Is expressive suppression harmful for Chinese American breast cancer survivors?

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ABSTRACT

Emotion regulation strategies are important for cancer survivors' adjustment. Expressive suppression, defined as the active effort of inhibiting the expressive component of an emotional response, has been found to be a maladaptive emotion regulation strategy. These studies, however, have been limited to cross-sectional designs and primarily European American samples. Chinese culture encourages emotion suppression to preserve interpersonal harmony and therefore it may be important to test these emotion regulation processes with this population. This study aimed to examine the longitudinal effects of expressive suppression, ambivalence over emotional expression (i.e., inner conflict over emotional expression), and cognitive reappraisal on quality of life among Chinese American breast cancer survivors. 103 participants completed a questionnaire assessing expressive suppression, ambivalence over emotional expression, cognitive reappraisal, and quality of life at baseline and a questionnaire assessing quality of life eight weeks later. Consistent with our hypotheses, baseline ambivalence over emotional expression was associated with lower follow-up quality of life above and beyond the effect of expressive suppression. Furthermore, cognitive reappraisal moderated the relations between expressive suppression and follow-up quality of life, such that expressive suppression may be less detrimental for Chinese American breast cancer survivors who are able to regulate their emotions using cognitive reappraisal. Implications for informing interventions for Chinese American breast cancer survivors are discussed.

1. Introduction

The negative emotions that occur from the diagnosis and treatment of breast cancer can continue for years after treatment and contribute to the higher levels of depressive symptoms and lower quality of life among breast cancer survivors [1,2]. To manage these negative emotions, cancer survivors' ability to regulate their emotions, expressive suppression has gained attention as a maladaptive emotion regulation strategy [5,6]. These studies, however, have been limited by cross-sectional designs and have drawn from a narrow slice of human diversity primarily involving individuals with European heritage [7]. With a growing number of studies that show the effects of expressive suppression to vary by culture (e.g., [8,9]), the objective of the present study was to assess the longitudinal effects of expressive suppression on quality of life with Chinese breast cancer survivors.

Expressive suppression refers to the active effort of inhibiting the expressive component of an emotional response [10]. Although expressive suppression can help people avoid undesirable interpersonal consequences (e.g., de-escalating a conflict by suppressing anger), it can lead to feelings of inauthenticity [11] that result in poorer interpersonal relationships and greater depressive symptoms over time [6,12]. Among a sample of patients with end-stage renal disease, higher levels of expressive suppression were associated with higher levels of depressive symptoms and dissatisfaction with perceived social support [13]. These studies, however, have only examined European American samples.

The incidence rate of breast cancer has steadily increased over the past two decades for Chinese Americans [14,15]. This alarming statistic illustrates the importance of research that explores the psychosocial predictors of quality of life to guide the development of culturally-sensitive interventions. Chinese individuals hold interdependent cultural values commonly found among individuals with Asian heritage [16]. Within this self-view, the inhibition of emotional displays is one way to protect social harmony, and this behavior can be seen as a sign of social competence and maturity [17]. Accordingly, Hong Kong Chinese endorsed greater use of expressive suppression than European Americans.
Americans [9], and Vietnamese American adolescents endorsed engaging in expressive suppression as a coping strategy after they experienced stressful experiences more frequently than European American adolescents [18]. Although expressive suppression has been consistently linked with maladjustment among European Americans, the relations between expressive suppression and health are mixed for Asian Americans. They have been found to be unrelated to well-being (e.g., [9,18]), less harmful for Asian Americans than for European Americans (e.g., [8,19]), or just as harmful between Asian and European Americans (e.g., [11]).

The examination of moderators can clarify why the relations between expressive suppression and health are mixed among Asian Americans. Along this vein, the present study examined whether the utilization of multiple emotion regulation strategies would moderate the relations between expressive suppression and quality of life. We selected cognitive reappraisal, which is a commonly studied emotion regulation process that involves reframing how a stressor is construed to reduce its emotional impact [6], as a putative moderator. Although people often utilize many different emotion regulation strategies [20], expressive suppression has mostly been studied in isolation. Thus, less is known about the health consequences of engaging in multiple emotion regulation strategies. Nonetheless, there is evidence that people who can flexibly adapt to a wide range of situations by engaging in a broad range of behaviors are better adjusted than people who are rigid [21]. Among a sample of Asian American college students who experienced ethnic discrimination, Juang et al. [22] found that high levels of expressive suppression in isolation was associated with greater depressive symptoms. However, the detrimental effects of expressive suppression became nonsignificant among individuals who also endorsed high levels of cognitive reappraisal. In other words, having access to multiple emotion regulation strategies may be advantageous. In the context of cancer adjustment where the negative health effects are chronic, the negative consequences of expressive suppression may be attenuated for those who are able to regularly reframe their thinking to reduce their negative emotional impact.

Another possibility for why the relations between expressive suppression and health is mixed may be attributed to the variation in the extent to which Asian Americans experience an inner conflict between engaging in expressive suppression and wanting to express their emotions. For example, a recent adult immigrant from China may endorse higher emotion control values than an immigrant who emigrated during childhood (i.e., he/she may have acculturated to the emotion expressive norms of the dominant American culture). In other words, the adult immigrant may engage in expressive suppression with less inner conflict, whereas the acculturated Chinese American immigrant may be at odds with the cultural pressure to control emotions. Indeed, the conflict that underlies an individuals’ expressive suppression has been identified to be an important variable in the relation between expressive suppression and health [23]. This conflict, or known as ambivalence over emotional expression, refers to the inner conflict of wanting to express emotions but fearing the consequences of such expression. For example, individuals who experience high levels of ambivalence over emotional expression are tense and repressed whereas individuals who experience low levels of ambivalence over emotional expression are relaxed and quiet when they engage in expressive suppression. Ambivalence over emotional expression have been associated with maladjustment among gastrointestinal cancer patients [24] and college students [23]. Thus, the combination of expressive suppression and desire to express emotions may be the key predictor of maladjustment above and beyond expressive suppression alone. Along this vein, one study showed that Taiwanese individuals who endorsed having the desire to protect social harmony as the motivation behind the use of expressive suppression reported lower levels of interpersonal distress. By contrast, Taiwanese individuals who endorsed having the desire to express their emotions, yet engaged in expressive suppression reported higher levels of interpersonal distress [25]. We hypothesized that when considered in the same model, ambivalence over emotional expression would be related to lower quality of life after controlling for expressive suppression.

1.1. The present study

Extant studies on the effects of expressive suppression on health have largely involved cross-sectional designs with healthy Asian American samples. These studies have typically examined expressive suppression in isolation despite that people tend to use multiple emotion regulation strategies. Addressing these gaps in the literature, the goals of the present study were 1) to examine the longitudinal effects of expressive suppression on quality of life, 2) to test cognitive reappraisal as a moderator of the expressive suppression and quality of life link, and 3) to explore whether ambivalence over emotional expression accounts for significant variance in quality of life after controlling for expressive suppression among a sample of Chinese breast cancer survivors.

Because the extant findings on the health outcomes of expressive suppression are mixed, and that it has yet to been examined with Chinese breast cancer survivors, we did not have an a priori hypothesis regarding the longitudinal effects of expressive suppression on quality of life. From a resilience perspective, we predicted that high levels of cognitive reappraisal would act as a buffer, such that the relations between expressive suppression and quality of life would be attenuated among those with high levels of cognitive reappraisal. Lastly, we hypothesized that ambivalence over emotional expression would be associated with lower quality of life over time after controlling for expressive suppression.

2. Methods

2.1. Participants and procedure

Recruitment was conducted in collaboration with our community partner, Herald Cancer Association, which is based in Los Angeles, New York, and Dallas. Community recruiters contacted breast cancer survivors living in these areas by phone calls, email, instant messaging app (Wechat), through friends’ referrals, and face-to-face recruitment during cancer survivor events. Potential participants were introduced to the study and were told that the study was to understand their experience of having breast cancer. The inclusion criteria were breast cancer survivors who can read and write Chinese.

A total of 121 Chinese breast cancer survivors living in Southern California, New York, and Dallas metropolitan areas were contacted and were all found to be eligible (70 in Southern California, 34 in New York, and 8 in Texas). Among the 121 eligible individuals, two did not provide mailing address during the initial contact and were lost for contact. The remaining 119 individuals were sent a package containing a consent cover letter and questionnaires. Among the 119 potential participants, 112 consented, three declined to participate, and four did not respond and were unreachable by phone.

Two questionnaire packages were mailed to participants eight weeks apart during the 8-month period from July 2015 to March 2016. 112 individuals participated in the baseline and 103 participated in the 8-week follow-up (8% attrition). At follow-up, three participants reported that they did not want to continue the study and six lost to contact. Participants who completed both questionnaires were compensated $35. Of the 103 participants who completed both questionnaires, 64 were located in Southern California, 32 were located in New York, and 7 were located in Texas. The study was approved by the Institutional Review Board at the University of Houston. Power analysis revealed that sample sizes of 93 and 109 were required to detect a direct correlation effect ($r = 0.3$) and a medium interaction effect ($f^2 = 0.15$) with power = 0.85.
3. Measures

3.1. Quality of life

Quality of life was assessed by the Functional Assessment of Cancer Therapy (FACT-G, [26]) at baseline and 8-week follow-up. The FACT-G was developed to measure multi-dimensional quality of life for cancer survivors during the past week. It contained 27 items and assessed four dimensions of quality of life, including physical well-being (7 items, e.g. "I have a lack of energy"), social well-being (7 items, e.g. "I get emotional support from my family"), emotional well-being (6 items, e.g. "I am losing hope in the fight against my illness"), and functional well-being (7 items, e.g. "I am able to work"). A composite quality of life variable was used. The Chinese version of the FACT-G was validated by [42] and used in the present study. Participants were asked to rate their quality of life on a 5-point scale (0 = "Not at all", 4 = "Extremely"). Higher scores indicated a higher quality of life. The present study indicated a high internal reliability for the overall quality of life scale at baseline (Cronbach’s \(\alpha = 0.948\)) and follow-up (Cronbach’s \(\alpha = 0.941\)).

3.2. Ambivalence over emotional expression

Ambivalence over emotional expression was assessed by the ambivalence over Emotional Expressivity Questionnaire (AEQ; [23]) at baseline. Example items include "When I am upset I usually try to hide how I feel". The AEQ has good internal consistency and stability over 6 weeks, predicts poorer health and emotional functioning, and is inversely related to emotional expressiveness [23]. In the original AEQ, there were twenty-eight items. However, in the present study, 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") were removed from the questionnaire package due to their incompatibility with our sample and from feedback from a focus group [27]. Thus, participants rated twenty-four items (e.g. "I want to express my emotions honestly but I am afraid that it may cause me embarrassment or hurt") on a 5-point Likert scale (0 = "Never", 4 = "Frequently"). The 24-item Chinese version of the measure was used in previously published studies [27]. A higher score indicates a higher level of ambivalence over emotional expression. The present study indicated a high internal reliability (Cronbach’s \(\alpha = 0.934\)).

3.3. Emotion regulation

Expressive suppression and cognitive reappraisal were assessed by the Emotion Regulation Questionnaire (ERQ; [6]). Participants rated 10 items on the extent to which they utilize expressive suppression and cognitive reappraisal using a 7-point Likert scale (1 = “Strongly Disagree”, 7 = “Strongly Agree”) at baseline. Sample items for reappraisal and suppression include "I control my emotions by changing the way I think about the situation I'm in", and "I control my emotions by not expressing them", respectively. Higher scores indicate a stronger tendency to use the corresponding emotion regulation strategy. The questionnaire was used and validated among Chinese samples [28]. The present study indicated high internal reliability for cognitive reappraisal (\(\alpha = 0.895\)) and expressive suppression (\(\alpha = 0.836\)).

3.4. Demographic information

Patients’ demographic information (age, gender, income, education level, length of time in the U.S.) were self-reported at baseline.

3.5. Analytic strategy

Descriptive statistics and bivariate correlations of study variables were computed. Hierarchical linear regressions were conducted to examine the associations among the study variables. Specifically, the dependent variable was quality of life at 8-week follow-up. The independent variables were entered in the following sequence: quality of life at baseline, and the main effects of expressive suppression and cognitive reappraisal in Step 1, ambivalence over emotional expression in Step 2, and the interaction between expressive suppression and cognitive reappraisal in Step 3. All continuous independent variables were centered prior to the analyses. Simple slopes analyses were conducted to examine if the main effects of independent variables on quality of life varied at different levels of the moderator [29].

4. Results

4.1. Preliminary analysis

Sample characteristics are in Table 1. There were no differences in demographic and medical variables included in Table 1 between those who completed the follow-up and those who did not (\(ps \geq 0.088\)).

Table 2 shows descriptive statistics and correlations among study variables. Cognitive reappraisal was positively associated with baseline and follow-up quality of life (\(rs = 0.42\) and 0.37, \(ps < 0.01\), respectively). Whereas expressive suppression was not associated with baseline and follow-up quality of life (\(rs = -0.12\) and \(-0.02\), \(ps = ns\), respectively), ambivalence over emotional expression was negatively associated with baseline and follow-up quality of life (\(rs = -0.39\) and \(-0.50\), \(ps < 0.01\), respectively). Follow-up quality of life was not associated with any demographic or medical variables (\(ps > 0.19\), and
High reappraisal was not a significant moderator of the relation. We found that expressive suppression was associated with lower quality of life over time among a sample of Chinese breast cancer survivors. Furthermore, we examined ambivalence over emotional expression as a predictor of relations or with medical populations. Another limitation of this literature is that most studies have involved populations within which expressive suppression was viewed as culturally undesirable. In the present study, we tested cognitive reappraisal as a moderator of the relations between expressive suppression and quality of life over time among a sample of Chinese breast cancer survivors who habitually use cognitive reappraisal. We also participants with a lower tendency of using cognitive reappraisal, higher expressive suppression was associated with lower follow-up quality of life ($\beta = -.24, p = .002$). In contrast, among participants with a greater tendency of using cognitive reappraisal, expressive suppression was not associated with follow-up quality of life ($\beta = 0.05, p = .366$). These findings suggest that cognitive reappraisal serves as a buffer for the detrimental effect of expressive suppression.

5. Discussion

The detrimental effects of expressive suppression on health have been well-documented in cross-sectional studies among healthy populations (e.g., [6]), but fewer studies have examined their prospective relations or with medical populations. Another limitation of this literature is that most studies have involved populations within which expressive suppression was viewed as culturally undesirable. In the present study, we tested cognitive reappraisal as a moderator of the relations between expressive suppression and quality of life over time among a sample of Chinese breast cancer survivors. Furthermore, we examined ambivalence over emotional expression as a predictor of quality of life after expressive suppression was controlled. Although we found that expressive suppression was associated with lower quality of life over time, cognitive reappraisal was a significant moderator of this relation. We found that expressive suppression was associated with lower quality of life over time among those with low levels of cognitive reappraisal, and this relation became nonsignificant for Chinese breast cancer survivors who habitually use cognitive reappraisal. We also

thus they were not included as covariates in the regression model.

4.2. Regression analysis

Table 3 shows results of the hierarchical regression analysis. In Step 1 of the hierarchical regression analysis, there was a significant main effect of expressive suppression on follow-up quality of life ($\beta = -0.11, p = .043$), but there was not a significant main effect of cognitive reappraisal. After ambivalence over emotional expression was added in Step 2, the main effect of expressive suppression became nonsignificant ($\beta = -0.06, p = .366$). These results showed that the ambivalence over emotional expression x expressive suppression interaction was not a significant predictor of follow-up quality of life ($\beta = -0.07, p = .18$).

### Table 3

Hierarchical regression analysis predicting follow-up quality of life.

<table>
<thead>
<tr>
<th>Step</th>
<th>QoL-Baseline</th>
<th>Suppression</th>
<th>Reappraisal</th>
<th>AEE</th>
<th>Suppression x Reappraisal</th>
<th>$R^2$/$R^2$</th>
<th>$\Delta F$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.77</td>
<td>-0.32</td>
<td>0.08</td>
<td>-3.746</td>
<td>0.69</td>
<td>0.76/0.76</td>
<td>100.30***</td>
</tr>
<tr>
<td>2</td>
<td>0.77</td>
<td>-0.16</td>
<td>0.02</td>
<td>-3.464</td>
<td>0.69</td>
<td>0.02/0.78</td>
<td>9.55**</td>
</tr>
<tr>
<td>3</td>
<td>0.77</td>
<td>0.02</td>
<td>0.66</td>
<td>1.12</td>
<td>0.66</td>
<td>0.02/0.81</td>
<td>11.16***</td>
</tr>
</tbody>
</table>

Note. QoL = quality of life. AEE = ambivalence over emotional expression. All predictors were centered.

$^*$ $p < .05$.

$^{**} p < .01$.

$^{***} p < .001$.
found that ambivalence over emotional expression was a significant indicator of maladjustment above and beyond expressive suppression. These findings contribute to the literature in a number of ways.

Extending previous findings that expressive suppression is unrelated to well-being among healthy Asians (e.g., [9,18]), we found that the effects of expressive suppression varied as a function of other emotion regulation strategies. Although expressive suppression in isolation was linked with maladjustment, having access to different emotion regulation strategies have been linked with well-being [30–32]. Building on these studies, our findings showed that expressive suppression was unrelated with quality of life over time among the Chinese breast cancer survivors who also engaged in high levels of cognitive reappraisal. It may be that the use of an adaptive emotion regulation strategy, such as cognitive reappraisal, was sufficient to counter the detrimental effects of expressive suppression. By contrast, expressive suppression was associated with lower quality of life among the Chinese breast cancer survivors who engaged in low levels of cognitive reappraisal. For those without the ability to successfully dampen the negative emotions through cognitive reappraisal, expressive suppression in isolation may have been an inadequate strategy for managing negative emotions [43], thereby resulting in poorer quality of life over time. Chinese breast cancer survivors tend to have smaller social networks, and their primary sources of social support tend to come from their immediate family [33]. Because cancer survivors tend to experience higher quality of life when they feel supported by close-others [34,35], the suppression of negative emotions may have prevented them from receiving adequate social support.

An important goal of the present study was to also determine if beyond expressive suppression, ambivalence over emotional expression was a unique predictor of reduction in quality of life over time. This finding indicated that although expressive suppression in isolation was associated with lower quality of life over time, it was not associated with quality of life when ambivalence over emotional expression was included in the model. On the other hand, ambivalence over emotional expression appeared to significantly predict the reduction of quality of life over time above and beyond expressive suppression among Chinese breast cancer survivors. Consistent with our findings, ambivalence over emotional expression predicted additional variance in health-related outcomes over and beyond emotion expression among a sample of older women [36]. The internal conflict of wanting to express emotions but fearing the consequences of such expressions may be the key predictor of maladjustment over and beyond the behavioral act of expressive suppression. Because Chinese breast cancer survivors can often be reluctant to seek support due to having fears of burdening others or shame from believing that their cancer is caused by weakness in their character or personal lifestyle choices [33], having ambivalence over emotional expression can be even more detrimental to their health.

These findings provide potential clinical implications for interventions. While working with Chinese breast cancer survivors who frequently use expressive suppression, it would be valuable to assess for levels of ambivalence over emotional expression. Interventions such as expressive writing provide private opportunities to express their deepest thoughts and feelings without the fear of experiencing negative relational consequences [37–39], and thus, may be especially beneficial for individuals with high levels of ambivalence over emotional expression. In fact, it has been show that individuals with higher levels of ambivalence over emotional expressive had experienced enhanced benefits from expressive writing among healthy Asian Americans [38] and non-Hispanic White chronic pain patients [40]. With regards to cognitive reappraisal, helping Chinese breast cancer survivors to learn and practice this emotion regulation strategy could help improve their ability to regulate the negative emotions stemming from their cancer treatment without having to rely on their support network. Altogether, instead of primarily working to reduce the use of expressive suppression, it would be important to prioritize the work on reducing their ambivalence over emotional expression and improving their ability to use cognitive reappraisal.

In addition to the preceding discussion, it is important to address some potential limitations to this study. One important limitation is that we don’t know whether expressive suppression and cognitive reappraisal were used in direct response to negative emotions stemming from their cancer. Instead, we infer that the expressive suppression and cognitive reappraisal are habitually used in response to all situations, which would include those related to cancer. It would be important in future studies to utilize ecological momentary assessment, for example, to examine specific emotion regulation strategies in response to cancer-related situations. Second, the focus on Chinese-speaking breast cancer survivors in the present study may preclude the generalizability of our findings to the larger pan-ethnic Asian group. Although Chinese culture share many similar cultural values (e.g., family obligation) with other Asian subgroups, there are still meaningful distinctions in the extent to which they adhere to specific cultural values [41]. Similarly, the generalizability of our findings with other types of medical illnesses require additional testing. Third, convenience sampling was used in this study and thus future replications are warranted. Fourth, given the significant within-group heterogeneity within the Chinese American population, age of immigration and generation status are important moderators to test in future studies. Lastly, a relatively small amount of variance in follow-up quality of life was accounted for by the different emotion regulation strategies (i.e., follow-up quality of life was mainly accounted by baseline quality of life). Because this may be partially explained by the relatively short duration between baseline and follow-up (8 weeks), future studies should implement longer follow-ups.

Despite these limitations, our findings increase our understanding of the prospective relations between expressive suppression and quality of life. We found that expressive suppression leads to reductions in quality of life over time among those with low levels of cognitive reappraisal, and that high levels of cognitive reappraisal can act as a buffer against the harmful effects of expressive suppression. We showed that the conflict between wanting to express emotions and fearing the consequences of such actions was a unique predictor of quality of life after controlling for expressive suppression. It is important to know that although expressive suppression has been consistently linked with maladjustment among European American samples, expressive suppression may represent a more complex process for Chinese breast cancer survivors. Understanding the moderators and other theoretically important variables provide beneficial implications for improving the quality of life of Chinese breast cancer survivors.

Conflict of interest statements

Authors Qian Lu, William Tsai, Qiao Chu, and Jing Xie declare no conflict of interest.

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