

## Distinguishing change in self-perception by Self-Figure Drawings in Subjects Who Underwent Different Breast Cancer Treatments

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### ABSTRACT

**Background and Objective:** Breast cancer is the most common cancer in women in Western society. Advances in medicine and technology have led to a significant reduction in the mortality rate. Hence, it is important to address the psychological consequences of the disease in breast cancer survivors. The purpose was to identify differences in the Machover Draw-A-Person (DAP) test in breast cancer survivors pre-post cancer. It was assumed that the various kinds of available treatments may affect their bodies differently and hence also their body image and self image.

**Materials and Methods:** The Machover Draw-A-Person (DAP) test was administered to 72 breast cancer survivors twice: first they were asked to draw themselves today, then they were asked to draw themselves as they had seen themselves pre-illness. The features in the self figure drawings of subjects who had undergone different medical treatments were compared.

**Results:** The following indicators in the drawings distinguished significantly between subjects in the pre and post phases: hair signs for chemotherapy; mouth and breast signs in for surgical procedures. More signs of mouth and breast omission in DAP at present compared to retrospective DAP characterized the drawing of subjects who underwent mastectomy. In contrast, fewer signs of mouth and breast omission in DAP at present compared to the retrospective DAP characterized the drawings of the subjects who underwent breast conserving surgery. There were head line outline differences in the two administered DAPs for radiotherapy treatment among subjects who had undergone mastectomy.

**Conclusion:** It is suggested that the projective tool Machover Draw-A-Person test could be used as an aid for identifying changes in self portrayal features that may be interpreted as manifesting changes in self image and could be applied for planning an intervention for alleviating the distress of structuring supportive care to alleviate the distress of breast cancer survivors.

### Keywords

Body image, Self esteem, Breast-conserving surgery, Breast cancer, Chemotherapy, DAP, Draw a Person, Mastectomy, Projective tool, Radiotherapy.

### Introduction

Breast cancer is the most common form of cancer in women in Western society (it affects one out of eight women) and it is the number one cause of female mortality [1]. However, advances in

medicine and technology enabling early detection have led to a significant reduction in the mortality rate [2]. Hence, it is important to address the psychological consequences of the disease in regard to breast cancer survivors [3]. Breast cancer patients have to deal with the fear of recurrence, which is perceived as an existential threat to their survival, a threat to their self-image and a threat to the sense of control over their lives and their futures, and constitutes a constant force in their lives even when they have been declared cancer-free [4]. Aside from this, there are additional pressures due

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to the course of available disease treatments.

It should be noted that progress in the field has enabled constructing a specific treatment plan for each subject, according to the type, nature, size and extent of the spread of the tumor. Different patients undergo different treatments [5], so that a variety of side effects and long-term repercussions among the survivors can be expected.

Mastectomy is one kind of major treatment. In many cases women with breast cancer are compelled to undergo surgery, which causes distortion or even complete removal of the breast, resulting in damage to a woman's body image, sense of sexual desirability and even her self-esteem [3]. Chemotherapy is the most common treatment. It causes hair loss, and even after the hair grows back it is often shaggy and not similar to what once was [6], a phenomenon that has been linked to a sense of loss of sexuality and attractiveness, damage to body image, personality loss and death [7]. Hormone therapy was found to cause weight gain which women have trouble losing even years after their disease diagnosis [3,6]. It can cause sexual dysfunction [3,8,9] and sometimes even damage to the womb, requiring a hysterectomy, i.e., removal of all or part of the womb [10]. Most breast cancer patients undergo radiotherapy which damages skin texture and adversely affects the cosmetic appearance of the breast [11,12]. It also causes fatigue and a decrease in activity, resulting in weight gain [13].

Studies on adjustment and coping by women with breast cancer revealed additional difficulties due to the disease and its treatment. For example, women disclosed that they were often afraid to talk openly about their cancer, that they felt humiliation, lack of empathy and disbelief and sometimes even pity and participation in their pain by others. They felt that talking about their cancer was ignored and avoided within their familial units. They were concerned about whether their breast amputation was detected by others. There was a fear of repercussions at work and in their interpersonal relationships, due to the physical difficulties they experienced. These women developed signs of mental stress due to fear of talking about the disease [4]. Young women, mothers of small children, experienced great difficulty speaking with their children, because they wanted to protect them from knowing that their mother had cancer and about the consequences of the disease and the treatments. Even when they chose to speak about the disease, they had to be careful and adjust the communication of information to the developmental stage of the child [14]. They also described communication problems with their partner, which sometimes even led to separation as a result of their sexual dysfunction [9]. In many cases the subjects knowingly refrained from talking about the threat, selectively denied it by way of cognitive avoidance, and refused to accept the consequences of the disease, to the point of displaying a lack of concern for their health and a basic denial of the existence of the disease. The denial and dissociation were used as partially effective defense mechanisms to cope with cancer awareness in the short term, as well as during the crisis, as long as it did not interfere with disease treatments. However, when used in the long term, after treatment, the denial generated distress and anxiety [15].

### Diagnosis via self-figure drawing

It is assumed that people have two languages: a primary language which is based on initial means of communication: touch, voice, sight and drawing, and a verbal language based on icons: speech and writing [16]. A drawing is less defensive than a verbal expression, enables spontaneous expression of one's own inner world, and provides diverse types of information [17,18]. For example, in a study on adolescents' self representations, self-figure drawings provided information on parent-adolescent relationship [19]. A study on breast cancer survivors using self figure drawings provided information on changes in self esteem due to the cancer [20]. In view of the concerns and distress found in the breast cancer population in speaking about the 'disease', it is of great importance to assess their distress and coping strategies with the help of both 'languages': the verbal level by asking questions and the experiential level by drawing. But, to our knowledge, most studies that examined the distress and emotional consequences of the disease and the treatment of women with breast cancer, used only verbal tools (i.e., questionnaires) which are controlled by cognition, ignored internal differences due to different medical treatment the subject had undergone. An exception are our previous studies which used self-figure drawing as a projective tool [20,21]. There, we found differences between the present self-figure drawing and that of the perceived-self pre-disease in regard to the following features: hair (short, shaggy); body outline (double, bold); eyes (hollow, shaded, dots); lower body (disconnected, unstable).

The current study will expand the previous studies by addressing the various medical treatment the subject underwent and will be based on indices examined in the previous study (i.e., bulging breast, head outline, mouth, eyes, body outline, lower body, hair). In addition, the current study will examine indices found in the literature regarding self-figure drawing in different populations which may be relevant in regard to breast cancer survivors: cancer patients [22], individuals with physical and/or mental deformities [23,24], or mental stress and anxiety [25], or with disorders of femininity and sexuality [26,27].

One salient feature is the body outline. It is a line that defines the boundary between the body and the environment, with the goal of maintaining the unity of personality [28]. Bold or doubled outline was found to distinguish between past and present self-image drawings, done by breast cancer survivors: in present drawings they were bold and/or double outlined, as compared to self-image drawings of the pre-disease self, and may indicate an increased level of anxiety and the need to protect in the present- after the disease- as compared to their situation prior to the disease [20]. It may also indicate a source of external pressure that characterized drawings done under situations of anxiety [29] and drawings done by groups known to have a high anxiety level [25,26,30,31].

Another important feature is the eyes. Cancer may be an opportunity for thought and introspection; women who had cancer, reported that they learned to ask for help and support from others in order to help them deal with the difficult treatments, something which previously, prior to their diagnosis, would have been difficult to

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request and receive [32]. Machover stated that eyes represent a basic organ used to communicate with the outside world [33]. The previous study by Barel-Shoshani & Kreitler (2017) found a significantly lower presence of unseeing/uncommunicative eyes signs in present self-figure drawings as compared to the self-figure drawings of the pre-disease self. The researcher assumed that this may indicate a sense of disillusionment due to the disease.

A third feature is the hair. Chemotherapy is often characterized by loss of hair [6]. Long flowing hair represents femininity and attractiveness in different cultures [34]. Women internalize these expectations within the culture, and they represent potentially damaging images of normative femininity to women who cannot achieve these ideals. This is exemplified in the following citation of a dance/movement therapy student who expressed her problem with her self-image through her hair: "I remember looking longingly across at the girls in my class who had long, straight healthy hair and so wanting to look like them. I thought that every girl in the class had hair that looked better than mine" [34]. As noted, long flowing hair characterizes drawings of women who are connected to their femininity and sexuality [27]. The previous research [21] found significant differences between the present self-image drawings and those of the perceived-self pre-disease in the hair index among women who underwent chemotherapy. Most women drew themselves with shaggy hair after the disease (present figure) in contrast to the pre-disease self-image drawing. The researcher assumed that this may indicate a sense of damage to their femininity and/or loss of attractiveness. However, in the last research by Barel-Shoshani & Kreitler (2017), the type of treatment was not accounted for. The difference in hair representation was valid for all the samples subjects. The differences were between the present self-image drawing and the past self-image drawing.

The fourth feature is the lower body parts. A sense of instability is common among cancer survivors due to the fear and concern about recurrence of the cancer [35,36]. Standing/lower body-legs confer to the figure stability, balance and a solid foundation to stand on. There were signs of unstable standing, or distorted/omitted legs, as an expression of the sense of instability [33] in the drawings of those groups who experience the world as unstable and uncertain, or those who experience themselves unrealistically [23,37], and who drew themselves in a stressful situation [26]. The previous research by Barel-Shoshani & Kreitler (2017) found a gap on the borderline of significance in the present self figure and pre-disease self figure drawings. Hence it is likely that signs of non-stable standing may be relevant also in the current study.

Next is the feature of the mouth. Studies on adjustment and coping by women with breast cancer found that the women experienced great difficulty and fear of speaking about their cancer [4,14]. Omission, distortion or highlighting of body parts which are injured or related to their physical or functional disability, were expressions of conflict about self-identity and body image [33]. Self-figure drawings by patients who experience difficulty in expressing their feelings [37] or difficulty in communication [24] were characterized by emphasized or omitted mouth. Hence

it is likely that omission or highlighting of the mouth may be an indicator characterizing drawings by breast cancer survivors.

In addition, characteristics found in drawings made by specific populations, such as the deaf, were emphasized ears, mouth and hands (organs used for communication) [24], or omitted or distorted ears [26]. Cancer patients who underwent resection of the colon and creation of stoma in their stomach omitted body parts and added extras in the abdominal area, which represent the stoma or malignant growths [22]. The breast organ in the breast cancer population is the injured body part that may cause a woman's death. Aside from this, due to the treatments, many women with breast cancer undergo breast surgery which causes distortion or even complete removal of the breast [3]. In previous drawing research, omitting breasts expressed poor female body image, [37], whereas prominent breasts expressed a high sense of femininity [27], or preoccupation with femininity, sexual identity and conflicts in regard to these domains [26]. In the preliminary research by Barel-Shoshani et al. (2011) breast indicators were noticed in the self-figure drawings of the present and past, among women who had breast cancer (regardless of whether they underwent surgery), in that breasts were omitted in the present drawing as compared to that of the past. Hence the breast indicator was also considered as relevant in the current study.

The current study addressed also feature of the head outline in the drawing. We assumed that it may be related to defense mechanisms. Ego defense mechanisms are considered as central "automatic unconscious psychological processes that protect the individual against anxiety and from the awareness of internal or external dangers or stressors, mediating his or her reactions to emotional conflicts and stressors" [38]. Defense mechanisms were classified into three major types: (a) those based on reality distortion, which are considered as being on the immature level of the defensive functioning that may lead to serious problems in a person's ability to cope effectively; (b) those based on affective regulation, which are considered as being on the medium level of defensive functioning; (c) those that are based on the adaptive style, which are considered as being on the relatively mature level of functioning [39]. Defenses are highly complex affective and cognitive styles for handling conflictual inner and outer realities [40]. Clinical psychologists developed self-reported and observer-reported methods for assessing defense mechanisms [39]. However, relying solely on self-report measures for this purpose is questionable, for it ignores the possibility that either intentionally or unintentionally, the self-report is biased [41]. In art therapy, when opposing images evolve in a drawing, an opportunity arises for observing the client's reaction to it. A careful phenomenological observation of the drawing enables us to support an experientially-based discussion, which is related with client's subjective and idiosyncratic language. The drawing may serve as a representational process record, while the discussion about it may serve in therapy as a meta-representational process. The distinction between these two levels is in terms of thinking versus thinking about thought, or, at a deeper level, possessing a mental representation of an experience versus being able to reflect on its validity, nature, and

source. An image might communicate a new or even contradictory aspect of the dialogue between client and therapist, which adds a new dimension or perspective to the client-therapist relationship which serves to highlight a new level of consciousness [42]. Head shape - head outline which is closed or bold is an expression of intellectualization [43], a defense mechanism in which the person engages in excessive abstract thinking to avoid experiencing disturbing feelings but leave awareness of events [44]. Head outline is characteristic of drawings by subjects with a high self-awareness of the gap between their actual and their desired behaviors [30], which are identified as drawings of those with neurotic anxiety [30,31]. In the preliminary research by Barel-Shoshani et al. (2011), indicators of a closed or bold head outline distinguished between the present self-figure drawing and that of the past. Among women who had breast cancer, a closed heavy bold head outline is present mainly in present self-figure drawings-after the disease. The researchers hypothesized that this feature represents the use of intellectualization as a defense strategy the disease and treatments, distinguishing between the "self" today and the "self" pre-disease. Hence it is likely that the head shape indicator may also be relevant in the current study.

### Current Study

The purpose of the current study was to examine differences in seven specific features between self-drawings at present and in the past in breast cancer patients who underwent different medical treatments. The specific features have been selected because they had been shown in previous studies to be related to particular psychological reactions characteristic of breast cancer patients.

The hypothesis was that differences will be found between the drawings of the self at present and in the past in subjects who underwent different medical treatments in the following variables seven features: breasts, hair, body boundary outline, legs, mouth and lips, eyes, head outline. As described in the Introduction, these seven features were expected to be expressive of impaired femininity and body image, impaired sexual attractiveness, sense of anxiety, instability, communication difficulties, denial and dissociation, and intellectualisation, respectively. It was expected that using both drawings, of the present and past self-image, combined, will help to identify the change of the subject due to illness. The change will be expressed by the differences between the drawings of the present and past self-image in the mentioned features.

### Methodology

#### Participants

The participants were 72 women aged 35-66 ( $M = 52.21$ ,  $SD = 8.81$ ), who had breast cancer and were now cancer-free. Between 1 and 10 years had passed since the end of their treatments. They currently showed no evidence of disease and had never been diagnosed with another form of cancer. The participants' age at time of diagnosis was 32.5-62 ( $M = 47.28$ ,  $SD = 8.14$ ). The women had all come for routine follow-up examinations at the Women's Health Center - Merav Institute of Sheba Medical Center, Tel HaShomer, Israel. Participants were volunteers who agreed to

participate in the study.

Most participants were married (72%), academics with B.A. degrees (75%) and working women (68%). The percentage of those working pre-illness was higher (90%); 22% percent had stopped working: some due to the illness (20%), and some retired due to age (2%). Among the remaining participants who worked, 18% reduced their hours of work due to their illness. Of the participants 36% got assistance and support due to the difficulties and emotional and mental distress of their illness and treatment. Some of the participants (17%) knew they carried the breast cancer gene BRCA1/2, while 10% did not check at all.

Of the participants 65% underwent a lumpectomy and 35% underwent a mastectomy. Among women who underwent a complete mastectomy, 64% had breast reconstruction, though most have not undergone a full restoration; only 31% chose to reconstruct the nipple, with 7% reconstructing the areola. Of the participants 76% received radiotherapy as adjuvant therapy, mostly those who had a lumpectomy (60%), 61% received chemotherapy or biological therapy, 65% received hormonal therapy, 25% underwent oophorectomy for prevention and 11% underwent hysterectomy (7% after the discovery of the disease, following the damage caused as a result of taking tamoxifen).

### Study Tools

- Questionnaire on background variables, used to collect personal and medical information about the participants.
- The "draw a person test" (DAP) [43], in which the participants were given two white A4 pages, a pencil and an eraser. They were asked to draw on the first page themselves as they are at present, and on the second page to draw themselves as they had been before the disease.

### Study Process

Each woman was contacted individually by the researcher, who presented the objective of the study and requested her consent to use the information they would provide for the purposes of the study. In order to avoid biases, the participants were first asked to complete their drawings and then to fill out the questionnaire on background and health variables. Most of the drawings were done while waiting at the clinic for tests at the Merav Institute at Sheba Medical Center.

Participants who asked how they should draw were told that it was entirely up to them. They were given no further instructions, so as to undesired biases. Pages were distributed and collected by the researcher. In total, we collected 70 present self-figure drawings, and 67 past self-figure drawings, with the past self-figure drawings serving as the control.

The study was approved by the Ethics Committee at Tel Hashomer Hospital, numbered SMC- 8712-11 on 27/11/2011. In addition, a written request was provided to the study participants, in which they were asked to consent to the use of the information they provided for this study. Each participant was instructed as to

the purpose of the study, and told that participation was entirely voluntary and therefore they could withdraw at any time. They were also assured that all information would be kept confidential.

### Definition of Variables

In line with the hypothesis, seven indicators were selected for comparison: Breasts (omission, distortion), Hair (cut, thin, shaggy), Body Outline (dual line, bold), Lower body (detached, omission, distortion), Mouth (omitted, line, closed firmly, cut), Eyes (dots, hollow, shaded), Head Outline (close, bold).

Drawings were analyzed according to the prominence level of the indicators based on predetermined criteria, by three judges: a youth counselor who is a graduate of an Arts program; an engineer with a M.Sc. in exact sciences; the researcher herself- an art therapist. Each judge worked separately. Each judge received judging and measurement scales for the drawings, including charts of criteria for each of the selected features. The judge ranked the features according to a scale, with 5 degrees (Interval scale): ranging from (5) (very obvious) to (1) (not at all obvious). The index score was calculated in terms of the mean of the scores assigned by the three judges. Each subject got several scores, according to several criteria, which were reviewed for each of the drawings she did. Reliability of study indices (reliability between judges -kappa) was: eyes ( $k=0.56$ ); omitted mouth ( $k=0.63$ ); for the other indices in the drawings, it was found that the scale is too sensitive and thus low reliability was obtained. In order to downgrade the sensitivity, indices scores were combined: scores of 1 and 2 were combined to 1 (not at all obvious); 3 changed to 2 (partially obvious); grades 4 and 5 changed into 3 (very obvious). The reliability of the combined scores was: hair ( $k=0.52$ ), prominent body outline ( $k=0.53$ ), lower body ( $k=0.54$ ), head outline ( $k=0.59$ ), breasts ( $k=0.61$ ), eyes ( $k=0.75$ ); and omitted mouth ( $k=0.74$ ).

In order to examine the changes in self-drawings following illness, a dependent variable was calculated for each subject- the conceptual gap of each of the indicators separately. The gap variable is expressed in the difference between the present self-image and the drawing that represents the self-imagine in the past, before the illness.

## Results

### Testing uniformity of group participants

This current study examined the effect of the treatments for breast cancer in on women who became ill. The distribution of the subjects according to treatments is presented in Table 1. In order to examine the research hypothesis, an inter-subject variable was examined – treatment group (by split order). The division was made 3 times, for each type of treatment separately, without taking into account additional treatments received: 1) Surgery (breast-conserving / mastectomy – no distinction was made between single or double mastectomy, and/or reconstruction); in this examination, radiotherapy and chemo were controlled. 2) Chemo – (received/ didn't receive) with control over type of surgery and radiotherapy. 3) Radiotherapy – for this treatment, we examined only some of the subjects. Table 1 shows that most of the women who had a

breast conserving surgery (91.5%) also received radiotherapy as an additional treatment. On the other hand, in the group of women who had a mastectomy, the numbers of women who had radiotherapy and those who didn't were almost equal. It appears that the effect of the surgery may impair the ability to identify the effect of radiotherapy; therefore we decided to examine subjects who had a full mastectomy (received / didn't receive) with control over chemotherapy.

The results of the analysis of variance (ANOVA) tests show that there is no age difference between the treatment groups (Table 2). The analysis was done by one-way ANOVA, controlled (covariate) (one-way ANCOVA) for the gaps between different treatment groups. The controlled variables were age, emotional support and the non-tested treatments.

Group	Treatment			N	% within treatment groups	% within all subjects
	Surgery	Chemo-therapy	Radio-therapy			
1	Breast conserving	No	No	2	8.70	2.78
		No	Yes	21	91.30	29.17
2	Breast conserving	Yes	No	2	8.33	2.78
		Yes	Yes	22	91.67	30.56
3	Mastectomy	Yes	No	8	40.00	11.11
		Yes	Yes	12	60.00	16.67
4	Mastectomy	No	No	5	100.00	6.94
		Yes	Yes	0	0.00	0.00

**Table 1:** Treatment distribution according to surgery, chemotherapy and radiotherapy.

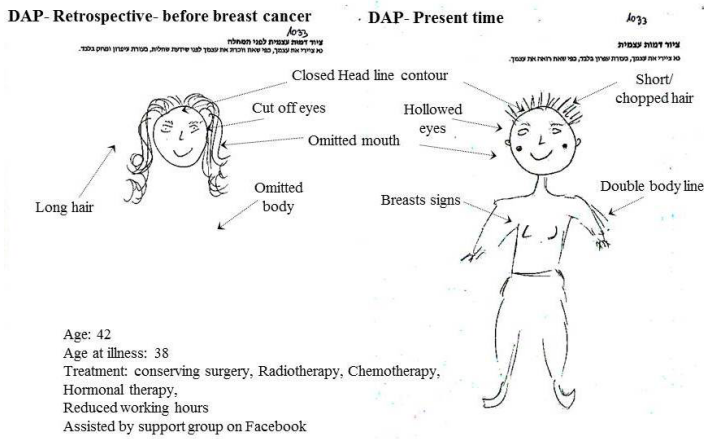
Treatment		M	SD	N	F	Df
Surgery	Breast conserving	53.49	8.22	47	1.17 <sup>a</sup>	(df=1,70)
	Mastectomy	50.98	10.79	25		
Chemotherapy	No	54.91	6.83	28	2.78 <sup>a</sup>	(df=1,70)
	Yes	50.49	9.54	44		
Radiotherapy (within mastectomy group)	No	52.65	9.09	13	2.29 <sup>a</sup>	(df=1,23)
	Yes	47.00	9.61	12		

a: p value above (>) .05, no internal differences.

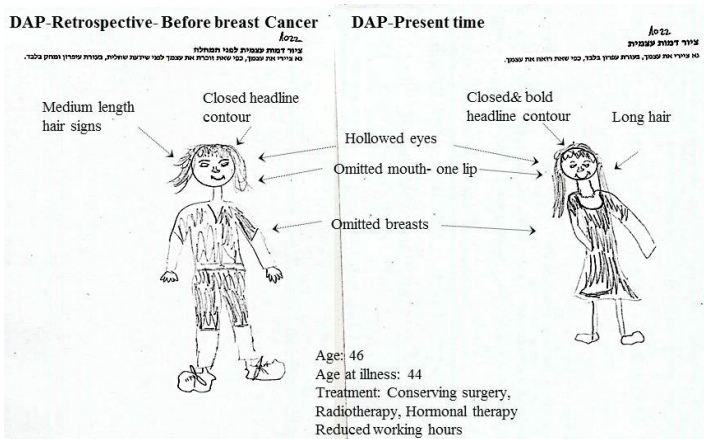
**Table 2:** The distribution and age differences in treatment groups.

### Statistical analysis of the findings relating to the research hypothesis

The study focused on the change in self-perception in women with breast cancer, following various treatments. Four indices in drawing were found to distinguish significantly between the subjects who have undergone different treatments, on the basis of comparisons between the self-drawing at present and in the past. First, signs of chopped or thinning hair ( $F(1,65)=14.09$ ,  $p<0.001$ ,  $\eta^2=0.18$ ) distinguished between the drawings of women who had chemo and those who did not. We found a positive gap ( $M=0.22$ ,  $SD=0.69$ ), between the drawings done by the women who had chemo (Figure 1), while the group of women who had no chemo showed a negative gap between the drawings ( $M= -0.39$ ,  $SD=0.53$ ) (Figure 2).



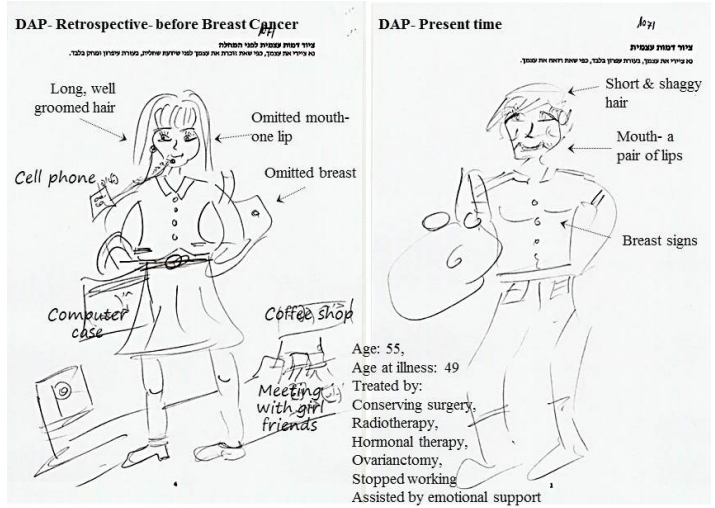
**Figure 1:** Treated by Conserving surgery & Chemotherapy: Present self image (right): Breast signs & Chopped hair. In the retrospective figure: Omitted body and breast, long and plentiful hair.



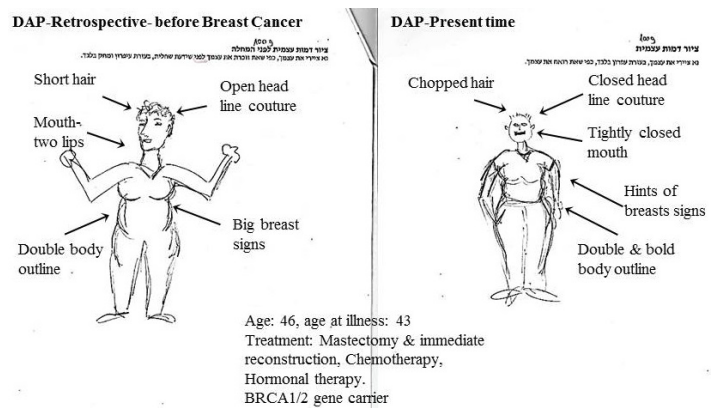
**Figure 2:** Not treated by chemotherapy: Present self-figure (right): Long hair. In the retrospective figure: medium length hair.

Secondly, Signs of breast omission ( $F(1,56)=6.79, p<0.05, \eta^2=0.12$ ) distinguished between drawings of subjects who had different kinds of surgeries. Omission of breasts: in the drawings of women who had breast-conserving surgery, we found a negative gap ( $M= -0.17, SD=0.53$ ) (Figures 1,3), while the group that had a full mastectomy, there was a positive gap ( $M=0.26, SD=0.63$ ) (Figures 4,5); Thirdly, closed mouth: in the drawings of women who had breast conserving surgery, we found a negative gap ( $M= -0.13, SD=0.52$ ) (Figure 3), while in the group of women who had a full mastectomy we found a positive gap ( $M=0.19, SD=0.85$ ) (see Figure 4). Concerning the differences in the closed mouth: ( $F(1, 65)=4.71, p<0.05, \eta^2=0.07$ ).

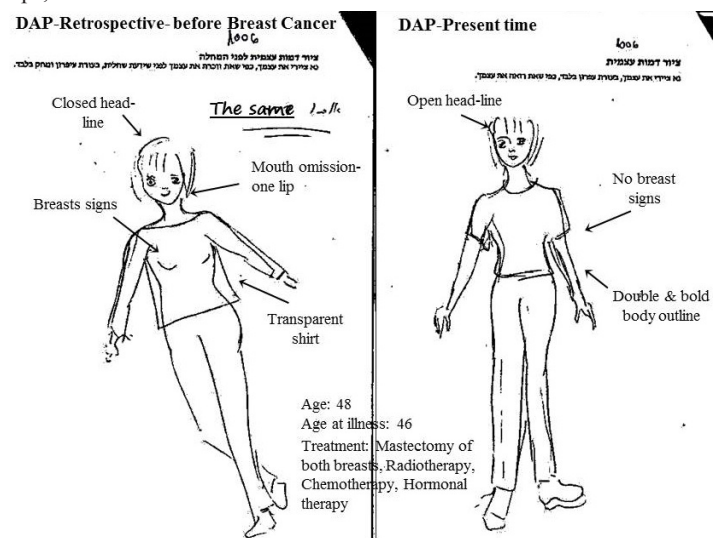
Fourth, in the group of women who had a full mastectomy, signs of closed / bolted head outline ( $F(1,22)=6.97, p<0.05, \eta^2=0.24$ ) distinguished between the drawings of subjects who had adjuvant radiotherapy and those who had not. We found a positive gap ( $M=0.28, SD=0.66$ ) in the drawings of women who had no radiotherapy (Figure 4), while in the group of women who had radiotherapy we found a negative gap ( $M= -0.33, SD=0.45$ ) (Figure 5).



**Figure 3:** Treated by Conserving surgery, & Radiotherapy: Present self-figure (right): Breast signs, Two lips signs. In the retrospective figure: omitted breast signs, un-talking mouth.



**Figure 4:** Treated by Mastectomy & Reconstruction, & Chemotherapy: Present self-figure (right): Hints of breast signs, Tightly closed mouth, Close head line contour. In the retrospective figure: big breast signs, two lips, no head line contour.



**Figure 5:** Treated by Mastectomy & Chemotherapy & Radiotherapy: Present self-figure (right): Omitted breast signs, Open head line contour. In the retrospective figure: breast signs, head line contour sign. In the verbal language level wrote: "No Difference" between the 2 drawings.

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In contrast, three indices in the drawing did not distinguish between the various treatments: lower body, body line and eyes. Hence, since only 3 out of 7 indices were confirmed, the hypothesis was only partially supported (Table 3).

## Discussion

The current study deals with a group of women who had breast cancer and recovered. Using a projective tool, we examined aspects of conceptual change due to illness and treatments as presented in the self-image drawn at present and in the past, prior to the illness. The research hypothesis posited that in self-image drawings there will be expressions of the differences in self-perception of women who had different treatments for cancer – using the gaps between two self-image drawings – a present self and a past (pre-illness) drawing based on memory. The results of the study show that 4 of the 7 indices clearly indicated the differences in self-perception between their pre-illness past self and the self-perception of their present self, in women who underwent different treatments for breast cancer. The indices were: hair, mouth, breasts, head outline. On the other hand, no differences were found for the remaining 3 indices: body outline, eyes and lower body.

As presented in the research literature, there may be a gap between the verbal channel and the projective channel. Evidence of this gap can be seen in Figure 5, where the subject indicated, on her past drawing, "the same", which meant that her past self-image was identical to the present self-image. However, a meticulous perusal of her drawings clearly shows differences in various indices: head outline, breast signs and body outline. The gaps in the first two indices clearly distinguished between subjects who received different treatments. The gaps in drawings can be used as a tool during a therapy session with the subject.

Breasts – can and do indicate the physical state of the subject. Women who had a mastectomy omitted breast signs in present drawings but chose to draw reality as it was pre-mastectomy-in past drawings, thereby emphasizing the loss. On the other hand, women who had breast conserving surgery chose to draw breast signs in present drawings but in past drawings omitted these signs, which may indicate that they are now more concerned and aware of that organ, like the drawings of deaf people, who emphasize their ears [24]. Moreover, it may be that they are expressing their fear of this organ by emphasizing it, and that perhaps the choice of a partial mastectomy is not safe and the illness may recur.

The mouth – an organ used for communication, as shown in the research literature. Women who had breast cancer experience difficulties talking about their illness. The projective tool used in the current study clearly demonstrated that this difficulty is intensified in women who had a mastectomy. By comparing signs of the mouth drawn by subjects in both self-image drawings, we can identify signs of introversion and lack of desire to talk, following the mastectomy, while in women who had breast-conserving surgery, there seems to be an opposite process, indicating more openness and willingness to speak after the illness, as opposed to the past.

As presented in the research literature [20], the findings show a feeling of impaired femininity and/or loss of attractiveness that was expressed by the marked presence of signs of thinning hair in the present self-image drawings as compared to the past self-image drawings, in all subjects. Nevertheless, an internal examination done in the current study, showed that among the women who underwent chemo there is a greater difference than among women who did not. Hence, it may be that the findings show a loss of attractiveness or the reality, i.e., hair that grew thinner, or women who chose not to let their hair grow long after finishing chemo.

Head Outline – it seems that the gaps between the two different self-image drawings show that head outline signs in women who have had a mastectomy, but no radiotherapy, represent the great amount of energy invested in the attempts to reduce anxieties and fear of the mere thought that the illness might recur, by applying an intellectualization mechanism. However, it is also possible that the tendency of women who have had radiotherapy to draw an open head outline in their present drawing, compared to the closed head outline, which is emphasized in the self-drawing of the past, expresses a heightened sense of feeling protected, since they had received the maximal possible treatments – mastectomy, chemotherapy (62%) and radiotherapy. They are "covered" on all fronts.

The indices for which no difference was found between the drawings (body outline, eyes, lower body) did distinguish between self-perception in the present and in the past, prior to the illness in general, among women who had breast cancer, with no dependence on treatment in the previous study [20]. Hence it is likely that since these indices represent the general population, regardless of treatment received, no gaps in perception were found among the subjects who have had different types of treatments. Nevertheless, the hair index, which was also found to characterize present drawings, in comparison to past drawings of the all the subjects who had breast cancer, is stronger among women who have experienced hair thinning and or total hair loss as a side effect of chemotherapy, as found in present study.

In conclusion, the present study found evidence of a distinguishing effect between subjects who underwent different treatments, in the four indices of the drawing in the gap between drawings of present self-image and those of past self-image:

- Chemotherapy – gap in hair signs (thinning/chopped)
- Type of surgery (breast conserving surgery/mastectomy) –
  - o Gap in breast signs (omitting/emphasizing).
  - o Gap in mouth signs (line/stiffly closed/cut)
- Radiotherapy among subjects who have had a mastectomy – gap in head outline (closed/emphasized).

The indices show differences in the self-perception and an impaired self-image of the subject depending on the kind of treatment she underwent. We can see greater signs of distress among women who have had aggressive treatments that affected the appearance of the subjects for a greater period of time (chemotherapy) and / or for good (mastectomy). And, on the other hand, we can see that the level of anxiety is greater among women who were "spared"

		Gap between pre-post figures								
		All subjects Surgery Gr.1 <sup>A</sup> Conserving Gr.2 <sup>A</sup> Mastectomy			All subjects Chemotherapy Gr1. <sup>A</sup> No chemotherapy Gr2. <sup>A</sup> Chemotherapy			Mastectomy subjects Radiotherapy Gr1. <sup>A</sup> No radiotherapy G2. <sup>A</sup> Radiotherapy		
Indicator <sup>A</sup>	Gr.	M	SD	F	M	SD	F	M	SD	F
Breast	1	-0.17	0.53	6.79* $\eta^2=0.12$	-0.25	0.67	3.22 <sup>^</sup>	0.33	0.65	0.06
	2	0.26	0.63		0.13	0.53		0.27	0.60	
Lower body	1	-0.06	0.51	0.41	0.03	0.49	2.57	-0.08	0.15	0.48
	2	-0.12	0.29		-0.15	0.40		-1.67	0.39	
Body outline bold/ double	1	0.31	0.69	0.03	0.40	0.65	0.66	0.27	0.87	0.01
	2	0.27	0.68		0.25	0.71		0.30	0.48	
Head outline	1	-0.04	0.58	0.12	-0.01	0.53	0.05	0.28	0.66	6.97* $\eta^2=0.24$
	2	0.01	0.66		-0.05	0.64		-0.33	0.45	
Mouth-omitted	1	-0.13	0.52	4.71* $\eta^2=0.07$	0.05	0.64	0.40	0.39	1.11	1.22
	2	0.19	0.85		-0.06	0.71		0.00	0.51	
Eyes	1	-0.21	0.62	1.04	-0.21	0.54	0.11	0.03	0.17	2.63
	2	-0.05	0.60		-0.17	0.56			0.52	
Hair	1	-0.16	0.70	2.77	-0.39	0.53	14.09*** $\eta^2=0.18$	-0.05	0.39	3.30 <sup>^</sup>
	2	0.27	0.62		0.22	0.69		0.56	0.67	

<sup>^</sup> $p<0.1$ ; \* $p<0.05$ ; \*\*\* $p<0.001$

A- Sum of subjects in group 1 & 2 by treatment: N1, N2, see values in the following sub table.

**Table 3:** Differences between subjects in the Gap between pre-post figures indices.

Treatment	Surgery			Chemotherapy			Radiotherapy		
Indicators	N1	N2	df	N1	N2	df	N1	N2	df
lower body, head-line, mouth, eyes, hair	43	24	1,66	25	42	1,65	12	12	1,22
breast, body-outline	37	22	1,58	20	38	1,56	11	19	1, 19

complementary treatments, such as radiotherapy, than among women who have had radiotherapy all of whom had a mastectomy. The head outline signs express the usage of an intellectualization mechanism. Our assumption is that these women do not feel sure they have had the maximal treatment that will prevent the recurrence of the illness and are in need of self-convincing, in comparison to women who have had supplementary radiotherapy. The technique we used in this study – comparing gaps in present self-drawings to past self-drawings – helped to diagnose and clarify the conceptual changes and the distress caused to the subjects by breast cancer treatment. Based on the review of the literature, combined with the findings of the current study, it appears that the applied projective tool can serve as a tool for therapists in order to better understand the methods of coping and adjusting to the illness and the medical treatments, years after the diagnosis of the illness. The tool can be used as a baseline for structuring a supportive treatment plan, designed to relieve the distress of these subjects, as part of a rehabilitating program. However, in order to complete the picture and make it more accurate, we recommend a follow up study which will delve deeper and examine the effects of the therapies on the self-expression in drawing, combined with verbal tools.

## Conclusion

The projective tool- self-figure drawing, combined with the

technique used in this study - a comparison of the gaps between the present self-figure drawing and a past self-figure drawing pre-disease, partially helped assess conceptual changes and hardships experienced by breast cancer survivors who received different treatments.

This study contributes to previous research conducted among populations of women who had breast cancer, which neglected the use of projective tools, and examined distress and coping after a disease and treatments with only verbal tools, and to our previous research which neglected the influence of treatment. This study used a projective tool- self-figure drawing, which allows for assessment of the developments in the deeper layers of the human soul, not expressed in overt behavior and verbal language, which are often dominated by cognition. In light of the concerns and hardships found in the breast cancer population in speaking about the 'disease', it is of great importance to be able to assess distress and coping strategies, with two 'languages', the verbal level by asking questions, and the projective level, such as through drawing.

From a practical viewpoint, it seems that the studied projective tool could be used to help clinicians understand coping strategies and adjustment to illness and concurrent medical treatment, years after diagnosis, as a basis for constructing supportive care designed to



alleviate the distress of those facing this process as part of their rehabilitation program.

## Limitations and Future Research Directions

### Place and timing

A limitation of this study is that most of the drawings were done a few hours before routine screenings for breast cancer. Due to the situation, the anxiety level of all the women was high, therefore pre-existing bias might exist in the findings. However, this claim can be refuted on the basis of the significant difference found between patients who underwent different treatments, as shown by the result of comparing opposite gaps between present drawings and past drawings; for example – a positive gap was found between self drawings, in the mouth index, which shows seclusion, among women who had a mastectomy, as opposed to a negative gap indicating openness and willingness to talk, among women who had breast conserving surgery.

### The sample

- Some of the women who had a mastectomy, also had a breast reconstruction. But no reference was made to it.
- The effect of radiotherapy was examined only within the group of women who had a mastectomy and was not examined among the women who had breast conserving surgery. Therefore the group was very small, and included only 25 subjects
- It is difficult to isolate the treatments since most women have a variety of treatments; nevertheless, after controlling for other treatments, it will be possible to identify distinctive expressions for different treatments.

### Future research directions

The current research indicates the ability of a projective tool - the drawing of a present and past self-image - to identify anxieties and change in self-perception among the subjects who have had different treatments for breast cancer. Therefore our suggestions for future study are:

- Examining additional indices of self-image that may be relevant to this population, such as: adding accessories and clothing that symbolize femininity, body structure (narrow waist, extended pelvis, shapely body in the shape of a sand clock), outstretched hand / concealment as an expression of desire to connect with the environment / withdrawal.
- Examining the effect of radiotherapy in a larger sample.
- Repeating the examination of the current self-perception change in comparison to the self-perception in the past prior to the disease, depending on the treatment, in order to validate the tests performed in the current and previous study [20].
- Continued expansion of the examination of expressions in self-image: focusing on the influence of demographic variables, such as age of the subjects and variables of education, children, employment, and more.
- Expanding the sample by adding additional populations, such as healthy women, women who have undergone other life-threatening illnesses and other traumas, the same population but in a larger scale, and other areas in Israel and abroad, for comparison and identification of common signs and

distinguishing signs.

- Expanding the research by adding additional valid research tools to find evidence for a convergent effect to measure self-image drawing by finding connections between the indices of the drawings and the indices of the tools.

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