Body Image 13 (2015) 33–37

Contents lists available at ScienceDirect

Body Image

journal homepage: www.elsevier.com/locate/bodyimage

Brief research report

Body image investment in breast cancer patients undergoing reconstruction: Taking a closer look at the Appearance Schemas Inventory-Revised

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ARTICLE INFO

Article history:
Received 24 April 2014
Received in revised form
10 December 2014
Accepted 11 December 2014

Keywords:
Body image
Body image investment
Exploratory factor analysis
Confirmatory factor analysis
Breast cancer
Breast reconstruction

ABSTRACT

Breast cancer and its treatment can significantly affect a woman's body image. As such, it would be useful to understand the importance or value these patients place on their appearance. We evaluated the factor structure of the Appearance Schemas Inventory-Revised (ASI-R), a measure of body image investment, with a sample of 356 breast cancer patients undergoing mastectomy and breast reconstruction. Using confirmatory and exploratory factor analyses, we found that a three-factor model demonstrated an improvement in fit over the original two-factor structure of the ASI-R. These factors were named Appearance Self-Evaluation, Appearance Power/Control, and Appearance Standards and Behavior. The three aforementioned factors demonstrated acceptable internal consistency reliabilities. Our findings have implications for the use of the ASI-R in an oncology setting, specifically for breast cancer patients undergoing reconstruction.

Introduction

Breast cancer treatment often results in significant alteration to one's breast(s), including changes in appearance (e.g., size and symmetry), skin texture, and sensation. For women undergoing a mastectomy, breast reconstruction offers a treatment option to assist in rebuilding their breast(s) and is known to provide important psychological benefits related to body image, sexuality, and quality of life (Cordeiro, 2008; Wilkins et al., 2000). Although there are many factors women must consider when choosing whether to undergo breast reconstruction following mastectomy, restoration of body image is found to be a primary motivating reason (Duggal, Metcalfe, Sackeyfio, Carlson, & Losken, 2013; Figueiredo, Cullen, Hwang, Rowland, & Mandelblatt, 2004). Research suggests that 42–67% of women who receive surgical treatment for breast cancer opt for reconstruction (Jagsi et al., 2014; Morrow et al., 2014).

Women undergoing breast reconstruction often face an extensive period of appearance alterations involving multiple surgical procedures occurring over a span of months to years. Although breast reconstruction has been shown to have positive benefits for women's social and psychological well-being (Cordeiro, 2008), many women receiving reconstruction are found to endorse body image difficulties that can persist even years post treatment (Sackey, Sandelin, Frisell, Wickman, & Brandberg, 2010). Considerable research is devoted to comparing body image and quality of life outcomes for women undergoing breast conservation therapy (BCT), mastectomy alone, or mastectomy with reconstruction. Studies report conflicting findings; however, higher rates of body image concerns have been repeatedly found among patients treated with mastectomy and reconstruction compared to BCT (Fobair et al., 2006; Rosenberg et al., 2012; Sackey et al., 2010; Shoma et al., 2009). A recent meta-analysis by Fang and colleagues offers further insight in this area showing that women with breast reconstruction experience significantly higher levels of body stigma compared to women treated with BCT (Fang, Shu, & Chang, 2013). Body stigma encompasses the loss of bodily integrity due to alteration of the body and removal of the breast. These findings reflect the complex nature of body image which encompass more than satisfaction with appearance.

Another component of body image which may be particularly relevant for patients undergoing breast reconstruction is body

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http://dx.doi.org/10.1016/j.bodyim.2014.12.003
1740-1445/

image investment, which refers to the value or importance placed on appearance and physical attributes. Adachi et al., found that patients having immediate breast reconstruction valued appearance and attractiveness to their partner more significantly than patients undergoing mastectomy alone or BCT (Adachi, Ueno, Fujioka, Fujitomi, & Ueo, 2007). Other studies have found associations between appearance investment, depression, and quality of life outcomes for breast cancer survivors irrespective of type of treatment (Moreira & Canavarro, 2010, 2012). A longitudinal study evaluating body image and psychosocial adjustment of breast cancer patients during the course of treatment further found that body image investment was a significant predictor of subsequent self-consciousness of appearance, body shame, and appearance satisfaction (Moreira, Silva, & Canavarro, 2010). As such, it is believed that further efforts to examine body image investment in breast cancer patients is warranted. This may be particularly valuable to study in women choosing reconstructive treatment, as understanding the importance these women place on their appearance may help explain variance in their satisfaction with reconstruction outcomes.

Most research evaluating body image investment in breast cancer survivors has used the Appearance Schemas Inventory-Revised (ASI-R) (Cash, 2003; Cash, Melnyk, & Hrabosky, 2004). This measure was originally developed and validated for use in college-aged individuals. Previous work found the ASI-R to be comprised of two factors: (1) Self-Evaluative Salience, the extent someone believes his or her looks influences personal worth and sense of self, and (2) Motivational Salience, the extent one engages in behaviors to manage his or her appearance (Cash et al., 2004). Important distinctions have been found between these factors, such that high motivational salience has been associated with better body image outcomes whereas high self-evaluative salience has shown a negative relationship with appearance satisfaction following breast cancer treatment (Moreira et al., 2010).

Prior to conducting further research utilizing the ASI-R with breast cancer patients, it is important to evaluate the factor structure of this measure to determine its usefulness with this patient group. A common research error is to rely on published reports of psychometric validity when using a scale with a different population (Rusticus, Hubley, & Zumbo, 2008; Thompson, 2004). Our purpose was to examine the dimensions/latent constructs underlying the ASI-R for breast cancer patients undergoing reconstruction. We hypothesized that breast cancer patients who undergo reconstructive treatment will have a unique response pattern on the ASI-R compared to college-age individuals. As far as we know, this is the first study to examine the factor structure of the ASI-R in a breast cancer population.

Method

Participants

This study involves a secondary analysis of a larger ongoing longitudinal project designed to evaluate appearance changes and body image outcomes for women undergoing breast reconstruction. Only data from participants who completed all ASI-R items at their baseline study visit were included in the current study. Participants were recruited from the Center for Reconstructive Surgery at The University of Texas MD Anderson Cancer Center (MDACC). To be eligible, participants had to be female, English-speaking, 21 years or older, and planning to undergo breast reconstruction following mastectomy. Participants were asked to complete the ASI-R as part of an initial psychosocial assessment. All procedures were reviewed and approved by the MDACC Institutional Review Board.

Measures

The Appearance Schemas Inventory-Revised (ASI-R) is a 20-item self-report measure designed to assess body image investment (Cash, 2003; Cash et al., 2004). Items are rated on a 5-point Likert scale from 1 'strongly disagree' to 5 'strongly agree'. Principal component analysis (PCA) with varimax rotation revealed that the best solution was a two-factor structure with 12 items loading on the first factor (Self-Evaluative Salience) and 8 items on the second factor (Motivational Salience) (Cash et al., 2004).

Analytic Plan

We generated descriptive statistics for our sample and individual items on the ASI-R. We then entered items from the previously established factors of Self-Evaluative Salience and Motivational Salience as the two latent variables for a two-factor confirmatory analysis (CFA). We used the chi-square goodness-of-fit test for the difference between expected and observed covariance matrices to test the appropriateness of the two-factor structure. We also assessed likelihood-ratio test, Akaike's information criteria (AIC), standardized root mean square residual (SRMR), Goodness of Fit Index (GFI), Bentler-Bonett Normed Fit Index (NFI), and Root Mean Square Error of Approximation (RMSEA) (Hu & Bentler, 1999).

Due to lack of fit of CFA, we conducted an exploratory factor analysis (EFA) with principal axis factoring (PAF) extraction method to further identify the number of latent constructs for the ASI-R. In order to reduce bias, we randomly split our sample ($N = 356$) into two datasets of equal size, a "training sample" ($n = 178$), and a "holdout sample" ($n = 178$). Utilizing the training sample, the final factor structure was extracted using factor analysis with oblique promax rotation with eigenvalue >1.0 rule and via an examination of the scree plot (Tabachnick & Fidell, 2001). The oblique rotation method was employed because the inter-item correlations revealed moderate correlations ($r > .40$) for more than half of the items within the ASI-R measure via Spearman correlation analysis. Subsequently, using the weighted least square mean and variance (WLSMV) estimation, a CFA was carried out for the holdout sample to confirm the model identified from the EFA. Model fit was evaluated through the indices used in our first CFA model. In assessing the reliability of the final factor structure, we also calculated the internal consistency with Cronbach's alpha for each factor via the holdout sample. We implemented all analyses in SAS Version 9.3 (SAS Institute Inc., Cary, NC).

Results

Descriptive Statistics

Of the 373 participants who completed the ASI-R, 17 participants had one or more missing response(s) for the 20 items. Thus, 356 participants were included in the analysis. Our sample of 356 women had a mean age of 49.43 ($SD = 10.3$); 74.3% were White, 11.3% were Black, and most participants (77.25%) were non-Hispanic. The majority (72.75%) were married and 68.6% had a college education or higher. Cancer types included invasive ductal carcinoma (53.4%), ductal carcinoma in situ (21.57%), invasive lobular carcinoma (9.6%), lobular carcinoma in situ (1.29%), and other (13.28%). Some participants had received adjuvant treatment consisting of chemotherapy (45.8%), radiation therapy (28.32%) or both (21.81%). Distributions of the ASI-R scores showed skewness and kurtosis within normal limits. When considering the original two-factor structure of the ASI-R, our sample had the following mean scores: Self-Evaluative Salience $M = 2.96$ ($SD = 0.72$), Motivational Salience $M = 3.77$ ($SD = 0.67$), composite $M = 3.28$ ($SD = 0.59$).