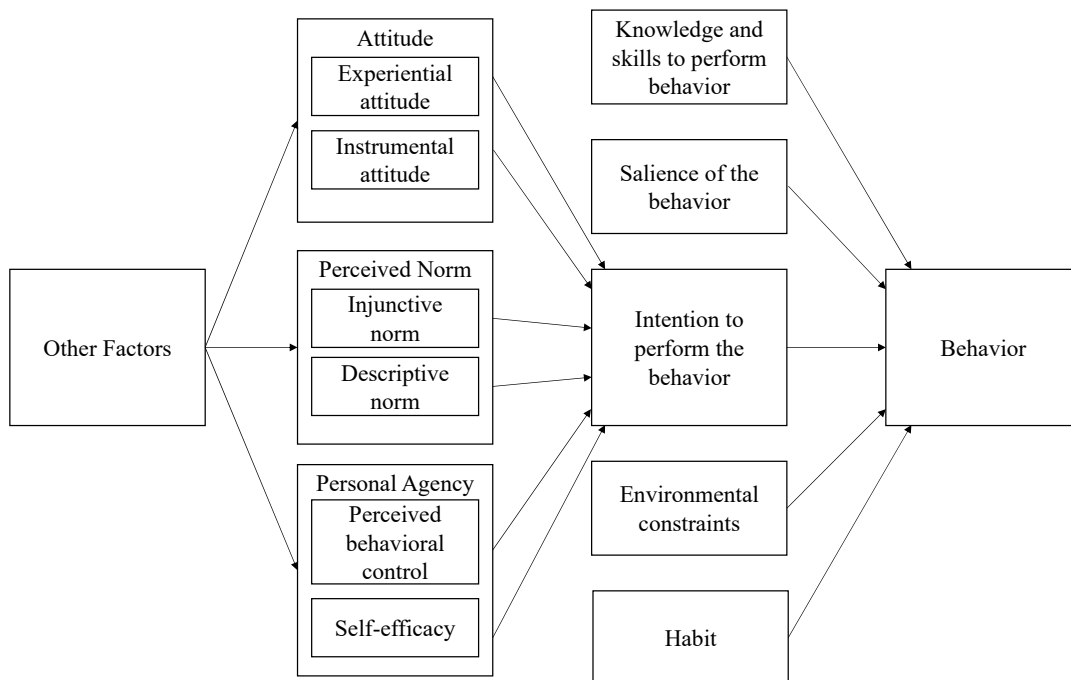


Figure 1

Integrated Behavioral Model

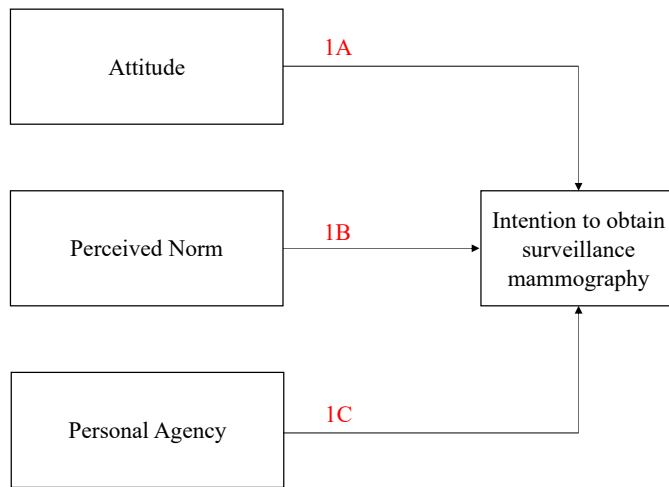


Figure 2

Hypothesized Model for Hypothesis 1

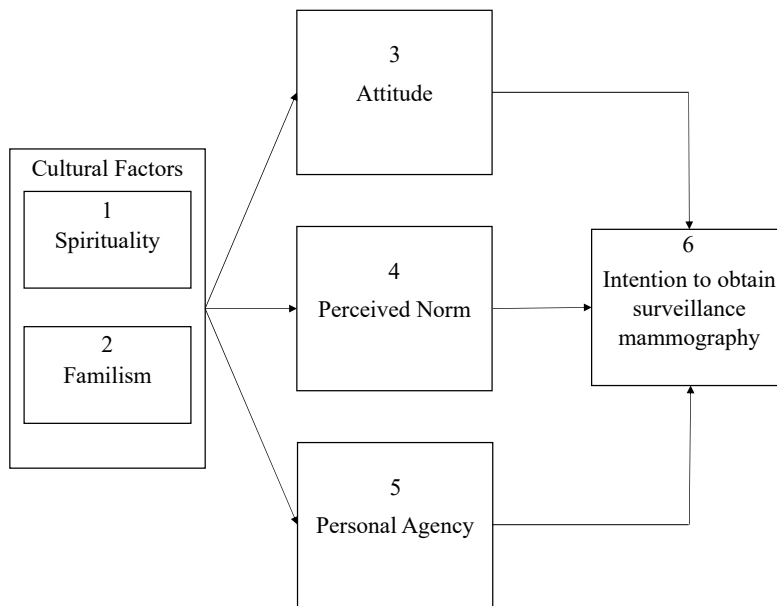


Figure 3

Hypothesized Model for Hypothesis 4

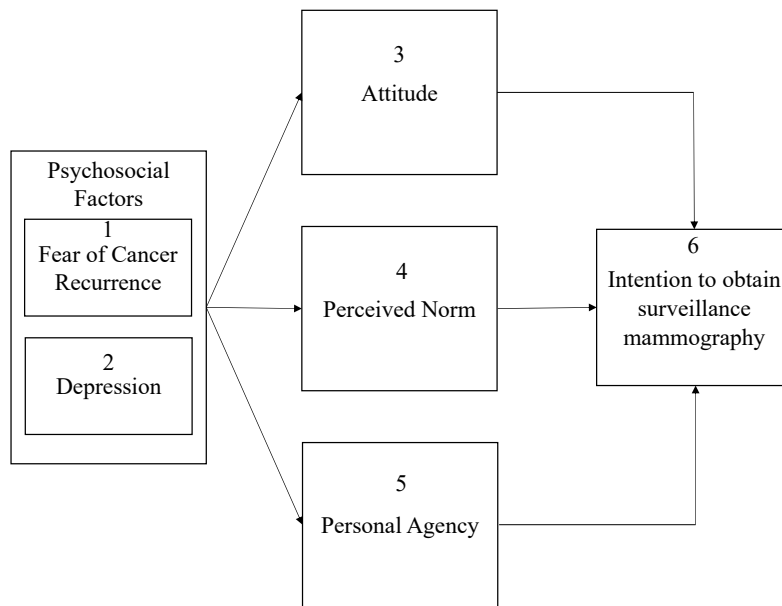


Figure 4

Hypothesized Model for Hypothesis 5

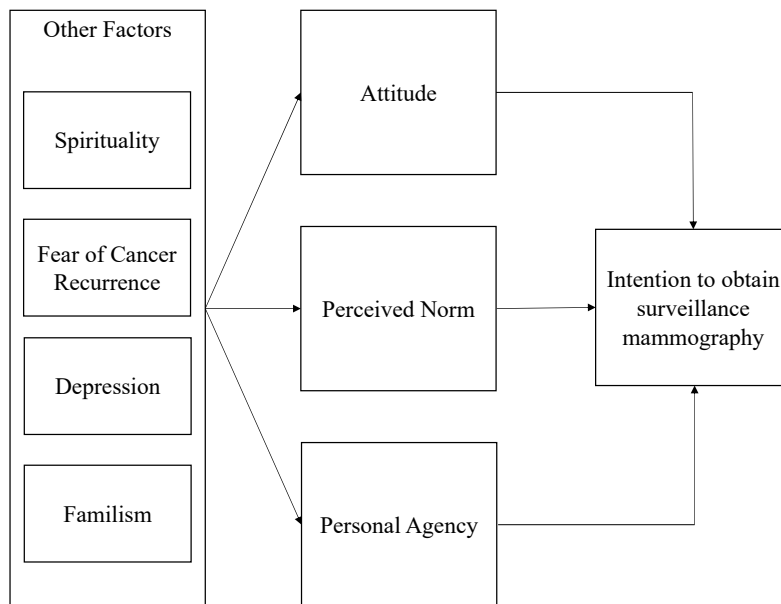


Figure 5

Hypothesized Model for Hypothesis 6A

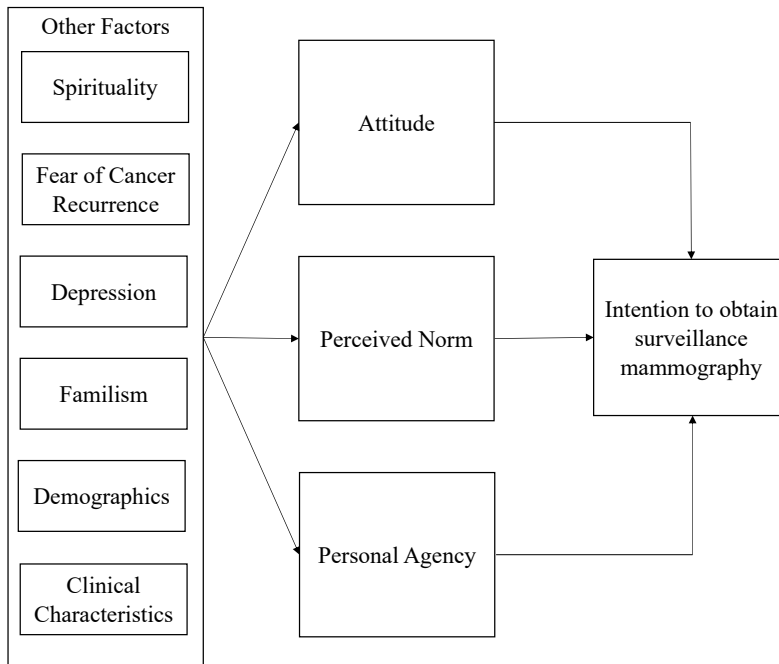


Figure 6

Hypothesized Model for Hypothesis 6B



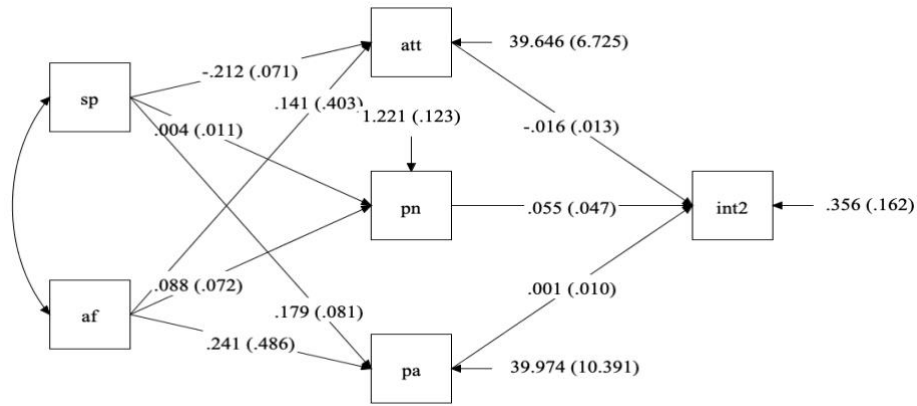
Figure 7

Hypothesized Model for Hypothesis 7

Dual-Panel approach Erkut et al., 1999; Erkut, 2010; Hagell et al., 2010	Steps 1. Forming an expert bilingual/bicultural research team familiar with the research area and/or measure in order to develop an initial translation from original to target language (first panel) 2. Reaching consensus on conceptual equivalence of constructs 3. Generating items to measure constructs simultaneously in two languages 4. Obtaining external output from lay populations (second panel) 5. Piloting final drafts of the measure with subsample of target population 6. Evaluating psychometric properties of translated/adapted measure
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Figure 8

Dual-Panel Approach for Translation and Adaptation of Measures



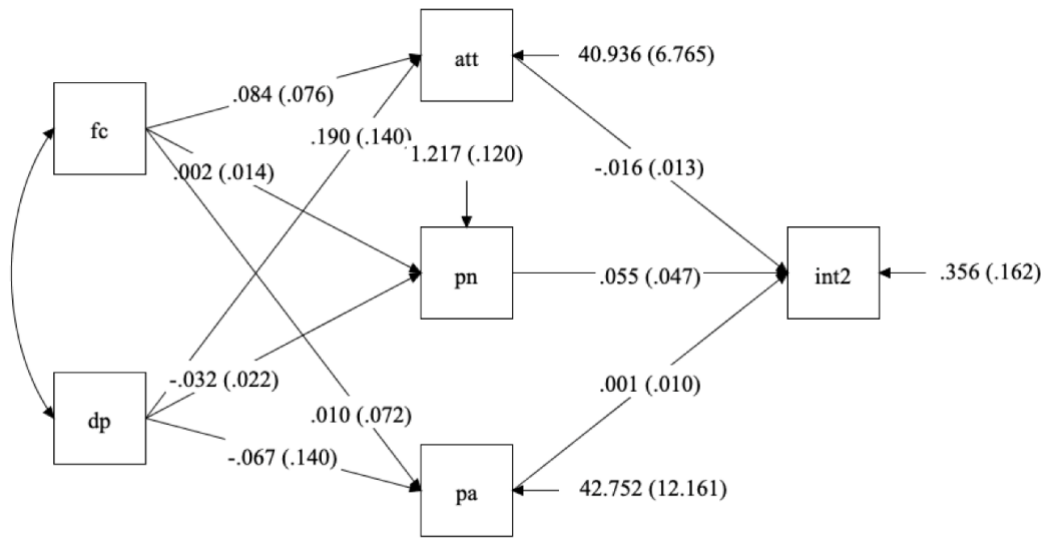
Unstandardized estimate [Standard error]

CFI = .298, SRMR = .124, RMSEA = .270, $\chi^2 = 50.932$, DF = 5, $p < .001$

Path	99% CI Lower .5%	95% CI Lower 2.5%	Estimate	95% CI Upper 2.5%	99% CI Upper .5%	p-value	β
ATT→INT2	-0.047	-0.039	-0.016	0.010	0.020	0.202	-0.175
PN→INT2	-0.054	-0.025	0.055	0.158	0.203	0.238	0.101
PA→INT2	-0.020	-0.013	0.001	0.027	0.041	0.919	0.011
SP→ATT	-0.410	-0.358	-0.212	-0.079	-0.042	0.003	-0.286
SP→PN	-0.022	-0.017	0.004	0.025	0.035	0.709	0.032
SP→PA	0.009	0.047	0.179	0.370	0.443	0.028	0.242
AF→ATT	-0.970	-0.692	0.141	0.904	1.128	0.726	0.032
AF→PN	-0.094	-0.059	0.088	0.228	0.272	0.222	0.117
AF→PA	-0.941	-0.677	0.241	1.224	1.528	0.621	0.054
SP→ATT→INT2	-0.004	-0.001	0.003	0.010	0.012	0.215	0.050
SP→PN→INT2	-0.001	-0.001	0.000	0.003	0.004	0.772	0.003
SP→PA→INT2	-0.004	-0.003	0.000	0.004	0.005	0.905	0.003
AF→ATT→INT2	-0.036	-0.026	-0.002	0.009	0.019	0.782	-0.006
AF→PN→INT2	-0.005	-0.002	0.005	0.029	0.037	0.453	0.012
AF→PA→INT2	-0.013	-0.007	0.000	0.015	0.025	0.960	0.001

Figure 9

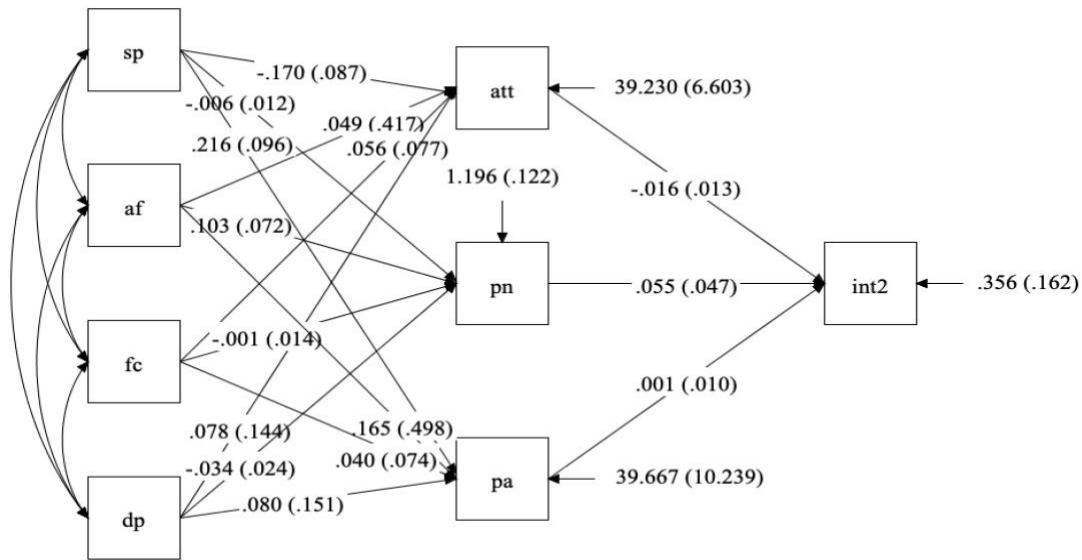
Results for the Path Model of Constructs in the Integrated Behavioral Model, Cultural Factors, and Intention to Obtain Surveillance Mammography Within the Next 12 Months in the Full Sample (N = 126) of Latina Breast Cancer Survivors. Note. β = standardized estimate; DF = degrees of freedom; CI = confidence interval; CFI = comparative fit index; RMSEA = root mean square error of approximation; SRMR = standardized root mean residual; ATT = Attitudes Towards Surveillance Mammography Scale; INT2 = Intentions to obtain surveillance mammography within the next 12 months; PN = Perceived norms; PA = Personal agency; SP = Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being Scale; AF = Attitudinal Familism Scale.



Unstandardized estimate [Standard error]							
CFI = .128, SRMR = .132, RMSEA = .281, $\chi^2 = 54.791$, DF = 5, $p < .001$							
Path	99% CI Lower .5%	95% CI Lower 2.5%	Estimate	95% CI Upper 2.5%	99% CI Upper .5%	p -value	β
ATT→INT2	-0.047	-0.039	-0.016	0.010	0.020	0.202	-0.175
PN→INT2	-0.054	-0.025	0.055	0.158	0.203	0.238	0.101
PA→INT2	-0.020	-0.013	0.001	0.027	0.041	0.919	0.011
FC→ATT	-0.109	-0.064	0.084	0.231	0.278	0.266	0.104
FC→PN	-0.037	-0.027	0.002	0.029	0.036	0.866	0.017
FC→PA	-0.223	-0.154	0.010	0.134	0.169	0.891	0.012
DP→ATT	-0.123	-0.057	0.190	0.498	0.609	0.176	0.148
DP→PN	-0.098	-0.079	-0.032	0.010	0.023	0.158	-0.146
DP→PA	-0.529	-0.394	-0.067	0.169	0.237	0.634	-0.052
FC→ATT→INT2	-0.009	-0.007	-0.001	0.001	0.002	0.413	-0.018
FC→PN→INT2	-0.003	-0.001	0.000	0.003	0.004	0.895	0.002
FC→PA→INT2	-0.002	-0.001	0.000	0.002	0.004	0.990	0.000
DP→ATT→INT2	-0.021	-0.016	-0.003	0.001	0.003	0.435	-0.026
DP→PN→INT2	-0.013	-0.010	-0.002	0.000	0.001	0.433	-0.015
DP→PA→INT2	-0.009	-0.005	0.000	0.002	0.003	0.962	-0.001

Figure 10

Results for the Path Model of Constructs in the Integrated Behavioral Model, Psychosocial Factors, and Intention to Obtain Surveillance Mammography Within the Next 12 Months in the Full Sample ($N = 126$) of Latina Breast Cancer Survivors. Note. β = standardized estimate; DF = degrees of freedom; CI = confidence interval; CFI = comparative fit index; RMSEA = root mean square error of approximation; SRMR = standardized root mean residual; ATT = Attitudes Towards Surveillance Mammography Scale; INT2 = Intentions to obtain surveillance mammography within the next 12 months; PN = Perceived norms; PA = Personal agency; FC = Fear of Cancer Recurrence Inventory; DP = Patient Health Questionnaire-8.



Unstandardized estimate [Standard error]
 CFI = .277, SRMR = .099, RMSEA = .233, $\chi^2 = 54.729$, DF = 7, $p < .001$

Path	99% CI Lower .5%	95% CI Lower 2.5%	Estimate	95% CI Upper 2.5%	99% CI Upper .5%	p-value	β
ATT→INT2	-0.047	-0.039	-0.016	0.010	0.020	0.202	-0.175
PN→INT2	-0.054	-0.025	0.055	0.158	0.203	0.238	0.101
PA→INT2	-0.020	-0.013	0.001	0.027	0.041	0.919	0.011
SP→ATT	-0.416	-0.353	-0.170	-0.012	0.039	0.051	-0.230
SP→PN	-0.036	-0.029	-0.006	0.017	0.027	0.611	-0.047
SP→PA	0.030	0.067	0.216	0.446	0.543	0.025	0.292
AF→ATT	-1.073	-0.818	0.049	0.850	1.036	0.906	0.011
AF→PN	-0.083	-0.041	0.103	0.243	0.286	0.153	0.136
AF→PA	-1.042	-0.763	0.165	1.177	1.519	0.740	0.037
FC→ATT	-0.140	-0.093	0.056	0.203	0.258	0.467	0.069
FC→PN	-0.041	-0.030	-0.001	0.024	0.032	0.917	-0.010
FC→PA	-0.178	-0.122	0.040	0.169	0.210	0.587	0.049
DP→ATT	-0.250	-0.177	0.078	0.393	0.519	0.590	0.060
DP→PN	-0.102	-0.085	-0.034	0.010	0.024	0.159	-0.155

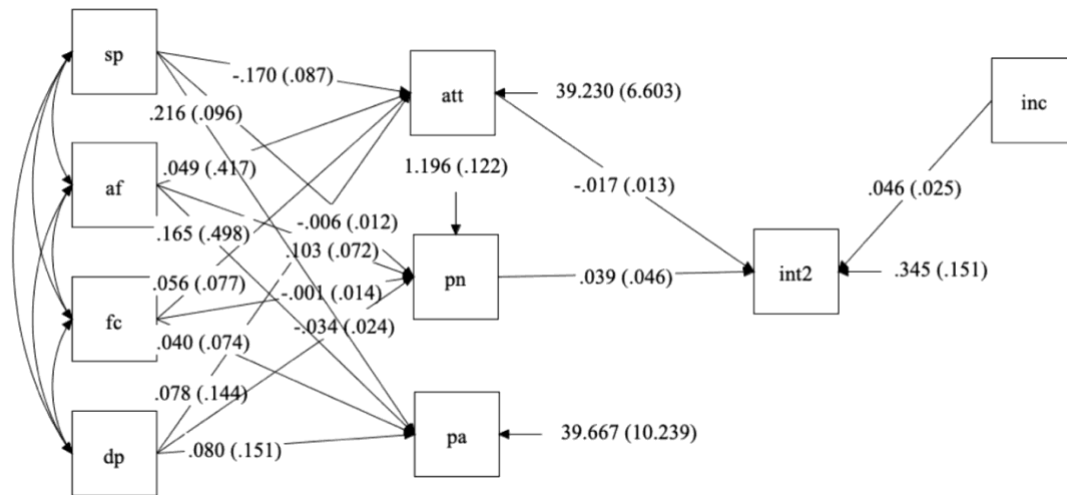
Figure 11

Results for the Unadjusted Path Model of Constructs in the Integrated Behavioral Model, Psychosocial Factors, Cultural Factors and Intention to Obtain Surveillance Mammography Within the Next 12 Months in the Full Sample (N = 126) of Latina Breast Cancer Survivors. Note. β = standardized estimate; DF = degrees of freedom; CI = confidence interval; CFI = comparative fit index; RMSEA = root mean square error of approximation; SRMR = standardized root mean residual; ATT = Attitudes Towards Surveillance Mammography Scale; INT2 = Intentions to obtain surveillance mammography within the next 12 months; PN = Perceived norms; PA = Personal agency; SP = Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being Scale; AF = Attitudinal Familism Scale; FC = Fear of Cancer Recurrence Inventory; DP = Patient Health Questionnaire-8.

Path	99% CI Lower .5%	95% CI Lower 2.5%	Estimate	95% CI Upper 2.5%	99% CI Upper .5%	p-value	β
DP→PA	-0.355	-0.239	0.080	0.375	0.482	0.596	0.062
SP→ATT→INT2	-0.003	-0.001	0.003	0.011	0.013	0.284	0.040
SP→PN→INT2	-0.006	-0.003	0.000	0.001	0.001	0.711	-0.005
SP→PA→INT2	-0.005	-0.003	0.000	0.005	0.007	0.910	0.003
AF→ATT→INT2	-0.031	-0.021	-0.001	0.014	0.026	0.926	-0.002
AF→PN→INT2	-0.005	-0.002	0.006	0.031	0.040	0.407	0.014
AF→PA→INT2	-0.013	-0.008	0.000	0.013	0.023	0.971	0.000
FC→ATT→INT2	-0.008	-0.006	-0.001	0.001	0.002	0.565	-0.012
FC→PN→INT2	-0.004	-0.003	0.000	0.001	0.003	0.935	-0.001
FC→PA→INT2	-0.002	-0.001	0.000	0.003	0.005	0.965	0.001
DP→ATT→INT2	-0.021	-0.014	-0.001	0.002	0.004	0.708	-0.011
DP→PN→INT2	-0.015	-0.010	-0.002	0.000	0.001	0.440	-0.016
DP→PA→INT2	-0.004	-0.002	0.000	0.004	0.007	0.955	0.001

Figure 11

Results for the Unadjusted Path Model of Constructs in the Integrated Behavioral Model, Psychosocial Factors, Cultural Factors and Intention to Obtain Surveillance Mammography Within the Next 12 Months in the Full Sample (N = 126) of Latina Breast Cancer Survivors. Note. β = standardized estimate; DF = degrees of freedom; CI = confidence interval; CFI = comparative fit index; RMSEA = root mean square error of approximation; SRMR = standardized root mean residual; ATT = Attitudes Towards Surveillance Mammography Scale; INT2 = Intentions to obtain surveillance mammography within the next 12 months; PN = Perceived norms; PA = Personal agency; SP = Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being Scale; AF = Attitudinal Familism Scale; FC = Fear of Cancer Recurrence Inventory; DP = Patient Health Questionnaire-8 , continued.



Unstandardized estimate [Standard error]

CFI = .298, SRMR = .094, RMSEA = .199, $\chi^2 = 59.927$, DF = 10, $p < .001$

Path	99% CI Lower .5%	95% CI Lower 2.5%	Estimate	95% CI Upper 2.5%	99% CI Upper .5%	p-value	β
ATT→INT2	-0.048	-0.041	-0.017	0.009	0.018	0.168	-0.187
PN→INT2	-0.079	-0.045	0.039	0.136	0.170	0.397	0.072
PA→INT2	-0.024	-0.017	0.000	0.023	0.037	0.975	-0.003
INC→INT2	-0.001	0.008	0.046	0.109	0.127	0.069	0.172
SP→ATT	-0.416	-0.353	-0.170	-0.012	0.039	0.051	-0.230
SP→PN	-0.036	-0.029	-0.006	0.017	0.027	0.611	-0.047
SP→PA	0.030	0.067	0.216	0.446	0.543	0.025	0.292
AF→ATT	-1.073	-0.818	0.049	0.850	1.036	0.906	0.011
AF→PN	-0.083	-0.041	0.103	0.243	0.286	0.153	0.136
AF→PA	-1.042	-0.763	0.165	1.177	1.519	0.740	0.037
FC→ATT	-0.140	-0.093	0.056	0.203	0.258	0.467	0.069
FC→PN	-0.041	-0.030	-0.001	0.024	0.032	0.917	-0.010
FC→PA	-0.178	-0.122	0.040	0.169	0.210	0.587	0.049
DP→ATT	-0.250	-0.177	0.078	0.393	0.519	0.590	0.060

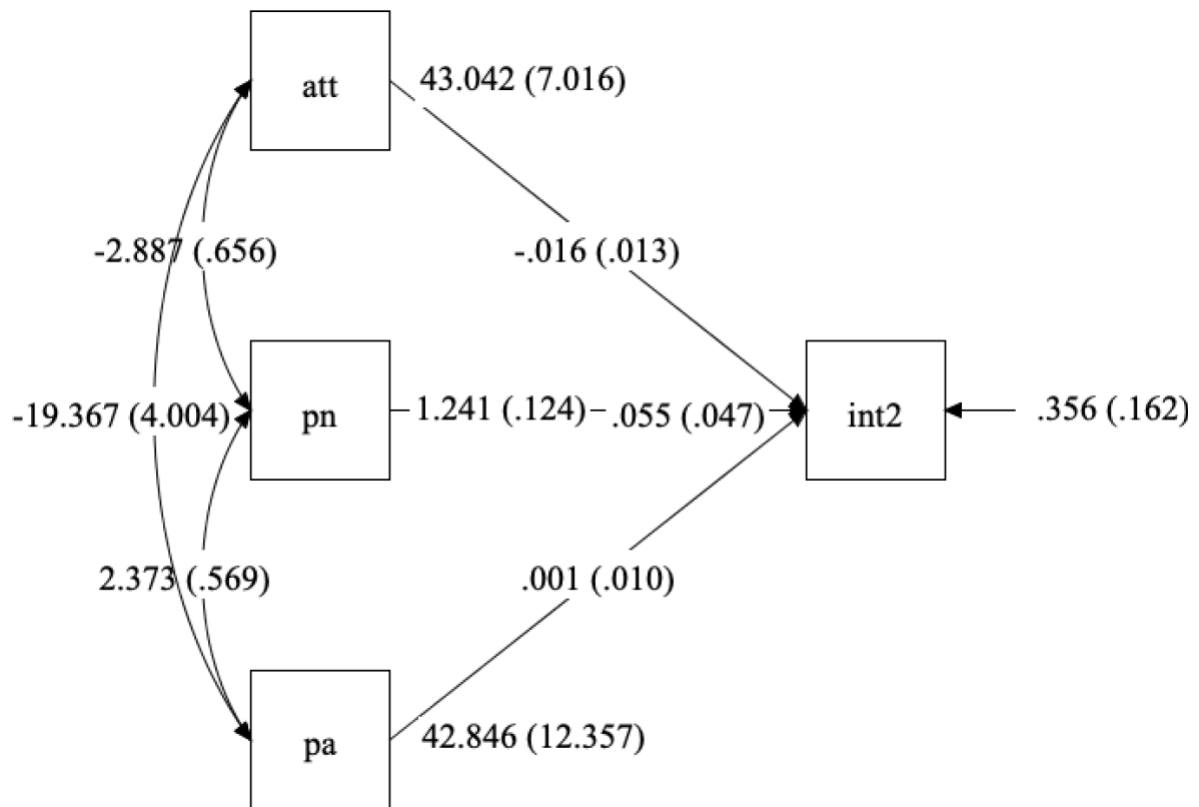
Figure 12

Results for the Adjusted Path Model of Constructs in the Integrated Behavioral Model, Psychosocial Factors, Cultural Factors and Intention to Obtain Surveillance Mammography Within the Next 12 Months in the Full Sample (N = 126) of Latina Breast Cancer Survivors. Note. β = standardized estimate; DF = degrees of freedom; CI = confidence interval; CFI = comparative fit index; RMSEA = root mean square error of approximation; SRMR = standardized root mean residual; ATT = Attitudes Towards Surveillance Mammography Scale; INT2 = Intentions to obtain surveillance mammography within the next 12 months; PN = Perceived norms; PA = Personal agency; INC = Income; SP = Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being Scale; AF = Attitudinal Familism Scale; FC = Fear of Cancer Recurrence Inventory; DP = Patient Health Questionnaire-8.

Path	99% CI Lower .5%	95% CI Lower 2.5%	Estimate	95% CI Upper 2.5%	99% CI Upper .5%	p-value	β
DP→PN	-0.102	-0.085	-0.034	0.010	0.024	0.159	-0.155
DP→PA	-0.355	-0.239	0.080	0.375	0.482	0.596	0.062
SP→ATT→INT2	-0.003	-0.001	0.003	0.011	0.013	0.257	0.043
SP→PN→INT2	-0.005	-0.003	0.000	0.001	0.001	0.756	-0.003
SP→PA→INT2	-0.007	-0.004	0.000	0.004	0.006	0.973	-0.001
AF→ATT→INT2	-0.032	-0.021	-0.001	0.015	0.026	0.924	-0.002
AF→PN→INT2	-0.007	-0.003	0.004	0.027	0.034	0.521	0.010
AF→PA→INT2	-0.017	-0.011	0.000	0.009	0.015	0.991	0.000
FC→ATT→INT2	-0.008	-0.006	-0.001	0.001	0.002	0.555	-0.013
FC→PN→INT2	-0.004	-0.002	0.000	0.001	0.002	0.945	-0.001
FC→PA→INT2	-0.003	-0.002	0.000	0.002	0.004	0.989	0.000
DP→ATT→INT2	-0.020	-0.014	-0.001	0.002	0.004	0.694	-0.011
DP→PN→INT2	-0.012	-0.009	-0.001	0.001	0.002	0.538	-0.011
DP→PA→INT2	-0.006	-0.004	0.000	0.003	0.005	0.986	0.000

Figure 12

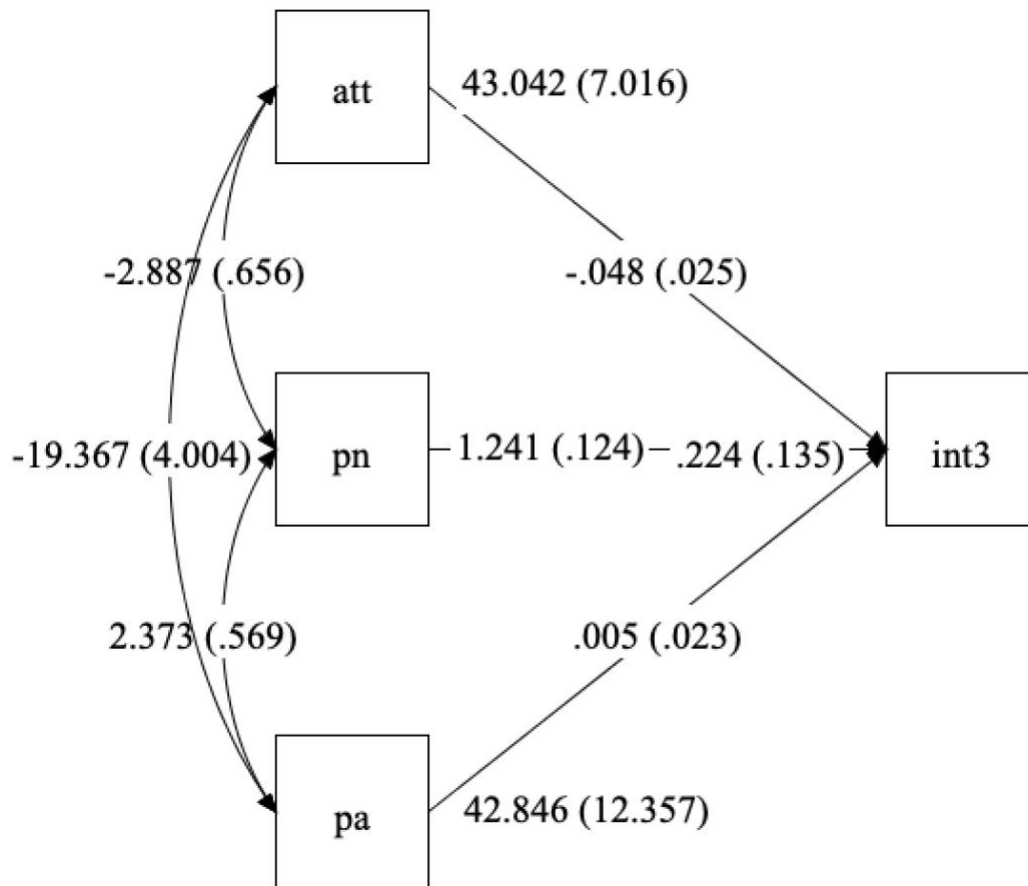
Results for the Adjusted Path Model of Constructs in the Integrated Behavioral Model, Psychosocial Factors, Cultural Factors and Intention to Obtain Surveillance Mammography Within the Next 12 Months in the Full Sample (N = 126) of Latina Breast Cancer Survivors. Note. β = standardized estimate; DF = degrees of freedom; CI = confidence interval; CFI = comparative fit index; RMSEA = root mean square error of approximation; SRMR = standardized root mean residual; ATT = Attitudes Towards Surveillance Mammography Scale; INT2 = Intentions to obtain surveillance mammography within the next 12 months; PN = Perceived norms; PA = Personal agency; INC = Income; SP = Functional Assessment of Chronic Illness Therapy-Spiritual Well-Being Scale; AF = Attitudinal Familism Scale; FC = Fear of Cancer Recurrence Inventory; DP = Patient Health Questionnaire-8, continued.



Unstandardized estimate [Standard error]							
CFI = 1.000, SRMR = .000, RMSEA = .000, $\chi^2 = .000$, DF = 0, $p < .001$							
Path	99% CI Lower .5%	95% CI Lower 2.5%	Estimate	95% CI Upper 2.5%	99% CI Upper .5%	p-value	β
ATT→INT2	-0.047	-0.039	-0.016	0.010	0.020	0.202	-0.174
PN→INT2	-0.054	-0.025	0.055	0.158	0.203	0.238	0.100
PA→INT2	-0.020	-0.013	0.001	0.027	0.041	0.919	0.011

Figure 13

Results for the Exploratory Path Model of Constructs in the Integrated Behavioral Model and Intention to Obtain Surveillance Mammography Within the Next 12 Months in the Full Sample (N = 126) of Latina Breast Cancer Survivors. Note. β = standardized estimate; DF = degrees of freedom; CI = confidence interval; CFI = comparative fit index; RMSEA = root mean square error of approximation; SRMR = standardized root mean residual; ATT = Attitudes Towards Surveillance Mammography Scale; INT2 = Intentions to obtain surveillance mammography within the next 12 months; PN = Perceived norms; PA = Personal agency.



Unstandardized estimate [Standard error]							
CFI = 1.000, WRMR = .000, RMSEA = .000, $\chi^2 = .000$, DF = 0, $p < .001$							
Path	99% CI Lower .5%	95% CI Lower 2.5%	Estimate	95% CI Upper 2.5%	99% CI Upper .5%	p-value	β
ATT→INT3	-0.115	-0.094	-0.048	0.006	0.029	0.053	-0.316
PN→INT3	-0.157	-0.055	0.224	0.487	0.573	0.098	0.250
PA→INT3	-0.044	-0.030	0.005	0.064	0.107	0.838	0.031

Figure 14

Results for the Exploratory Path Model of Constructs in the Integrated Behavioral Model and Intention to Obtain Surveillance Mammography Within the Next 12 Months Binary Variable in the Full Sample (N = 126) of Latina Breast Cancer Survivors. Note. β = standardized estimate; DF = degrees of freedom; CI = confidence interval; CFI = comparative fit index; RMSEA = root mean square error of approximation; SRMR = standardized root mean residual; ATT = Attitudes Towards Surveillance Mammography Scale; INT3 = Binary Intentions to obtain surveillance mammography within the next 12 months; PN = Perceived norms; PA = Personal agency.