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The link between ambivalence over emotional expression and depressive symptoms among Chinese breast cancer survivors

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Abstract

Objective—Ambivalence over emotional expression (AEE) is the conflict between wanting to express emotion yet fearing the consequences of such expression. Recent literature reveals a close link between AEE and depressive symptoms among college students. Although cancer survivors experience intense emotions, few studies have examined the relationship between AEE and depressive symptoms and the underlying mechanisms among cancer survivors. Furthermore, relevant research is absent among Asians, whose culture discourages emotional expression. The present study investigated AEE's associations with depressive symptoms in Asian breast cancer survivors, and examined intrusive thoughts as a mediator. Intrusive thoughts are repetitive and unwanted thoughts about stressful events. We hypothesized that AEE would increase intrusive thoughts which in turn would increase depressive symptoms.

Methods—A total of 118 Chinese American breast cancer survivors completed a questionnaire packet containing the Ambivalence over Emotional Expression Questionnaire (AEQ), Brief Symptom Inventory (BSI), and the Impact of Event Scale (IES).

Results—AEE was positively associated with depressive symptoms ($\beta = .45, p < .001$) and intrusive thoughts ($\beta = .41, p < .001$). Additionally, intrusive thoughts partially explained the relationship between AEE and depressive symptoms ($z = 3.77, p < .001$).

Conclusions—These results suggest that Chinese breast cancer survivors who are highly ambivalent over emotional expression may have increased risk for depressive symptoms, and such relationships can be partially explained by a cognitive mechanism: intrusive thoughts. Future research may explore other mediators and design interventions specifically targeted at reducing AEE and intrusive thoughts with the ultimate goal of reducing depression.

Keywords

Ambivalence over emotional expression; Depression; Intrusive thoughts; Chinese; Breast cancer

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Conflict of interest statements

The authors have no competing interests to report.

Introduction

Breast cancer is the most common cancer in women worldwide. It is estimated that more than 1.6 million new cases of breast cancer occurred among women worldwide in 2010 [1]. Having experienced a serious illness like breast cancer, survivors often face emotional and social problems following cancer diagnosis and treatment [2–4]. A review suggests that the prevalence of clinically significant depressive symptoms in cancer patients and survivors exceeds that of the general population [5]. Because cancer diagnoses and treatments often elicit strong emotional responses, and these emotions often accompany cancer survivors' years after treatment, how individuals cope with these emotions may influence their adjustment. For example, a recent prospective study with a nationally representative U.S. sample over a 12-year follow-up found that emotion suppression increases risk of earlier death, including death from cancer [6].

The Asian American breast cancer rate has been the nation's fastest growing [7], however few studies have investigated emotion suppression among Asian American cancer survivors. In Western cultures, open emotional expression tends to be expected [8]. In many Asian cultures, there is a norm of suppressing emotions and concealing private thoughts to avoid damaging harmony with others [9]. Given the different cultural norms, it is imperative to provide empirical evidence on whether it would be beneficial to encourage emotional expression, and how to design interventions to reduce distress among Asian cancer survivors.

Among the Asian American populations, Chinese represent a less acculturated immigrant population compared to other Asian ethnic groups such as Japanese and Filipino [7]. Thus, they may be at higher risk of added psychological distress given their immigrant status. The first goal of the present study was to examine whether depressive symptoms were linked with Ambivalence over Emotional Expression (AEE) among Chinese American breast cancer survivors. Healthy Asian Americans have been found to experience more AEE compared to Caucasians [10], which indicates the importance of examining emotion expression/suppression among Asians cancer survivors. AEE is defined as an individual's inner conflict concerning the desire to express emotions yet failing to do so [11]. A number of previous studies have found that higher levels of AEE are associated with significantly higher levels of depressive symptoms in various populations including college students, rheumatoid arthritis patients, and the general population [11–16]. There has only been one study investigating the AEE construct in cancer patients. Porter and colleagues studied AEE's associations with pain and quality of life among gastrointestinal cancer patients [17]. They found that patients who were high in AEE engaged in more pain catastrophizing and reported poorer quality of life. Accordingly, it was hypothesized that AEE was positively associated with depressive symptoms among cancer survivors.

The second goal of the study was to investigate the mechanisms underlying the link between AEE and depressive symptoms. Pennebaker [18] has proposed that the lack of emotional expression coupled with the desire to express will lead to obsessive thoughts related to the inhibited feelings or event. Cancer survivors commonly report experiencing significant amounts of intrusive thoughts relevant to cancer [19]. Intrusive thoughts are defined by

Horowitz [20] as repetitive and unwanted thoughts about stressful events. These thoughts arise when information about traumatic or stressful events is present, and cannot be fully assimilated into an individual's preexisting schemas. Horowitz [21] has argued that intrusive thoughts subside once the individual modifies the preexisting schemas to fully assimilate or accommodate the new information. Successful assimilation (i.e., changing the appraised meaning of the stressful event to make it consistent with preexisting schemas) and accommodation (i.e., modifying preexisting schemas to adjust them to the appraised meaning of the stressful event) of the new information help the individual restore feelings of security. This process may depend on repeated exposure to the traumatic stimuli, reappraisal of the stressors, and the modification of preexisting schemas. Talking about stress and relevant emotions may expose individuals to the trauma, and offer an opportunity to re-evaluate the stressors, and facilitate the assimilation or accommodation of the new information. By being ambivalent about expressing emotions regarding the stressful event, individuals might not be aware of the source of distress which impedes the cognitive processing that is necessary for the assimilation or accommodation to take place. In other words, ambivalence over emotional expression may take away the opportunity for intrusive thoughts to become resolved. Furthermore, inhibition of feelings may also promote unwanted thoughts [22].

Intrusive thoughts are theorized to play a critical role in the development or maintenance of negative emotions [23]. Several studies have shown that intrusive thoughts are positively associated with depressive symptoms [23,24]. While there is currently no direct evidence supporting the link between AEE, intrusive thoughts, and depressive symptoms, some research has shown that cancer patients with lower levels of emotional expressivity experienced higher levels of distress caused by their intrusive thoughts [25]. Emotional expression allows the individual opportunities to process the event again as well as the emotions that come with it, which reduces the detrimental impact of intrusive thoughts. This evidence provides further support for the links between AEE, intrusive thoughts, and depressive symptoms. We hypothesized that intrusive thoughts may mediate AEE's positive associations with depressive symptoms.

As noted, the goal of the present study is to investigate AEE's associations with depressive symptoms in Chinese American breast cancer survivors, and to examine underlying mechanisms. We propose the following hypotheses: 1. AEE would be positively associated with depressive symptoms and intrusive thoughts. 2. Intrusive thoughts would mediate the relationship between AEE and depressive symptoms.

Methods

Participants

Approval from the relevant Institutional Review Boards was obtained. The study sample consisted of 118 Chinese-speaking breast cancer survivors residing in Southern California. Participants were recruited through local community organizations. Inclusion criteria included: (1) being a Chinese-speaking breast cancer survivor; (2) being within 5 years after breast cancer diagnosis; and (3) having a first breast cancer diagnosis of stages 0–III. The study was announced at cultural events, educational conferences, peer support groups, and

community newsletters in Southern California. Breast cancer survivors were told that the study was to understand their adjustment to cancer. Those who indicated interest in the study were contacted by community research staff to determine eligibility and those who were eligible were invited to participate in the study. Among 150 survivors who were potentially interested, two were ineligible. Among 148 eligible survivors, 118 agreed to participate, yielding an 80% response rate. Reasons for non-participation included being too busy, finding the study uninteresting, and health reasons.

Measures

Ambivalence over emotional expression (AEE)—AEE was assessed using the Ambivalence over Emotional Expression Questionnaire (AEQ) [11]. This self-report questionnaire asks participants to rate from 1 (never) to 5 (frequently) and measures individuals' inner conflict of having the desire to express emotions while fearing the consequences of expressing emotions; for example, "I worry that if I express negative emotions such as fear and anger, other people will not approve of me." The internal reliability was good ($\alpha = .89$), and the scale was shown to be predictive of psychological distress among college students [11]. The original questionnaire had 28 items. Based on feedback from a focus group that discussed the relevance of each of the items to this sample, four items were removed from the original version due to low applicability to middle-aged or older adults and our study population. For example, we removed the following item, "I try to control my jealousy concerning my boyfriend/girlfriend even though I want to let them know I'm hurting," because although this item was relevant for the original sample with which the measure was validated (i.e., undergraduates), it is not applicable to this sample of middle-aged adult women who are more likely settled in long-term relationships. The participants in this study completed the 24 items that remained after the four items had been removed from the original version. Following a standard procedure, the measure was first translated by a member of the bilingual research team; a second person then back-translated the items into English; and a third person compared it with the original English version and made suggestions for further revision of translation. This process was repeated until all the items were equivalent in meaning. The internal reliability was good in this study ($\alpha = .94$) compared to studies which used the original version [11,16].

Depressive symptoms—Depressive symptoms were assessed using the depression subscale of the Brief Symptom Inventory (BSI) [26]. The depression subscale consists of six items; it uses a 5-point rating scale ranging from 0 (not at all) to 4 (extremely severe) and measures the extent to which one has experienced depressive symptoms (e.g., feeling blue, feeling no interest in things) during the last week. Its brevity makes it particularly suited for cancer patients, who often do not have the energy to complete lengthy questionnaires. The BSI provides normative data for cancer patients, and it is commonly used to assess depressive symptoms in cancer samples [27,28]. The internal consistency of the depression subscale was 0.84 in a community sample [26] and 0.88 in a sample of adult survivors of childhood cancer [28]. The depression subscale also showed good convergent validity with the MMPI depression clinical scale ($r = .50$) [29]. This measure was translated into Chinese and back-translated into English following the standard procedure described above. The internal reliability was good in this study ($\alpha = .89$).

Intrusive thoughts—Intrusive thoughts were assessed using the 7-item intrusion subscale of the Impact of Event Scale (IES) [30]. The IES is a 15-item self-report questionnaire that assesses the current degree of impact experienced in response to a specific stressful event, in this case, the breast cancer illness. The IES has two subscales — intrusion and avoidance. The intrusion subscale assesses how distressing cancer-related intrusive thoughts had been over the past week; for example, “I thought about it when I didn’t mean to,” and “Other things kept making me think about it.” The items are rated using a 4-point frequency scale (i.e., 0 = not at all, 1 = rarely, 3 = sometimes, and 5 = often). Horowitz and colleagues (1979) reported split-half reliability for the total scale to be .86, Cronbach’s alpha for the intrusion subscale to be .78, and test–retest reliability (1 week) for the intrusion subscale to be .89. The internal consistency reliability for the intrusion subscale was also reported to be ranging from .86 to .89 [31], and to be .91 [32]. This measure was validated in Chinese [33]. The Cronbach’s alpha for the intrusion subscale was .91 in this study.

Analytic plan

Means, standard deviations, and frequencies were computed to provide descriptive statistics for the demographic variables. Internal reliability was assessed for the measures. Pearson correlations among major variables and demographic variables were calculated. Hypothesis 1 about the association between AEE and depressive symptoms was tested using a hierarchical linear regression analysis. Hypothesis 2 about the mediation effect was tested by a path analysis with EQS 6.0 [34]. Model fit was estimated using five fit indices: the normed fit index (NFI) [35], the Goodness-of-Fit Index (GFI) [36], the comparative fit index (CFI) [34], and standardized root mean-square residual (SRMR) [34]. The model is evaluated as satisfactory if NFI, GFI, and CFI are larger than .90 and SRMR is smaller than .08 [34,37].

Results

Sample characteristics are shown in Table 1. Descriptive statistics of major variables and Pearson correlation matrix among the major variables are presented in Table 2. All measures demonstrated good internal consistency; alpha coefficients ranged from .81 to .94. Age was correlated with intrusive thoughts. Stage at diagnosis was correlated with depressive symptoms and intrusive thoughts. All the other demographic and cancer-related characteristics (e.g., education) were unrelated to AEE, intrusive thoughts, or depressive symptoms. Thus, only age and stage at diagnosis were controlled as covariates in the following analyses.

Regression analysis was conducted with depressive symptoms as a dependent variable. Age and stage at diagnosis were entered in Block 1 as covariates. AEE was entered in Block 2 as an independent variable. In Block 1, stage at diagnosis was positively associated with depressive symptoms ($\beta = .32, p < .01$), and explained 13% of the variance in depressive symptoms. In Block 2, as hypothesized, a higher level of AEE was associated with a higher level of depressive symptoms ($\beta = .45, p < .001$) and explained 20% of the variance in depressive symptoms.

The mediating role of intrusive thoughts in the relationship between AEE and depressive symptoms was tested with path analysis. Because the zero-order correlation analyses showed

that age and stage at diagnosis were correlated with intrusive thoughts and depressive symptoms, and age and stage at diagnosis were also included in the hypothesized model (Fig. 1). Path analyses revealed the hypothesized mediation model fit well, NFI = .97, CFI = 1.00, GFI = .99, SRMR = .05. AEE had a positive association with depressive symptoms ($\beta = .27, p < .001$). AEE also had a positive association with intrusive thoughts ($\beta = .42, p < .001$), which had a positive association with depressive symptoms ($\beta = .40, p < .001$). That is, AEE was positively associated with depressive symptoms both directly ($t = 3.57, p < .001$) and indirectly through intrusive thoughts ($z = 2.20, p < .05$). The results suggested that intrusive thoughts partially mediated the relationship between AEE and depressive symptoms.

Discussion

In contrast to prior research on emotion regulation and cancer survivorship that primarily focused on Caucasian populations, the current research studied a Chinese breast cancer survivor population whose culture particularly discourages emotional expression. The present study adds to the existing literature by examining factors that explained AEE's relationship with depressive symptoms in minority cancer survivors. Consistent with our hypotheses, this study revealed the positive association between AEE and depressive symptoms, and this association was explained by intrusive thoughts. Findings have implications for designing interventions specifically targeted at reducing AEE and intrusive thoughts with the ultimate goal of reducing distress.

We found that Chinese Americans who were highly ambivalent about expressing emotions also had higher depressive symptoms. Consistent with our findings, Iwamitsu and colleagues [38] found in a prospective study that breast cancer patients in Japan who restrained their emotions before diagnosis had higher levels of depression, anxiety, fatigue, and confusion after receiving a breast cancer diagnosis compared to patients who were emotionally expressive before diagnosis. These findings suggest that AEE may be a risk factor for higher depressive symptoms among Asian cancer survivors.

Previous research shows that Asians typically have higher AEE compared with Caucasians [10], suggesting that it is important to consider emotion regulation style among Asians in designing culturally sensitive interventions. Addressing the conflict surrounding emotional expression may enhance the benefits of psychosocial interventions for Asians. Given that the Asian culture does not encourage emotional expression, it is important for patients and clinicians to be aware of the health implication of ambivalence over emotional expression.

The concept of AEE is different from the lack of emotional expression, or emotional inhibition. AEE is not simply the lack of emotional expression; individuals who are not outwardly expressive may or may not have inner emotional conflict [11,39]. Previous research has shown that AEE was more highly correlated with psychosocial factors and health-related quality of life than emotional expression in a large sample of women who were predominantly white, and suggested that ambivalence may be more important to consider in studies of health-related outcomes than expression [40]. Another study found that breast cancer survivors showed significantly more ambivalence over emotional

expression than the healthy controls, however, they did not differ in alexithymia or expressing emotions in general [41]. The authors suggest that cancer patients' inhibited behavior is a reaction to the disease rather than a reflection of a personality characteristic. Therefore, AEE is a unique construct that is different from other constructs such as emotional expression or inhibition. Thus it is a very useful construct in cancer survivorship research and should be further investigated.

Although no studies have simultaneously linked AEE with both intrusive thoughts and depressive symptoms among Caucasian cancer survivors, previous research has found the positive association between AEE and depressive symptoms in various Caucasian populations, including college students, rheumatoid arthritis patients, and the general population [11–16]. Furthermore, previous research found that regardless of ethnicity, written emotional disclosure reduced the association between AEE and negative affect [10]. These studies suggest that AEE is likely to have a negative impact on well-being among Caucasian cancer survivors as well. This is speculative, however, and future studies should be conducted to replicate the findings in other ethnic groups.

Our study extends previous knowledge by revealing intrusive thoughts as a mediator in the relationship between ambivalence over emotional expression and depressive symptoms. This finding supports Pennebaker's proposition [18] that the lack of emotional expression coupled with the desire to express will lead to obsessive thoughts related to the inhibited feelings or event. One previous study showed that written emotional disclosure reduced the association between intrusive thoughts and depressive symptoms among college students [23]. Another study found that expressive writing reduced intrusive thoughts among Chinese American breast cancer survivors [42]. These findings suggest that focusing on reducing intrusive thoughts among those with higher levels of AEE may relieve depressive symptoms.

This study focused on cognitive mechanisms, intrusive thoughts, which partially mediate the link between AEE and depressive symptoms. It remains to be seen what else might contribute to this relationship. In the past, mechanisms that were found to explain the link between AEE and depressive symptoms included catastrophizing and needs satisfaction [13], and the use of certain passive and distancing coping strategies [15]. These mediators were demonstrated among populations without cancer. Future studies should investigate these mechanisms among cancer survivors. Another potential mediator may be social support. Social support was found to predict a lower level of depression in cancer patients [43]. Furthermore, expressing emotions to others has been positively related to social support [44]. By being ambivalent about expressing emotions, individuals may lose opportunities to elicit social support, which may partially explain their higher levels of depressive symptoms. Future studies should include these possible mediators and examine which of them could be the strongest mediator.

Several limitations are worth noting. First, the study was cross-sectional in nature. Thus, it is not possible to determine the direction of causality. We used structural equation modeling to conduct statistical tests to provide evidence for a hypothesized mediating relationship. Existing theories helped to bolster the tentative conclusion that a mediating relationship exists. Future work should use experimental design to validate the mediation relationship

and establish the direction of the effect. Longitudinal research in which multiple measures of AEE, intrusive thoughts, and depressive symptoms are taken at various time points throughout the disease trajectory would better explain how intrusive thoughts mediate the link between AEE and psychological distress. Second, data were collected using self-report measures that are potentially susceptible to reporting biases. However, we followed a rigorous translation procedure and the questionnaires yielded good psychometric properties. Third, selection bias limits the generalizability of the study. Fourth, the study only included a Chinese sample. Cross-cultural comparisons should be made to explore the culturally unique or universal roles of AEE in predicting depressive symptoms among cancer patients from different cultural/ethnic backgrounds.

Despite the limitations, these results have important clinical implications. First, understanding what contributes to the depressive symptoms experienced by minority breast cancer survivors may help improve mental health care for this understudied and underserved population. Specifically, since AEE was found to have positive associations with depressive symptoms in this minority population, it may be useful for clinicians who work with Asian breast cancer patients to observe and assess for AEE during clinical interviews. Second, it may be beneficial to design and evaluate interventions specifically targeted at reducing AEE and intrusive thoughts with the ultimate goal of reducing depression. Past research has shown that expressive writing improved cancer related mobility and illness symptoms for Caucasian breast cancer survivors [45]. Notably, Asian American healthy adults were found to benefit more from expressive writing compared with Caucasians [10]. A recent study found that an expressive writing intervention was associated with improvement of quality of life and positive affect at a six month follow-up among Chinese American cancer survivors, who appreciated the opportunity to engage in expressive writing [42]. Interventions, such as expressive writing, that focus on emotion regulation may be particularly helpful for cancer survivors with ambivalence over emotional expression.

In conclusion, the present study extends prior findings by revealing AEE's associations with depressive symptoms among Chinese breast cancer survivors, and by revealing intrusive thoughts as a mechanism through which AEE relates to these symptoms among breast cancer survivors. The partial mediation of intrusive thoughts suggests the need for exploring additional mediating variables (i.e., catastrophizing, needs satisfaction, coping, and social support) to provide further understanding on the underlying mechanisms through which AEE associates with psychological health outcomes among cancer survivors. Additional research also needs to address the impact of AEE on physical health among cancer survivors. It may be beneficial to design and evaluate emotion regulation interventions specifically targeted at reducing AEE and intrusive thoughts with the ultimate goal of reducing depression.

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Notes. Stage at diagnosis was included as a covariate for intrusive thoughts ($\beta = .18, p < .05$) and depressive symptoms ($\beta = .25, p < .001$), and age was a covariate for intrusive thoughts ($\beta = .13, ns$). Stage at diagnosis and age were not included in the figure for clarity.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Fig. 1. Mediation analysis for depressive symptoms among Chinese breast cancer survivors

Notes. Stage at diagnosis was included as a covariate for intrusive thoughts ($\beta = .18, p < .05$) and depressive symptoms ($\beta = .25, p < .001$), and age was a covariate for intrusive thoughts ($\beta = .13, ns$). Stage at diagnosis and age were not included in the figure for clarity. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 1

Characteristics of participants (N = 118).

	N (frequency%)/mean (SD)
<i>Demographic variables</i>	
Age (years)	54.65 (8.61)
Marital status	
Married	85 (72%)
Single/separated/divorced/windowed	33 (28%)
Education level	
Middle school or below	19 (16.1%)
High school	35 (29.7%)
Associate degree	32 (27.1%)
College degree or above	32 (27.1%)
Employment	
Full-time employed	34 (28.8%)
Part-time employed	17 (14.4%)
Unemployed or housewives	55 (46.7%)
Retired	9 (7.6%)
Others	3 (2.5%)
Average annual household income	
Less than \$15,000	38 (32.2%)
\$15,000–\$45,000	28 (23.7%)
\$45,000–\$75,000	21 (17.8%)
More than \$75,000	19 (16.1%)
Unknown	12 (10.2%)
<i>Cancer- and treatment-related variables</i>	
Years since diagnosis	1.35 (1.09)
Stage at diagnosis	
Stage 0	15 (12.8%)
Stage I	35 (29.9%)
Stage II	49 (41.9%)
Stage III	18 (15.4%)
Treatment	
Surgery	111 (94.1%)
Radiotherapy	44 (37.3%)
Hormone therapy	81 (68.7%)
Chemotherapy	76 (64.4%)

Table 2

Means, standard deviations, and correlations among major variables.

	<u>Mean</u>	<u>SD</u>	(1)	(2)	(3)	(4)	(5)
1. Age	54.65	8.61	–				
2. Stage at diagnosis	1.60	0.90	–.01	–			
3. AEE	1.96	0.90	–.15	.03	–		
4. Depressive symptoms	0.75	0.78	–.15	.33***	.45***	–	
5. Intrusive thoughts	10.81	7.59	–.19*	.19*	.44***	.56***	–

Notes.

* $p < .05$,

** $p < .01$,

*** $p < .001$.