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Ambivalence over Emotional Expression and Intrusive Thoughts as Moderators of the link between Self-Stigma and Depressive Symptoms among Chinese American Breast Cancer Survivors

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Abstract

Due to successful public health campaigns, breast cancer has successfully transformed from a highly stigmatized illness to a philanthropically supported disease in the United States. However, Chinese American breast cancer survivors continue to experience high levels of self-stigma and associated negative mental health outcomes. In the present study, we examined the relations between self-stigma and depressive symptoms, and further tested individual difference variables such as ambivalence over emotional expression and intrusive thoughts that may exacerbate the harmful effects of self-stigma among this population. One hundred and twelve foreign-born Chinese breast cancer survivors living in the United States completed questionnaires measuring self-stigma, depressive symptoms, AEE, and intrusive thoughts. We found significant AEE x Self-stigma and Intrusive-Thought x Self-Stigma interaction effects in predicting depressive symptoms. Specifically, the relationships between self-stigma and depressive symptoms were exacerbated among individuals with high levels of AEE and intrusive thoughts. Self-stigma represents a significant predictor of depressive symptoms among Chinese breast cancer survivors, and particularly so for individuals with higher levels of AEE and intrusive thoughts. The findings suggest that for interventions designed to reduce the negative mental health outcomes associated with self-stigma, targeting risk factors such as AEE and intrusive thoughts might be promising.

Introduction

Breast cancer is the most common type of cancer among Chinese American women (Miller, Chu, Hankey, & Ries, 2008). With the annual incidence rate of breast cancer for Chinese

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Ethical approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent: Informed consent was obtained from all individual participants included in the study.

American women steadily increasing over the past two decades (Gomez et al., 2017), breast cancer represents a significant public health issue. Although breast cancer survivors can adjust well to their cancer diagnosis and treatment, many experiences lingering maladjustment that persists even after the successful completion of treatment. Among the various risk factors that have been linked with poor emotional adjustment among cancer survivors, the internalization of stigma, or self-stigma, has been found to be a robust predictor of negative mental health outcomes (Gonzalez & Jacobsen, 2012; Link & Phelan, 2013). Although successful philanthropic efforts such as the Pink Ribbon campaign has contributed to reduced self-stigma among non-Hispanic White breast cancer survivors over the past decade (Sulik, 2010), recent studies have documented high levels of self-stigma among Asian Americans (Karbani et al., 2011; Tang, Mayer, Chou, & Hsiao, 2016). With Asian Americans projected to become the largest immigrant group in the United States by 2055 (Pew Research Center, 2015), and Chinese Americans representing the largest Asian American subgroup, there are substantial public health and societal benefits to be gained by understanding the psychological processes associated with self-stigma to aid intervention efforts. Thus, the present study investigated ambivalence over emotional expression (AEE) and intrusive thoughts as potential moderators of the relations between self-stigma and depressive symptoms among Chinese breast cancer survivors.

Self-stigma occurs when cancer survivors internalize and endorse the prejudiced or discriminatory behavior and thoughts targeted towards them (Corrigan & Watson, 2002). For example, they may believe that others perceive them poorly because their cancer is self-inflicted. While self-stigma may be ubiquitous in cancer survivors around the world, its themes and consequences are shaped by culture (Yang et al., 2007). Chinese culture is rooted in interdependent values that is characterized by the importance of preserving *face* and maintaining social harmony (Wong, 2014). Indeed, several qualitative studies found that many cancer stigma themes among Chinese breast cancer survivors were related to relational concerns (Tang et al., 2016; Warmoth et al., 2017). For example, one belief is that breast cancer is caused by poor lifestyle habits and is a direct punishment for misdeeds from the current or prior life. Consequently, having breast cancer brings shame to the family and subsequently weakens their social standing in the community. Another common myth is that breast cancer is contagious and that it spreads by sharing personal belongings or by being in contact with the person with breast cancer (Karbani et al., 2011). When these stigmatized beliefs are internalized by the breast cancer survivor, they lead to self-blame, social isolation, and shame and guilt (Gonzalez & Jacobsen, 2012). Indeed, self-stigma has been found to be associated with greater levels of perceived stress and depressive symptoms among Chinese breast cancer survivors (Warmoth et al., 2012).

To further advance our understanding of self-stigma, an important next step is to investigate potential moderators of the relations between self-stigma and depressive symptoms. We focused our investigations on individual-difference variables that have been linked with quality of life and psychological well-being among breast cancer survivors. One such moderator is ambivalence over emotional expression (AEE), which is characterized by a reluctance to express emotions or the regret of having expressed emotions (King & Emmons, 1990). When individuals are unable to comfortably express their negative emotions, they have less opportunity to process and make sense of their cancer experiences.

Indeed, AEE has been associated with greater depressive symptoms, lower levels of social support, and lower quality of life among Chinese American breast cancer survivors (Tsai & Lu, 2017a; Tsai & Lu, 2017b). Members from their social network may also be less aware of the needs of the cancer survivor and provide inadequate support (Yu & Sherman, 2015). As such, the presence of AEE may exacerbate the guilt and diminished self-worth stemming from the self-stigma, and result in greater depressive symptoms. Conversely, individuals with low levels of AEE may benefit from a supportive social network due to their ability to comfortably express their negative cancer-related emotions, and thus experience protection from the harmful effects of self-stigma on depressive symptoms.

Another potential moderator of the relations between self-stigma and depressive symptoms is intrusive thoughts. Despite the improved prognosis for breast cancer and a 92% 5-year survival rate (Torre et al., 2016), receiving a breast cancer diagnosis is still believed to be synonymous with receiving a death sentence among Chinese breast cancer survivors (Tang et al., 2016). This life-endangering traumatic thought and fear of the disease itself can lead to self-stigma and higher levels of intrusive thoughts (Kangas, Henry, & Bryant, 2002). Intrusive thoughts are unwanted and recurrent thoughts about cancer, and cancer survivors with high levels of intrusive thoughts are found to have poorer psychological adjustment and health-related quality of life (Kangas et al., 2002).

From a theoretical perspective, intrusive thoughts are caused by the incomplete cognitive processing of stressful events (Horowitz, 1986). In the early stages of receiving a breast cancer diagnosis, intrusive thoughts may be adaptive to the extent that it brings to mind the stressor, facilitates processing of cancer-related changes in life, and eventually result in integrating old world views with new world views associated with surviving cancer. However, if high levels of intrusive thoughts remain even after the successful completion of cancer treatment, intrusive thoughts indicate an incomplete processing of cancer experiences. Based on this premise, we hypothesized that the negative effects of self-stigma on depressive symptoms would be intensified for Chinese breast cancer survivors with high levels of intrusive thoughts. In contrast, individuals with low levels of intrusive thoughts are likely to have experienced greater processing of their cancer experiences, and thus be more prepared to cope with the distress stemming from their self-stigma.

Current Study

The goal of the current study was to examine the moderating effects of AEE and intrusive thoughts on relations between self-stigma and depressive symptoms among a sample of Chinese breast cancer survivors. We hypothesized that AEE and intrusive thoughts would moderate the extent to which self-stigma is associated with depressive symptoms. Specifically, we predicted that the harmful effect of self-stigma on depressive symptoms would be more pronounced among Chinese breast cancer survivors with higher levels of AEE and intrusive thoughts. Conversely, among Chinese breast cancer survivors with low levels of AEE and intrusive thoughts, the relations between self-stigma and depressive symptoms would be mitigated.

Methods

Procedure

All aspects of the study were carried out in Chinese including the recruitment and screening of participants. The survey materials that required translation were forward and back translated into Chinese following established cross-cultural research protocol (Brislin, 1970). The inclusion criteria were Chinese participants with a breast cancer diagnosis who can read and write in Simplified or Traditional Chinese. The recruitment was conducted in collaboration with our community partner organization, the Herald Cancer Association, which has branch offices in Los Angeles, New York, and Dallas. Community staff members contacted Chinese breast cancer survivors living in this areas by phone call, email, text messaging, and face-to-face recruitment at cancer education and outreach events. Potential participants were informed that the present study was designed to learn about their experiences with breast cancer. Participants were sent a paper-pen questionnaire by postal mail and returned it for monetary compensation upon completion. All participants provided written informed consent and the study was approved by the Institutional Review Board. More information about the recruitment methods and procedure can be found elsewhere (Lu, Tsai, Chu, & Xie, 2018).

Participants

Participants were 112 foreign-born Chinese breast cancer survivors (M_{age} = 54.54, SD = 7.91) residing in the Southern California, New York, and Dallas metropolitan areas. Among them, 74% were married, 9% divorced, 9% never married, 5% widowed, and 3% separated (3% did not answer the question). The average number of months since their breast cancer diagnosis was 85.11 (SD = 70.81). Twenty-six percent reported an annual household income of less than $15,000, 39% between $45,000–75,000, 16% between $45,000–75,000, 12% greater than $75,000 (7% did not answer the question). Lastly, 12% were diagnosed at stage 0, 30% at stage 1, 41% at stage 2, 16% at stage 3 (2% did not answer the question).

Measures

Self-stigma.—Self-stigma was assessed by the 9-item Self-Stigma Scale-Short Form (SSS; Mak & Cheung, 2010). The SSS was developed in Chinese and validated in Hong Kong to assess the stigma that individuals have toward themselves because of a minority status (e.g., HIV status, sexual orientation). We replaced the minority descriptions (e.g., HIV status) with “breast cancer survivor” in this study. A composite self-stigma score was created by averaging across the three subscales (i.e., cognitive, affective, and behavioral subscales). Example scale items are “I fear that others would know that I am a breast cancer survivor” and “My identity as a breast cancer survivor is a burden to me.” Participants rated the items on a 4-point Likert scale (1 = “Strongly Disagree” to 4 = “Strongly Agree”). The reliability and construct validity of the SSS has been established in previous research (Mak & Cheung, 2010). The Cronbach’s α was .95 for the present study and a higher score indicates a higher level of self-stigma.

Intrusive thoughts.—Cancer-related intrusive thoughts were assessed by the 7-item intrusion subscale of the Impact of Event Scale (IES; Horowitz, Wilner, & Alvarez, 1979).

Participants rated the items on a 4-point Likert scale (0 = “Not at all”, 1 = “Rarely”, 3 = “Sometimes”, 5 = “Often”). Example items are “Other things kept making me think about it” and “I thought about it when I didn’t mean to.” The IES has been widely-used with cancer survivors (Gurevich, Devins, & Rodin, 2002). Higher scores on this scale indicate greater frequency of intrusive thoughts. The Cronbach’s α was .90 for the present study

Ambivalence over emotional experience.—AEE was assessed by the 24-item Ambivalence over Emotional Expressivity Questionnaire (AEQ; King & Emmons, 1990). Instead of the full 28-item scale, we excluded four items (e.g., “I try to control my jealousy concerning my boyfriend/girlfriend even though I want to let them know I’m hurting”) that were incompatible with our sample and from feedback from a focus group (Lu, Man, You, & LeRoy, 2015). Some example items of the AEQ are “I often cannot bring myself to express what I am really feeling” and “After I express anger at someone, it bothers me for a long time.” Participants rated the items on a 5-point Likert scale (0 = “Never” to 4 = “Frequently”). The AEQ has been previously used with medical populations such as gastrointestinal cancer patients (Porter et al., 2005). The Cronbach’s α was .93 for the present study and a higher score indicates a higher level of AEE.

Depressive symptoms.—Depressive symptoms were assessed by the 6-item depressive subscale of the Brief Symptom Inventory (BSI; Derogatis, 1975). Participants rated the items related to depressive symptomatology (e.g., “Feeling blue”) on a 5-point Likert scale (0 = “Not at all” to 4 = “A great deal”). The BSI has demonstrated validity and reliability in previous research with cancer survivors (Zebrack et al., 2014). The Cronbach’s α was .90 for the present study and a higher score indicates a higher level of depressive symptoms.

Results

Descriptive statistics and bivariate correlations of study variables were reported in Table 2. As expected, all study variables were significantly associated with each other (*p*s rangefrom .40 to .64, $p < .001$).

We first examined potential covariates for the moderation models (see Table 1 for complete demographic and medical information). Self-stigma was negatively correlated with annual household income, such that Chinese breast cancer survivors with less household income have greater levels of self-stigma than those with higher household income ($r_s = -.25$, $p < .05$). An independent samples t-test revealed that Chinese breast cancer survivors who undergone chemotherapy endorsed higher levels of self-stigma ($M = 17.48$, $SD = 7.46$) than those without chemotherapy ($M = 14.15$, $SD = 6.14$), $t(108) = 2.42$, $p < .05$. As such, we controlled for annual household income and chemotherapy treatment in the moderation analyses. Moreover, we controlled for stage of diagnosis and age in the moderation analyses as they have been found to be associated with cancer survivors’ psychological adjustment in previous studies (Sant et al., 2003).

To test the role of AEE and intrusive thoughts as moderators of the link between self-stigma and depressive symptoms, we conducted two hierarchical multiple regression analyses. In Step 1, the covariates were entered. In Step 2, the main effects of self-stigma and the

moderator were entered, and in Step 3, the two-way interaction term (self-stigma x AEE or self-stigma x intrusive thoughts) was entered. The variables were centered prior to the regression analyses to reduce multicollinearity.

As shown in Table 3, significant main effects were found for AEE and intrusive thoughts, such that higher levels of AEE ($\beta = .36$, $p < .001$) and intrusive thoughts ($\beta = .41$, $p < .001$) were associated with higher levels of depressive symptoms. They accounted for 31% and 30% of the unique variance in depressive symptoms, respectively. As predicted, we found a significant AEE x self-stigma interaction ($F(1, 80) = 7.13$, $p < .01$, $\Delta R^2 = .05$, $\eta_p^2 = .08$) and a significant intrusive thoughts x self-stigma interaction ($F(1, 82) = 4.05$, $p < .05$, $\Delta R^2 = .03$, $\eta_p^2 = .05$). Simple slopes plotted in Figure 1 and 2 show that among Chinese breast cancer survivors with high levels of AEE and intrusive thoughts, respectively, self-stigma was strongly associated with depressive symptoms (βs = .55 and .36, ps < .01, respectively). Among Chinese breast cancer survivors with low levels of AEE and intrusive thoughts, self-stigma was not associated with depressive symptoms (βs = −.03 and −.02, ps > .88 respectively).

Discussion

Although public health campaigns such as the pink ribbon and improvements in breast cancer prognosis have decreased cancer-related stigma among European American breast cancer survivors in the United States (Sulik, 2010), extant research has continued to document high levels of self-stigma among Chinese and other Asian American cancer survivors (Tang et al., 2016; Karbani et al., 2011). With the increasing number of Chinese Americans and their growing rate of breast cancer, more research is needed to understand when the harmful effects of self-stigma are magnified. The present study contributes to a small but growing literature on self-stigma among immigrant breast cancer survivors by investigating AEE and intrusive thoughts as moderators of the relations between self-stigma and depressive symptoms. We found support for our hypotheses that the link between self-stigma and depressive symptoms would be exacerbated by high levels of AEE and intrusive thoughts.

Consistent with the finding that cancer survivors experience poor coping and adjustment when social constraints inhibit them from disclosing their cancer-related thoughts (Lepore & Revenson, 2007), we found that emotional constraints such as AEE served a similar maladaptive role. Specifically, self-stigma was associated with greater levels of depressive symptoms among Chinese cancer survivors with high levels of AEE, but not for those with low levels of AEE. The desire to express feelings accompanied by restraint and ambivalence to do so may have worsened the distress stemming from self-stigma. In contrast, individuals with lower levels of AEE may freely disclose their cancer-related concerns with others when they wish to do so, and in turn, can receive new perspectives on their cancer experiences and subsequently enjoy protection from the distress associated with self-stigma. Supporting this interpretation, cancer survivors who express greater levels of emotions experienced greater well-being and higher levels of cognitive processing of their cancer experiences (Quartana, Laubmeier, & Zakowski, 2006).

We also found intrusive thoughts to be a significant moderator of the relations between self-stigma and depressive symptoms. Specifically, self-stigma was associated with greater levels of depressive symptoms among those with high levels of intrusive thoughts, but not for those with low levels of intrusive thoughts. As introduced earlier, one interpretation may be attributed to the finding that high levels of intrusive thoughts are indicative of incomplete cognitive processing of cancer experiences (Cordova et al., 2001). Thus, individuals with high levels of intrusive thoughts are also less likely to be equipped with the emotional and social resources to cope effectively with self-stigma. Moreover, the lingering intrusive thoughts can indicate a lack of acceptance and avoidance of ones' cancer-related emotions, which has both been identified as risk factors for maladjustment among breast cancer survivors (Luszczynska et al., 2005). As indicated by high levels of intrusive thoughts, Chinese breast cancer survivors with incomplete "narratives" of their cancer experiences are likely to experience greater levels of depressive symptoms relative to their peers who have processed their cancer experiences.

Our findings have implications for developing interventions for reducing self-stigma and improving the well-being of Chinese breast cancer survivors. Because we found support for AEE and intrusive thoughts as risk factors, interventions that aim to reduce the experience of AEE and intrusive thoughts would be valued. Toward this end, emerging research has found expressive writing, or the private emotional disclosure over writing, to be a culturally-sensitive and effective intervention in improving the quality of life among Chinese breast cancer survivors (Lu, Gallagher, Loh, & Young, 2018). Overcoming common stigma themes, such as the belief that cancer is contagious, an expressive writing intervention allows cancer survivors to express their emotions privately without the fear of receiving judgment from others. Expressive writing can also facilitate cognitive processing of their cancer experiences, and in turn, lead to decreases in intrusive thoughts and improvements in well-being. Moreover, in the same spirit of facilitating cognitive processing and unlocking emotion display channels, psychosocial interventions that focus on providing psychoeducation to alter the stigmatized beliefs and connecting Chinese breast cancer survivors with peers from a similar cultural background will likely be beneficial. For instance, Chinese American breast cancer survivors who participated in a social support intervention with peer mentors (i.e., volunteer Chinese breast cancer survivors who were trained to provide support to their peers) experienced reductions in self-stigma and increases in sense of belonging, which in turn, led to lower levels of depressive symptoms after treatment (Lu, You, Man, Loh, & Young, 2014). Given the high levels of self-stigma, interventions that don't emphasize verbal self-disclosure, such as yoga (Bower et al., 2012) or Tai Chi (Wang et al., 2010), may be effective for Chinese American breast cancer survivors. In general, there has been few psychosocial interventions designed for Chinese breast cancer survivors in the United States, and thus, more research is needed to develop culturally-sensitive and effective interventions for this growing and underserved population in the United States.

The present study has several limitations. First, the cross-sectional design limits our ability to make causal inferences. Future research using longitudinal designs such as cross-lagged panel analyses can elucidate the temporal relations between self-stigma and depressive symptoms. For example, in addition to self-stigma predicting maladjustment over time, does

preexisting negative mental health outcomes cause Chinese breast cancer survivors to experience higher levels of self-stigma? Second, the generalizability of our findings is limited to Chinese breast cancer survivors whose immigration history significantly differs from other immigrant groups. Furthermore, we did not investigate whether different types of stigmatized beliefs are differentially associated with maladjustment. For example, are stigmatized beliefs about social concerns differentially associated with maladjustment than stigmatized beliefs about the fear of death? Which, or both, are moderated by AEE and intrusive thoughts to exacerbate depressive symptoms?

Despite these limitations, the present study builds upon a small but growing literature that has begun to elucidate when the effects of self-stigma may be worsened by individual difference variables such as AEE and intrusive thoughts. Our results suggest that Chinese breast cancer survivors with higher levels of AEE and intrusive thoughts evinced higher levels of depressive symptoms. In contrast, low levels of AEE and intrusive thoughts mitigated the depressive symptoms associated with self-stigma. These findings highlight AEE and intrusive thoughts as risk factors for stigma interventions to target and provide promising directions for future research.

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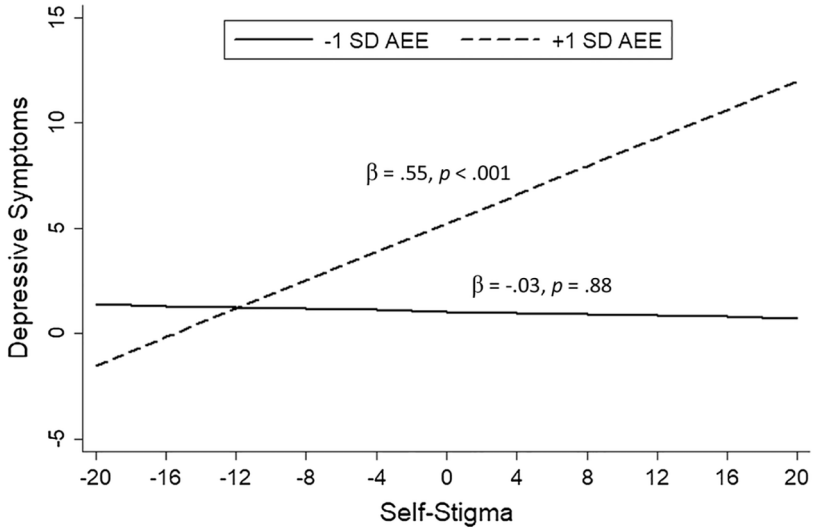

Figure 1.
Self-Stigma x AEE interaction on depressive symptoms.

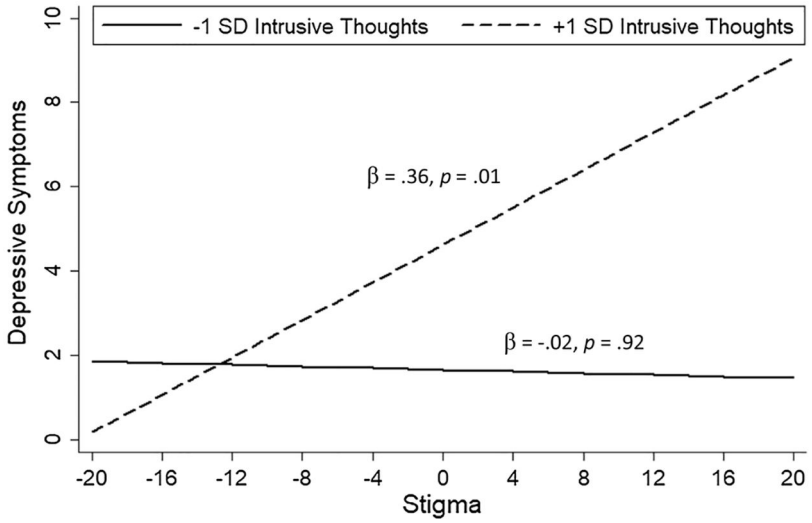

Figure 2.
Self-Stigma x Intrusive thoughts interaction on depressive symptoms.

Table 1.

Demographic variables and relationship with stigma

Variable		Stigma scores *M(SD)*	Correlation with stigma	Diff. in Stigma between groups
Age (years)		--	*See* Table 2	--
Mean (SD)	58.89(9.48)			
Range	39–90			
Time since diagnosis (months)		--	*See* Table 2	--
Mean (SD)	85.11(70.81)			
Range	8 – 351			
Education	Percent		$r_s = -.11$	--
Below high school	13.4%	15.47(6.90)		
some high school	2.7%	14.00(4.00)		
high school graduate	22.3%	18.20(7.64)		
some college	25.9%	16.97(6.68)		
college degree	20.5%	15.13(7.01)		
post-graduate degree	14.3%	15.50(8.46)		
Missing	0.9%			
Annual household income			$r_s = -.25^*$	--
less than $15,000	25.9%	19.07(7.33)		
$15,000–S45,000	39.3%	16.02(6.93)		
$45,000–$75,000	16.1%	14.56(5.88)		
More than $75,000	11.6%	14.08(8.04)		
Missing	7.1%			
Stage of breast cancer			$r_s = .13$	--
0	11.6%	13.46(4.10)		
I	29.5%	15.06(6.04)		
II	41.1%	18.28(8.12)		
III	16.1%	16.17(7.17)		
Missing	1.8%			
Treatments Undergone				
Surgery			--	$t(106) = 0.80$
Yes	81.3%	16.00(7.38)		
No	15.2%	17.53(6.56)		
Missing	3.6%			
Chemotherapy			--	$t(108) = 2.42^*$
Yes	61.6%	17.48(7.46)		
No	36.6%	14.15(6.14)		
Missing	1.8%			
Radiation			--	$t(107) = 1.41$
Yes	56.3%	17.13(7.83)		
No	41.1%	15.20(5.84)		

Variable		Stigma scores *M(SD)*	Correlation with stigma	Diff. in Stigma between groups
Missing	2.7%			
Other Medications			--	$F(2,107) = .45$
Yes	42%	17.15(7.49)		
Yes, but not currently	29.5%	16.21(6.70)		
Never	26.8%	15.60(7.15)		
Missing	1.8%			

Note. r_S = Spearman's rho.

$^{*}p < .05$

Table 2.

Correlations and Descriptive Statistics of Study Variables

Variable	1	2	3	4	5	6	*M*(*SD*)	Range
1. Stigma	--						16.30 (7.18)	[9,35]
2. Intrusive Thoughts	.64***	--					9.03 (7.01)	[0,27]
3. AEE	.40***	.40***	--				46.34 (18.83)	[2,83]
4. Depressive Symptoms	.51***	.56***	.48***	--			3.55 (4.40)	[0,18]
5. Age	−.13	−.05	−.02	−.11	--		58.89 (9.48)	[39, 90]
6. Time since Diagnosis	−.00	.10	.04	−.03	.53***	--	85.11 (70.81)	[8,351]

Note.

* $p < .05$,

** $p < .01$,

*** $p < .001$.

AEE = Ambivalence over emotional experience.

Table 3.

Hierarchical regression analyses of self-stigma, intrusive thoughts, AEE, and their interactions on depressive symptoms.

	β	R^2	ΔR^2	*df*	*F*
AEE					
Step 1		.08	--	4,83	1.89
Chemotherapy	.20				
Household Income	−.24*				
Stage	−.08				
Age	−.09				
Step 2		.35	.31	2,81	20.66***
AEE	.36***				
Self-stigma	.35***				
Step 3		.39	.05	1,80	7.13**
Self-stigma x AEE	.26**				
Intrusive thoughts					
Step 1		.03	--	4,85	1.75
Chemotherapy	.19				
Household income	−.23*				
Stage	−.07				
Age	−.07				
Step 2		.33	.30	2,83	19.47***
Intrusive thoughts	.41***				
Self-stigma	.21				
Step 3		.35	.03	1,82	4.05*
Self-stigma x Intrusive thoughts	.21*				

Note. AEE = ambivalence over emotional expression.

* $p < .05$,

** $p < .01$,

*** $p < .001$.