The Body Grid as an Assessment Tool for Body Image

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Abstract

Objective: The aim of this study was to analyze the Body Grid (BG) as an assessment tool for body image in a sample of patients with breast cancer, after surgery. We explored two measures of cognitive structure, Percentage of Variance Accounted for by the First Factor (PVAFF) and Polarization, and we compared measures of body image and body self-esteem obtained by means of the BG with those obtained via a validated body image questionnaire. Method: Our sample was comprised of 23 patients (12 subjected to radical mastectomy, 11 subjected to conserving surgery) and 24 healthy controls. Participants were administered the BG and the Multidimensional Body Self Relations Questionnaire (MBSRQ). We analyzed the similarities between instruments using correlations and non-parametric tests. We have also provided two case studies to exemplify the use of the BG. Results: We found statistical differences in cognitive structure between patients and healthy controls. There were no differences between women subjected to mastectomy and women with breast conserving surgery in the level of PVAFF, but there were significant differences between them in the level of Polarization. We found significant correlations between body image indices of both instruments, especially Self-evaluated Attractiveness (MBSRQ) and Distance between Real and Ideal Body (BG). We found similar distributions of these indices in all the samples. Conclusions: The BG provides useful information about body image. The results show that both instruments assess similar constructs. This suggests that the BG is a valid instrument for body image assessment.

Key words: body grid, assessment, self-esteem, body image

The Body Grid as an Assessment Tool for Body Image

Body image (BI) is defined as the perception an individual possesses of the global body and each of its parts, its movement and limits, and the subjective experience of attitudes, thoughts, feelings, and valuation, as well as the behavior resulting from those cognitions and emotions (Raich, 2000). It is about how an individual thinks, feels, perceives, and behaves with respect to his or her body. BI includes perceptual elements, referring to particular aspects of the body, with information about size and shape; cognitive elements, including thoughts and beliefs about the body; and emotional elements, which are related to feelings and the level of satisfaction with one's own body and corporal experiences (Pruzinsky & Cash, 1990). It also includes behavioral elements, such as exhibition or concealment of one's body.

BI is part of the self-concept, the totality of perceptions that a person has of him/herself, including judgments on behaviors, abilities, or appearance, in social, work/academic, familial, body, and global areas. Self-esteem consists of the evaluation of self-concept, the difference between self-concept and the ideal self-image. Self-esteem implies the positive/negative valuation that a person possesses about him/herself, the feelings about his/her characteristics and the affective valuation of them (Mora & Raich, 2010).

Breast cancer is the second most frequent type of cancer in the world, with lung cancer being the most frequent. In Europe, there are 370,000 diagnoses every year (27.4% of all tumors) (AECC, 2012). In Spain, over 22,000 new cases are diagnosed on an annual basis (approximately 30% of tumors). The most frequent age at diagnosis is between 45 and 65 years old (AECC, 2012).

Research on BI in breast cancer patients is of major importance due to its epidemiological relevance and psychosocial consequences for women (Sebastián, Manos, Bueno, & Mateos, 2007). Both the disease and its treatment have a negative impact on

quality of life and the emotional well-being of patients. Breast cancer patients experience their BI as a source of distress provoked by the asymmetry they perceive, and this leads to difficulties in looking at themselves in the mirror, wearing some clothes, or having sexual relations (Achte, Lindfors, Salokari, Vauhkonen, & Lehvonen, 1987). Specifically, mastectomy has been described as an experience of "body deconstruction," accompanied by feelings of mutilation and alienation (Piot-Ziegler, Sasi, Raffoul, & Delaloye, 2010). Women subjected to surgery experience significant effects on their BI (Trill & Goyanes, 2003).

From a constructivist perspective, health psychology provides a rich research field, with many studies being conducted concerning how patients construe health and illness, and how body experiences may affect these constructions. Recently Cipolleta, Consolaro, and Horvath (2014) found four main trajectories of patients' constructions of illness: opportunity, denial, preoccupation, and ambivalence. These constructions are linked to the experiences and perception of health and illness, the somatic awareness of the person, and their self. Patients need to cope with the oncological process, and the way they do it depends on how they construe the illness and themselves, including their BI. Regarding BI and cancer, specifically breast cancer, there is an increasing interest in the way that BI changes and needs to be re-construed in relation to the disease, its treatments, and the physical changes associated with them (Lane & Viney, 2005; Rosenblatt, 2006; Segura-Valverde, García-Nieto & Saúl, 2014; Viney, 1989).

Personal Construct Theory (PCT), first posited by George Kelly (1955, 1966), states that people build their own reality, within their context, and are influenced by interpersonal and sociocultural exchanges. Their systems of constructs, or bipolar dimensions of meaning, are constantly evolving due to changes in the environment. To explore the structure and content of people's meaning systems, Kelly developed the Repertory Grid Technique (RGT) (Fransella, Bell, & Bannister, 2004). The RGT is widely used in health psychology research,

in different areas such as eating disorders, hematological diseases, cancer, rhinoplasty, and menopausal symptoms (Saúl et al., 2012; Turpin, Dallos, Owen, & Thomas, 2009).

There are several instruments to assess BI in cancer patients. Most of them have been specifically conceived for addressing a particular topic of investigation (Annunziata, Giovannini, & Muzzatti, 2012), so they fit with the researcher's personal theory of what BI is. These questionnaires define BI with the same components for everybody, all of them settled a priori from the researcher's framework, but they do not take into account which aspects are meaningful in the construction of the BI from the patient's particular personal world view. However, the Body Grid (BG), the body version of the RGT, is useful for studying BI in patients because it provides structure and allows for assessment of the acceptance of the body and the integration of its parts from the perspective of the patient's personal construct system. Fransella and Crisp (1979) measured changes in concepts about weight and the individual's personal world, comparing anorexic, neurotic and normal females. They used a form of repertory grid, which included images of the subject at different weights (present weight, fatter, thinner, ideal weight) among the elements. Feldman (1975) first used the BG to explore BI and object relations in a sample of anorexic patients. He used several body parts and the whole "person," related to the subjects themselves and to their mother, father, partner and ideal self, as elements. He found the BG to be a useful tool to determine properties of the body representation of self and significant others, analyzing the principal components of the BG and the distances between elements. Borkenhagen, Klapp, Brähler, and Schnoeneich (2008) developed a specific BG to explore and compare the dissatisfaction with the body in anorexic and bulimic patients, and the level of integration and dissociation of single body parts with respect to the real and ideal body.

With respect to cancer patients, Weber's research group (Weber et al., 2001; Weber et al., 2005; Weber, Thier, Walter, & Klapp, 2004) used the BG in hematological and

metastasized cancer patients, in an attempt to explore the specific contents with which the patients construe their BI. They found a restricted and often unidimensional BI in these patients, and they suggested that this restriction might act as a coping mechanism to help the individual in dealing with the disease and treatment.

Despite the increasing interest in the BG, this technique is barely used in Spain, where this research takes place. The authors have not found any studies using the BG version of the grid in this country. The aim of this research is to use the BG as a tool to gain a better comprehension of the BI structure, specifically comparing breast cancer patients who have undergone surgery with a healthy control sample. To reach this objective, we explored the use of structural indices of the BG in both samples and presented a comparison between classic self-esteem indices of the BG and a well-validated BI questionnaire. As far we are aware, this is the first attempt to compare the results from BG to other instruments to assess BI. Also we showed the usefulness of this information in a clinical context using two case studies.

Method

Sample

The sample was comprised of 47 women, in two groups. The first group included 23 patients, between the ages of 30 and 70 years, suffering from breast cancer, and subjected to surgery between 2010 and 2012. All patients were diagnosed with in situ carcinoma (stage 0), localized carcinoma (stage I), or regional carcinoma (spread to nearby tissues or lymphatic nodes, stages II or III depending on the size of the tumor and its extension). The second group was a control group of 24 healthy women, equivalent in age and education level. The patient group was divided into patients subjected to mastectomy (12 patients) and patients subjected to breast conserving surgery (11 patients). The patients were treated in the psycho-oncology program of a hospital on the outskirts of Madrid. In addition to surgery, patients could be receiving other pre- or post-surgery treatment (radiation, chemotherapy, hormone

therapy). Two patients with oncological disease in stage IV (metastatic cancer) were excluded, as well as women with a clinical diagnosis of major psychopathology.

Convenience sampling was used. All participants signed an informed consent, approved by the Ethics Committee of the hospital, which stated the voluntary and the unpaid participation of the patients, as well as their right to revoke the consent they had given.

Instruments

Body grid technique

The BG technique consists of a data matrix made up of rows, where the elicited constructs are placed, and columns, to place the elements. A specific grid was developed to assess BI and its disturbances, based on previous work by Borkenhagen et al. (2008), Borkenhagen, Klapp, Schoeneich, and Brähler (2005), and Weber et al. (2001). An example of this technique is provided in Figure 1.

[Insert Figure 1 about here]

Eleven body parts were selected as elements – *Breast, Armpit, Arm, Skin, Neck, Belly, Hips, Genitals, Legs, Head, Face* – in addition to the elements "*Real Body,*" "*Body 5 years before surgery*" for patients only, "*Body 5 years ago*" for controls only, and "*Ideal Body.*" To elicit constructs, a dyadic method was used, which consisted of presenting pairs of elements to compare. Eleven pairs of elements were presented; one of them was always "*Real Body*". There were some cases, due to difficulties of participants to think in body terms, where a monadic method was used instead, consisting of asking about one characteristic that described only one element. The characteristic that appeared by answering the questions was the emergent pole of the construct. Participants were then asked to name the characteristic they considered the opposite, or the contrast pole, to complete each of the bipolar constructs. When presenting the elements, each participant generated at least one construct. The

elicitation phase finished when the participant was unable to generate new constructs. The minimum number of constructs elicited was 11, and the maximum was 15.

Once the constructs were elicited, the participants completed the grid by rating all of the elements on all of the constructs using a seven-point scale where 1 (very), 2 (quite), and 3 (a little) referred to the emergent pole, 4 was the midpoint, and 5 (a little), 6 (quite), and 7 (very) referred to the contrast pole.

Multidimensional body self-relations questionnaire (MBSRQ)

The Spanish version of the MBSRQ (Botella, Ribas Rabert, & Benito Ruiz, 2009; Brown, Cash, & Mikulka, 1990) is a 45-item self-administered questionnaire which assesses attitudes concerning BI in emotional, cognitive, and behavioral aspects.

The Spanish version has four factors, instead of the seven factors of the original questionnaire: one general factor and three specific ones. Specific factors are 1) behavior focused on preserving physical condition (BFPP, range of 1 to 5): high scores on this factor indicate that the person spends a large amount of time and effort to improve and maintain her physical condition. Low scores mean a lack of these behaviors; 2) self-evaluated attractiveness (SEA, range of 1 to 5): high scores on SEA indicate that the person feels attractive and desirable, while low scores mean the person feels unattractive and undesirable; and 3) care about physical appearance (CPA, range of 1 to 5): High scores on this factor indicate frequent behaviors focused on caring about external aspects of physical appearance (e.g., hairstyle, clothing, weight). Low scores mean indifference to these aspects. The general factor, subjective importance of corporality (SIC, range of 1 to 5), combines the other three factors. High scores on ISC mean that the person gives importance to health, appearance and physical condition, while low scores indicate that these aspects are not important for the person. The questionnaire has acceptable psychometric properties, with a reliability (internal

consistency) of .884. Cronbach's alpha coefficient is .94 for BFPP, .709 for CPA, and .842 for SEA (Botella et al., 2009). The questionnaire also shows acceptable criteria for predictive validity.

Procedure

Patients who satisfied inclusion criteria were contacted via telephone and we made an appointment with them to explain the research. The control group was selected from the primary care service in the same geographical area: when they had a medical visit, a Resident Psychological Intern (working in the service at that moment) asked them in person to participate in the research. If they were interested then they were contacted via telephone and followed the same protocol as the patient group. The application of the test protocol was in groups, each one having four to eight participants, and patients were tested separately from controls.

Design

A retrospective ex post facto design was used, with only one measurement point.

The measures of cognitive structure selected were the Percentage of Variance Accounted for the First Factor (PVAFF) and the Polarization index. The PVAFF is a well-established measure of differentiation, an index of cognitive complexity as the number of different dimensions of the cognitive system (Feixas, Bach, & Laso, 2004; Kovářová & Filip, 2015), and the percentage of variance accounted for by the first factor (derived from principal component analysis) has been used in analyzing BG in previous works (Borkenhagen et al., 2008; Weber et al., 2001; Weber et al., 2005). Weber's group found that hematological and metastasized patients showed a restricted and unidimensional body image (PVAFF over 60%), and explained this result as a mechanism to cope with the threat caused by the oncological process. Similarly, in the present research, the PVAFF is expected to be higher in the patients than in the control group. In the case of the RECORD 5.0 program, the PVAFF

is derived by correspondence analysis (CA), a multidimensional factor analysis technique. The aim of CA is to extract the maximum variance from the data, reducing them to a few dimensions by using distances as a measure of similarity, and the simultaneous computation of constructs and elements (Feixas & Cornejo, 1996, 2002). The PVAFF allows identification of the magnitude of the principal dimension of meaning in the person's construct system. High scores on PVAFF (over 47%) suggest unidimensionality of the system, whereas low scores indicate greater differentiation (Feixas et al., 2004). However, for the purpose of this research, 60% was taken as the cut-off point, following Weber's previous work (Weber et al., 2001).

The Polarization index is a measure of the extremity of ratings. It is calculated as the percentage of extreme scores (1 or 7). The theoretical probability of extreme scores for a 7-point Likert scale is 28.57% (Feixas, Montebruno, Dada, Del Castillo, & Compañ, 2010). The use of extreme ratings suggests the meaningfulness of the construct or element employed. It has been found to be a valid measure of the importance to the individual of the construct or the elements rated (Fransella et al., 2004). Previous research has proven that individuals with a history of trauma show more extreme ratings (Harter, Erbes, & Hart, 2004; Sewell et al., 1996). If cancer is considered a traumatic event, then it might be expected that the constructions of cancer patients will be more polarized, including the aspects related to BI. In addition, taken as a global index (total proportion of extreme scores), a high level of polarization, above the theoretical probability, has been linked to cognitive rigidity (Feixas & Cornejo, 2002).

The variables used to compare the two instruments were the four indices of the MBSRQ, and two self-esteem indices provided by the BG: 1) Correlation between Real Body and Ideal Body (C.R-I) and 2) Distance between Real Body and Ideal Body (D.R-I). The C.R-I is a product-moment coefficient between both elements. A common problem when

using inter-element correlations is that the resulting value depends on the rating direction of the constructs (Mackay, 1992). To avoid this problem the RECORD program automatically aligns all the constructs, placing all positive poles, as defined by ratings of the ideal body, to one side of the grid. This makes the inter-element correlations comparable (Fransella et al., 2004, p.93; Mackay, 1992). Its values vary between -1 and +1. Strong positive correlations indicate good self-esteem, because it means that both elements are perceived as similar. If the correlation is negative or weak, this represents low self-esteem. D.R-I is a continuous variable calculated by the RECORD 5.0 program (Feixas, Cornejo, & Laso, 2012). The RECORD 5.0 program automatically calculates the standardized Euclidian distances with the following equation: $D = [0c(Y - I)2/(6C)]$, where Y is the score on the element present self (in this research real body), I is the score on the element ideal self (ideal body), C is the number of constructs in the grid, and 6 is the maximum distance possible between real and ideal body on a 7 point Likert scale. The problem with Euclidian distances is that their maximum value depends on the number of constructs, which does not allow for the comparison of different grids. Dividing the result by the maximum value gives a standardized distance, which varies between 0 and 1 (adapted from Trujillo, 2016). The D.R-I represents the difference between the image that a person has of his/her body and his/her desired image. The larger the distance is, the more difference there will be between both images. As these variables have an inverse correlation, similar associations with the MBSRQ (although inverse) might possibly contribute to validate the use of the BG as a tool to assess BI. As the BG is specially designed to assess body parts, the measures of self-esteem are specifically related to its body aspects.

The independent variable was the type of surgery that the patients were subjected to. This was a nominal variable, with three different levels: no surgery, breast conserving surgery, and mastectomy.

Data analysis

Firstly, data were analyzed with the program RECORD 5.0 for the RGT. Secondly, statistical analyses were conducted using SPSS for Windows, version 19 (IBM, 2010). A chi-squared test for contingency tables was used for descriptive analysis. The socio-demographic variables were: marital status, children yes/no, number of children, education level, economic level, and employment situation. Three variables related to the surgery were also considered: grade of the tumor, year of the surgery, and adjuvant treatment.

Correlation tests were used to observe the level of association between the variables. Afterwards, one-way ANOVA and Bonferroni post-hoc analysis were conducted to analyze the differences in the distribution of the BG variables among the groups (Authors, 2014). Non-parametric tests (Kruskal-Wallis H and Mann Whitney U for independent samples) were conducted to analyze PVAFF and Polarization, as well as the variables provided by the MBSRQ, because they did not fit the basic assumptions of the ANOVA model.

Results

Differentiation and Polarization of the personal construct systems

The main descriptive results of PVAFF and Polarization for the three samples are summarized in Table 1.

[Insert table 1 about here]

Assuming 60% as the cut-off point for PVAFF (Weber et al., 2001), the most remarkable results are the following: in the control group, we found only one score that indicates unidimensionality in the person's construing of her BI (4.2% of the sample). In the breast conserving surgery group, 27.3% of the scores were above the cut-off point, whereas in the mastectomy group, 41.6% of the sample was above 60% and an additional 33% reached a PVAFF of 58%. This means that approximately 75% of the patients who had undergone mastectomy showed a restricted and unidimensional construing system.

Non-parametric tests were conducted to analyze differences between samples. Statistically significant differences were found in PVAFF (H = 18.791; p < .001; η_H^2 = .336). The healthy group showed lower PVAFF than the breast conserving surgery group (U = 49.00; Z = -2.061; p = .002; r = .349) and the mastectomy group (U = 31.00; Z = -3.088; p < .001; r = .514). There were no significant differences between both groups of patients, however (U = 38.00; Z = -1.847; p = .091).

For the variable Polarization, there were also statistically significant differences between the sample groups (H = 13.9; p < .001; η_H^2 = .222). In this case, the mastectomy group showed significant higher polarization compared to both the healthy group (U = 38.00; Z = - 3.558; p < .001; r = .593) and the breast conserving surgery group (U = 19.50; Z = - 2.863; p = .004; r = .597). No statistical differences were found between the healthy group and the breast conserving surgery group (U = 125.00; Z = -.249; p = .804).

Comparison with a well-validated instrument

To begin, correlations between the self-esteem scores of both instruments were analyzed. To simplify the comparison, and maintain the samples in as similar forms as possible, all patients were taken as one sample, given that there were no significant differences on this measure between mastectomy and breast conserving surgery patients. Correlations for the total sample, the patients, and the control group are presented in Table 2.

[Insert table 2 about here]

Significant correlations (moderate-strong) were found between D.R-I and SEA in all the samples, and between D.R-I and SIC in the total sample and the patients group (Table 2). Regarding the index C.R-I, significant correlations were found with SEA in the total and the control group, but not in the patients group. There were no significant correlations between C.R-I and SIC in any of the samples. There were also no correlations between the BG indices

and CPA and BFPP, apart from a correlation between D.R-I and BFPP in the patients group. The distribution of the variables from the MBSRQ was then analyzed (Table 3).

[Insert table 3 about here]

Statistically significant differences in the distribution of SIC and SEA were found between the mastectomy and the control group (Table 3). The mastectomy group scored higher on SIC, showing more worries about health, appearance and physical condition, and lower on SEA, feeling less attractive and desirable than the control group. In addition, SEA showed significant differences in its distribution between controls and breast conserving surgery patients, the latter group showed lower scores (feelings of unattractiveness). Neither of the two indices showed differences between patients subjected to mastectomy and patients subjected to breast conserving surgery. Results concerning CPA and BFPP were not significant.

These results were compared with the results concerning body self-esteem previously obtained using the BG in the same sample (Segura-Valverde, García-Nieto & Saúl, 2014). The authors analyzed the distribution of the indices C.R-I and D.R-I in the three groups, following an ANOVA model. For the variable C.R-I, the authors found significant differences ($F(2,44) = 9.210$; $p < .01$; $\eta_p^2 = .295$). Bonferroni post hoc tests indicated that the healthy control group showed higher C.R-I compared to both the mastectomy group (mean difference = .551; $SE = .147$; $p = .02$) and the breast conserving surgery group (mean difference = .480; $SE = .151$; $p = .008$), but there were no significant differences between the two surgery groups (mean difference = .071; $SE = .173$; $p = 1.00$). Similarly, for the variable D.R-I, there were also differences ($F(2,44) = 23.230$; $p < .001$; $\eta_p^2 = .524$), which were also between the healthy group and both the mastectomy (mean difference = .342; $SE = .508$; $p < .001$) and the breast conserving surgery groups (mean difference = .200; $SE = .522$; $p = .001$). In this case, the healthy group showed lower D.R-I than the other groups. There were no significant

differences between the two surgery groups (mean difference = .141; *SE* = .059; *p* = .06) in this case either.

Case studies

To illustrate the usefulness of the BG in a clinical context, we will take the results from two patients. Patient 1 was a 56-year-old woman, divorced, with three grown up children and intermediate level of education, diagnosed with intraductal carcinoma and subjected to unilateral mastectomy as the only treatment for her breast cancer at the time of assessment. Patient 2 was 55 years old, also divorced, with two grown up children and intermediate level of education. She was diagnosed with an infiltrating ductal carcinoma and was subjected to unilateral lumpectomy and lymphadenectomy. After this, she underwent radiation and chemotherapy.

Both patients showed similar scores on the MBSRQ (Patient 1: SIC = 3.20, BFPP = 2.86, SEA = 2.67, CPA = 3.6; Patient 2: SIC = 2.90, BFPP = 2.86, SEA = 2.67, CPA = 3.4), below the average scores of the normal population. This means that they showed fewer behaviors focused on preserving their physical condition and appearance than the normal population and they felt less attractive and desirable than what would be expected in a healthy woman. When we looked at the results of the grids, however, some relevant differences arose. The main results for both patients concerning body self-esteem and the cognitive structure indices PVAFF and Polarization obtained with the BG are presented in Figure 2.

[Insert table 4 about here]

Although both women showed a low level of self-esteem focused on body aspects, Patient 2 had a more negative view of herself, as shown by C.R-I and D.R-I. What is more, the two self-esteem indices were slightly more negative in the case of the breast conserving surgery patient, contrary to what may have initially been expected. Regarding the PVAFF,

both patients are close to or above the cut-off point (60%), which means that their cognitive systems are undifferentiated and restricted. There is 10% difference in PVAFF between the patients, which may not be a big difference a priori. Patient 2 showed a higher PVAFF with respect to the average of her group (53.59; breast conserving surgery group), while Patient 1, scored lower than the average of the mastectomy group (63.26). This difference should be taken into consideration in the therapeutic process of each patient.

There was a major difference between the two patients in relation to which elements contributed most to the determination of the first factor: for Patient 1, the real body appeared to be a referent in the way she construed her meanings, whereas in the case of Patient 2, the reference was not what she looked like at the time, but rather how she would have liked to look (ideal body). Patient 2 included the image of her arm and armpit in this factor, in addition to the breast. We can also appreciate some differences with respect to the constructs with which the patients gave sense to their body experience. In the case of Patient 1, body experience was highly explained in terms of sickness, mutilation, and the construct 'masculine – feminine'. In the case of Patient 2, although there were potential similarities in constructs related to the death of body parts or the absence of sensitivity, the main sense also referred to evaluative aspects ('indifferent – disturbing;' 'pleasant – disgusting').

Regarding the other structural measure, Patient 1 showed greater polarization of the system in general, which meant a tendency to some rigid thinking, maybe because the experience of trauma had not already been integrated in the construct system of the patient, and it was quite prominent at the time of the assessment. This appears clearer when considering the particular polarized elements and constructs, all of which are directly related to the experience of the disease ('mutilated – whole,' 'sick – healthy,' 'masculine – feminine'; Ideal Body, Genitals, and Breast), indicating their meaningfulness to the patient.

Patient 2, however, did not have notable polarization as a global index or in regard to particular constructs, but the construction of the Ideal Body was extremely polarized.

Thus, even though the two patients may have initially seemed similar, when the results of the BG were analyzed in detail, some large differences appeared in the way they construed their BI and, although the body self-esteem of both patients was low and negative, this was likely for different reasons.

Discussion

Even though there is no tradition of use of the BG in Spain, in Germany its use is progressively increasing. Studies of eating disorders and in vitro fertilization patients (Borkenhagen, 2004), pregnant women (Sokolski, Walter, Klapp, & Klapp, 2004), obesity (Weber, Thier, Walter, & Klapp, 2004) and, of course, cancer (Weber et al., 2001; Weber et al., 2005) have proven its usefulness as an assessment tool for body experience.

Our results reveal that there are no large differences between women who have undergone mastectomy and those subjected to breast conserving surgery in global BI, body self-esteem and differentiation of their construct systems. These results may be surprising at first. In a review of the latest studies on the psychological effects of mastectomy, Sánchez (2015, p. 68) suggested that mastectomies "have lost part of the traumatic nature that they once possessed," and that the change of mentality due to the public image of famous mastectomized women may be softening the impact of the surgery on emotional reactions. This change in the perception of mastectomy may partially explain the similarity between both types of surgery patients. On the other hand, the absence of statistical differences in differentiation and body self-esteem indices could be related to the fact that, although women subjected to breast conserving surgery do not lose their breast(s), surgery may still affect the way that patients perceive their body, both its appearance and its functioning, their femininity, the implications for maternity, etc. In other words, the BI disruption may be caused by factors

other than the somatic experience of lacking the breast. These factors are likely present in nearly all the patients, as even the idea of a "scarred breast" and its implications can be quite frightening itself, without the possibility of a complete mutilation to affect the BI. This idea agrees with a statement by Cipolleta et al. (2014) that somatic information, referring to somatic awareness or to wider somatic events, is not a relevant phenomenon itself, but acquires its relevance only when the person gives it some interpretation, always based on the context in which the person is currently living. This explanation is supported by the finding that both groups of patients showed poorer self-esteem, and greater polarization and unidimensionality, than did healthy control women. Despite these similarities, there is still a major difference in polarization between the patients. The mastectomy group showed, in general, higher levels of polarization than the breast conserving group, which might possibly indicate a different experience of trauma in these patients, and maybe a greater sense of threat and crisis.

The results reveal some interesting similarities between the BG and the other well-validated assessment instrument. The correlations between the BG indices and the SEA index are particularly relevant. Given that self-esteem is the valuation the person makes of his/her self-concept, it is not surprising that the BG indices, which traditionally assess this construct, are closely related to the index that is oriented to the self-valuation of attractiveness. It therefore appears that the BG is a useful tool in the assessment of the construction of BI and its affective valuation, especially the index D.R-I. We have no explanation as to why the C.R-I showed correlations in the total and control sample and not in the patient sample. Trujillo (2016) suggests that indices based on correlations may not be the most appropriate in measuring discrepancy because they depend on the rating direction of the constructs, and she therefore recommends the use of distances between elements. Nevertheless, as Mackay (1992) points out, there are methods, like the alignment of the constructs, to solve these

problems. Feixas and Cornejo (2002) note that product-moment correlations may have problems related to: a) linear correlations detecting similarities between elements but not their proximity, and b) the same product-moment correlation concealing very distinct data distribution (e.g. results being very influenced by outliers). Mackay also notes that the correlation is a measure of association, meaning that two variables (elements) vary together, but the fact that two elements are associated does not necessarily mean that they are similar (Cronbach & Gleser, 1953; Mackay, 1992). In our case, it would be interesting to investigate if the correlation (association) between real and ideal body means the same as the distance between them. It seems clear that further research is required concerning this particular index. There were no correlations between the BG and the indices CPA and BFPP, perhaps indicating that they are measuring different things: CPA and BFPP are specifically concerned with concrete behaviors focused on caring about the body, while SEA and the BG indices may refer to global self-perception and its valuation and associated emotions.

Nonetheless, it is also clear that the BG is a powerful tool with which to assess BI. It gives the opportunity to investigate the content and structure of BI in more detail, more so than do other questionnaires, understanding that the impact of the disease and its treatment on BI will depend on the idiosyncratic construction that the patient makes based on BI and the disease itself.

This is useful in the design of psychological treatments for patients. For example, in the case of Patient 1, who showed high scores in Polarization, one of the therapeutic foci could be the loosening of her system, and understanding the principal constructs and related constructs, on which she bases her BI, in order to facilitate the elaboration of her experience of trauma and its integration with the rest of her construct system. With Patient 2, however, whose Polarization was within the expected range, but had a high PVAFF, one therapeutic focus could be the differentiation of her cognitive structure, in order to facilitate a

multidimensional system of constructs that would allow her to understand her experiences from different points of view. These suggestions are based only on two or three of the possible measures of the BG, and without considering a content analysis of the BG, because of space restrictions in this paper. We are only beginning to investigate the BG and its possibilities, and further research will help to broaden its use with other groups of patients and diseases, and to refine its measures and utility. One line of research could be to investigate if these findings of unidimensionality and high polarization in patients' construing could be related to the trajectories of experience of health and illness that Cipolleta et al. (2014) previously identified. For example, Cipolleta et al. associated the tendency to deny an experience of illness with the need to constrict in cancer patients, in order to maintain the core roles of strength and independence that they possessed before the disease. Another line of research could include qualitative analysis of the constructs in order to understand the construction of BI in more detail.

These results should be treated cautiously because of methodological limitations, which included a nonprobability sampling, the small number of participants in each group, the bias due to the fact that all patients belonged to a psycho-oncology program and, of course, the group application of the BG. Despite the limitations, our results suggest that the BG facilitates understanding of individuals' adaptations to the disease, its treatment, and potential resulting psychological disorders. Additionally, our results aid in elucidating the way in which each patient provides meaning to her disease and its associated symptoms, and how this meaning affects her BI.

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