

Longitudinal effect of emotional processing on psychological symptoms in women under 50 with breast cancer

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Abstract

Breast cancer is a potential traumatic event associated with psychological symptoms, but few studies have analysed its impact in under-50 women. Emotional processing is a successful function in integrating traumatic experiences. This work analysed the relationship between emotional processing and psychological symptoms during three phases of treatment (before hospitalization, counselling after surgery and adjuvant therapy) in 50 women under the age of 50 with breast cancer. Mixed-effects models tested statistical differences among phases. There were significant differences in symptoms during the treatments: the levels of anxiety decrease from T1 to T3 (0.046), while those of hostility increase (<0.001). Emotional processing is a strong predictor of all symptoms. Clinical implications are discussed.

Keywords

breast cancer, emotional processing, ex-post facto study, psychological symptoms, women under 50

Introduction

Breast cancer is a life-threatening event associated with physical and psychological effects (De Luca Picione et al., 2017; Martino and Freda, 2016a, 2016b; Martino et al., 2019; Somerset et al., 2004), which may also occur after successful medical treatments (Elklit and Blum, 2011). Numerous stress factors have been identified, such as the time of diagnosis, the severity, the prognosis, the progression of the disease, the aggressiveness of the treatments and the risk of recurrence (Gurevich et al., 2002), in addition to some resource factors (Finck et al., 2018).

Being diagnosed with breast cancer is considered to be a potential traumatic experience (Janoff-Bulman, 1992; Mehnert and Koch, 2007), which may overcome the ordinary adaptive abilities of an individual and can produce various emotional reactions, symptomatic manifestations and psychological discomfort (Bertero and Chamberlain Wilmoth, 2007; Saha et al., 2008). These aspects can challenge femininity (Kirkman et al., 2014; Liamputtong and Suwankhong, 2015) and cause anxiety, depression, guilt, isolation and distrust (Fatiregun et al., 2016). In particular, the element of age at the onset of the disease has been

shown to be a useful condition in facing and dealing with this traumatic event (Epping-Jordan et al., 1999), as well as a discriminating aspect in relation to the emergence of clinical symptoms (Champion et al., 2014). Although the literature presents women under the age of 50 with breast cancer as a more vulnerable target (Howard-Anderson et al., 2012), showing specific needs (Ruddy et al., 2013) and clinical aspects (Ribnikar et al., 2015), nowadays, only few studies are trying to improve knowledge regarding the psychological impact of breast cancer on women under 50, in order to develop patient-tailored programmes and support interventions.

Women under 50 are at a higher risk of having traumatic outcomes or at a greater risk of developing posttraumatic stress disorder (Koopman et al., 2002) compared with older

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women. Breast cancer is a traumatic stressor for younger women because it is often more aggressive, lethal and destructive to daily life and to their own vision of the world (Yazdani-Charati et al., 2019). Women under the age of 50 show more emotional distress, anxiety, and depression symptoms and lower vigour for aggressiveness of chemotherapy received, regardless of the surgical procedure or tumour evaluation time (Martino et al., 2015; Mosher and Danoff-Burg, 2006). Studying the potential traumatic nature of breast cancer, Cordova et al. (2007) showed that age is inversely associated with the perception of a positive change after cancer (Bower et al., 2005; Manne et al., 2004).

One of the reasons for the less psychological adaptation, both during and after treatment (Ahmad et al., 2015), is the fear of recurrence (Cohee et al., 2015). This aspect is particularly relevant in younger women because they receive more aggressive cancer diagnoses and treatments, report high levels of distress, and have greater family and work responsibilities and because the disease interferes with important roles and activities of theirs (Dirier et al., 2009; Hubbeling et al., 2018; Maggard et al., 2003). Women under 50 years of age are more concerned about their health, femininity, gender role and motherhood (Fernandes-Taylor et al., 2015); in particular, the latter increases generalized fear over women without children (Lebel et al., 2012; Thewes et al., 2013). Furthermore, in exploring the predictors of fear of recurrence in younger women, the literature recognizes the levels of anxiety and illness representation, particularly the perception of breast cancer as a life intruder, with negative physical, social and economic effects (Lebel et al., 2012). This perception is greater at young ages, because illnesses are completely unexpected and come when women are performing development tasks that require greater strength and physical endurance (e.g. career, family responsibilities and care for children) compared with a subsequent phase of the life cycle.

In conclusion, we showed that, on one hand, the scientific literature is starting to deal with this specific target (Paluch-Shimon and Warner, 2015), particularly focusing on the specific impact of the experience and its psychological/clinical aspects. On the other hand, we observed a scientific gap in the comprehension of EP of the potential traumatic experience and its relation to the psychological symptoms of women under 50 with breast cancer, not only at the end of the disease, but also during the treatments.

EP and psychological symptoms

One of the main elements for a deeper understanding of the traumatic experience of breast cancer in younger women is the study of the EP of the disease. The comprehension of EP allows highlighting the style, the level and the difficulties that women with this diagnosis can experience, as well as elaborating the experience itself. EP is seen to be crucial for

successful adjustment and integration to traumatic experiences such as breast cancer (Schmidt and Andrykowski, 2004). Thus, Stanton et al. (2000) showed that processing and expressing emotions enhance the adjustment and health status of patients with breast cancer. Expressing emotions surrounding cancer decreases distress during the next 3 months compared with those with low points in emotional expression.

Rachman (1980) used the term emotional processing (EP) to refer to the way in which an individual processes stressful and critical life events. He defined EP as ‘a process whereby emotional disturbances are absorbed, and decline to the extent that other experiences and behaviour can proceed without disruption’ (p. 51). He noted that, for the most part, people successfully process the majority of aversive events that occur in their lives. Indeed, if they are unable to absorb or process emotional disturbances, then they operate at a constantly high level of arousal with so much intrusion from their feelings that it would be difficult to concentrate on their daily tasks of living.

Various researchers have delineated factors that may promote or impede EP and developed theories that have important clinical implications for this. Baker et al. (2007) formalized these clinical observations and research findings in an EP model that specifies some of the psychological operations that may impede processing. According to their model of EP, which integrates different emotion-related concepts, EP consists of an input in the form of an event that is consciously or unconsciously registered, followed by a rapid and unconscious appraisal of the event and subsequent emotional experience, which is central to the processing of emotion and includes awareness of emotions, experiencing emotions as a psychological whole, identifying and labelling emotions, and linking them to relevant causal events. The final output stage is an appropriate expression of emotions. Incomplete processing characterized by prolonged or excessive avoidance and/or inhibition of negative emotions can result in intrusive or obsessive thoughts, as well as disturbances in behaviour and experience, and further prevents the integration and resolution of negative emotional experiences (Margherita and Gargiulo, 2018; Roberts and Reuber, 2014). EP plays a key role in facilitating the resolution of distress and decreases psychopathology over time (Greenberg and Pascual-Leone, 2006).

Currently, there are no studies in the literature that deal with EP in women under the age of 50. Therefore, in this work, we investigate the few studies performed on samples of women over the age of 50 with breast cancer, which deal with the relation between EP and psychological symptoms. The life-threatening nature of breast cancer understandably contributes to emotional distress, which dissipates after the first year for most but not all patients with breast cancer (Ganz et al., 2004). Women who process instead of avoiding or suppressing their emotions are expected to have moderately elevated scores on distress measures during the

first year after their diagnosis, when they are coping with the stress of noxious treatments and life changes.

The consideration of both emotional responses and EP is important when attempting to interpret studies of self-reported distress and its influence on breast cancer progression (Ganz et al., 2004). The finding that the repressive emotion strategy predicts more rapid disease progression in patients with breast cancer is, therefore, consistent with the hypothesis that lower EP, as indicated by low self-reported distress and emotional suppression/repression, is associated with increased mortality risk (Reynolds et al., 2000) and predicted increased mortality during a 9-year follow-up, whereas the expression of emotion predicted decreased mortality. In addition, Manna et al. (2007) showed that the tendency to repress one's emotions is associated with some general schemes of reaction to stress, which when used in a dysfunctional manner (such as the attempt to ignore how threatening an event is) are maladaptive in the end.

An EP framework helps integrate how processing the event can cause emotional distress. Similarly, the study by Iwamitsu et al. (2005) showed that patients with breast cancer who suppressed their emotions and had chronically high levels of anxiety felt higher levels of emotional distress both before and after the diagnosis. The repression of negative emotions is a predictor of strong anxiety, depression and confusion after receiving the diagnosis, compared with patients with breast cancer who express their negative emotions. Furthermore, self-reported emotional expression predicted fewer depressive symptoms (Marroquin et al., 2016). The literature mentioned above suggests that it may be therapeutically beneficial to express and communicate emotions, in particular the negative ones, after receiving the diagnosis, in order to help maintain psychological adjustment in the face of the disease.

Owing to the fact that there are no studies analysing EP during the experience of breast cancer in women under 50 years of age, our study aims to fill in this gap. Our hypotheses are to explore if there are variations of symptoms and EP during the time of treatments in women under the age of 50 with breast cancer. In particular, we propose a reflection of the EP of the breast cancer experience in women under 50 in a longitudinal study, analysing the level and the transformation of EP at three different phases of treatment (T1: before hospitalization, T2: counselling after surgery and T3: adjuvant therapy). Furthermore, we analyse the relation between EP and some psychological symptoms.

Method

Participants and procedure

This research took place at the National Cancer Institute 'Fondazione G. Pascale' of Naples, the national reference for the treatment and care of neoplastic illnesses. This research was co-constructed in collaboration with the psychology service

and the breast unit surgery of the hospital. The psychology service of the hospital provided its location and facilities for monitoring meetings and taking charge of the women who wanted to continue with psychotherapeutic support over time.

Women were identified from the medical reports according to our eligibility criteria: diagnosis of breast cancer carcinoma in situ from stage 0 to III, first access to the hospital before the age of 50, absence of genetic tests carried out before the onset of cancer and voluntary participation. Our exclusion criteria were a metastatic disease (stage IV) and psychotherapeutic treatments in progress. The recruitment of women, which started in January 2018 and ended in September 2018, was carried out through meeting in a day hospital to explain the whole path and aim of the research. Participation was voluntary by providing informed consent, and the privacy policy of the hospital was respected. This research was approved by the ethical committee of the hospital.

We enrolled 50 women (mean age $M=42.32$; $DS=5.35$) at T1, the first phase of hospitalization, 10 days after detecting a suspicious nodule; 24 women at T2, the second phase of counselling after surgery, which consists of one session 30–40 days after the surgery; and 15 women at T3, adjuvant therapy, according to the histologic exit: chemotherapy (III cycle, after 2 months from the beginning of the treatment that lasts 5–6 months) and/or radiotherapy (after 20 days from the beginning of the treatment which lasts 35–40 days).

Instruments

All patients were provided with the Socio-Demographic Questionnaire, the Symptom Questionnaire (SQ; Kellner, 1987) as an outcome measure, and the Emotional Processing Scale (EPS-25; Baker et al., 2010) as a process measure, for the three different phases of treatment.

SQ is a self-report questionnaire aimed at assessing the four symptom axes of anxiety, depression, somatic symptoms and hostility. It consists of 92 items, of which 68 describe symptoms (symptom scales) and 24 describe the antonyms of some of the symptoms to collectively indicate well-being (well-being scales). The 92 items form the basis of four scales: depression, anxiety, anger/hostility and somatic symptoms. The validity of this instrument has been well established in clinical research settings, and these self-rating scales have been shown to be more sensitive than observer-rated scales. The somatic symptom scale was used to assess somatic distress. The depression, anxiety and anger/hostility scales were used to assess the stability of antidepressant responses. The score of each scale of the SQ is obtained by adding the scores of the items of each corresponding subscales; the range score of each scale (anxiety, depression, somatic symptom, hostility) goes from 0 to 23; furthermore, higher scores indicate high levels of anxiety, depression, somatic symptoms and hostility.

EPS-25 is a self-report questionnaire that is designed to identify, quantify and differentiate the types of EP styles and potential deficits in healthy individuals and those with psychological or physical disorders, as well as to measure the changes in EP as a result of therapy or interventions for physical or psychological disorders and to assess the contribution of poor EP to the development of psychosomatic and psychological disorders. This scale comprises five subscales, each with five items that are rated on a 10-point (0–9) attitudinal scale: suppression (excessive control of emotional experiences and expressions), signs of unprocessed emotions (intrusive and persistent emotional experiences), unregulated emotions (inability to control one's emotions), avoidance (avoidance of negative emotional triggers) and impoverished emotional experiences (detached experience of emotions due to poor emotional insights). Total EPS score is obtained by adding the scores of every items completed for the subscale and dividing by the number of items, to give a mean score in a range which goes from 0 to 9. A higher score indicates poorer EP. Total scores based on healthy group are as follows: very low (1.1), low (1.7), average (between 2.0 and 5.2), high (5.6) and very high (6.1); (Baker et al., 2015).

Statistical analysis

Data are reported as the number of patients (%), mean (\pm standard deviation) or median (25th to 75th interquartile range (IQR)), as appropriate. The demographic and clinical characteristics of patients at baseline (T1) were described for the overall sample.

The total EP Score and the four subscales of SQ (anxiety, depression, somatic symptoms, and hostility) were described for the overall sample at T1 and for the subsamples of patients who completed the post-surgery counseling at T2 and the adjuvant therapy at T3.

For longitudinal data analysis, scores were plotted over time, and mixed-effects models were used, considering time as a fixed-effect parameter and, thus, testing for statistical differences of SQ scores from T1 to T2, and T3. EPS was also considered in the models as a covariate, to adjust differences of SQ scores for its potential effect. To fit mixed-effects models to longitudinal data, the lmer function in the lme4 R package (Bates et al., 2015) was used. The relationship between the total EPS and SQ was also studied over time, considering each SQ subscale as a dependent variable. Mixed-effects models were run separately for each SQ subscale, to estimate the main effects of time, which represent the deviations from the baseline, and total EPS on each SQ subscale.

All the models used all the available data at each time point (T1, T2, T3). Statistical significance was defined as a p value of <0.05 . All data analyses were performed with the R software version 3.4.4.

Table 1. Demographic and clinical characteristics of participants at baseline.

Variable	All participants ($n=50$)
Age (years)	42.32 (± 5.35)
Educational level	
Primary and middle school	22 (44)
High school	20 (40)
Degree	8 (16)
Occupational status	
Housewife/unemployed	28 (56)
Employed	19 (38)
Self-employed	3 (6)
Marital status	
Nubile	5 (10)
Married	37 (76)
Separated	6 (12)
Widowed	1 (2)
Number of sons	2 (1–2)
Diagnosis location	
Private	14 (28)
Public	33 (66)
Unknown	3 (6)

Data are reported as the number of patients (%), mean (\pm standard deviation) or median (25–75th IQR), as appropriate.

Numbers of participants with missing data: marital status ($n=1$).

Results

Study sample

The characteristics of the patients at baseline are presented in Table 1. Overall, the mean of the age in years was 42.32 (± 5.35). The distribution of the educational level was as follows: the majority of the patients completed primary and middle school (44%), followed by those who completed high school (40%), and a minority of the sample obtained the degree (8%). Concerning the occupational status, the majority of the patients were housewives/unemployed (56%), with some employees (38%), and a minority were self-employed (6%). Regarding the marital status, the percentages were as follows: 76 per cent married, 12 per cent separated, 10 per cent nubile and 2 per cent widowed. The median number of children was two (range: 1–2). Finally, concerning the location where the women received their diagnoses, the majority of them declared that they received their breast cancer diagnosis at a public health institution (66%), some received their diagnoses at private centres (28%) and a minority did not know this information (6%).

EP at different phases of treatment

From the analysis, it was found that there is no significant variation in the total EPS over the three phases of treatment (Table 2). However, from a descriptive point of view, it is possible to observe that, concerning our sample, the means of total EPS decrease at T2, the phase after surgery, and

increase at T3, the adjuvant therapy phase. These findings show that the women with breast cancer in our study tended to show healthy EP during the second phase of treatment,

but they tended to show problematic EP of the event at the third phase of treatment of the disease, which corresponds to the potential traumatic experience of adjuvant therapies (chemotherapy or radiotherapy).

Table 2. Means (\pm standard deviations) of scores of EPS at each time point.

	T1	T2	T3	<i>p</i> value
Total EPS	4.18 (\pm 1.84)	3.63 (\pm 1.95)	4.32 (\pm 1.79)	0.114 ^a 0.769 ^b

EPS=Emotional Processing Scale.

^aT1–T2.

^bT1–T3.

Symptomatic levels in each phase of treatment

Concerning the symptomatic level of our sample of women under 50 with breast cancer in each phase of treatment, in Table 3 and in Figure 1, we observe that, at T1 (the before hospitalization phase), the highest scores were those of anxiety, followed by those of somatic symptoms. There is clinical evidence of high arousal and high emotional and bodily activation in this phase.

Table 3. Means (\pm standard deviations) of scores of SQ at each time point.

	T1	T2	T3	<i>p</i> value*
SQ				
Anxiety	12.55 (\pm 5.03)	11.67 (\pm 4.25)	10.80 (\pm 2.62)	0.909 ^a 0.046^b
Depression	8.70 (\pm 4.35)	7.92 (\pm 2.28)	7.47 (\pm 2.03)	0.759 ^a 0.177 ^b
Somatic symptoms	11.93 (\pm 6.73)	7.62 (\pm 4.41)	9.33 (\pm 4.39)	0.012^a 0.098 ^b
Hostility	8.21 (\pm 5.62)	10.08 (\pm 4.35)	13.07 (\pm 4.37)	0.012^a <0.001^b

SQ=Symptom Questionnaire.

*Results from mixed-effects longitudinal analysis. Bold *p* values are significant.

^aT1–T2.

^bT1–T3. Partial means adjusted for EPS.

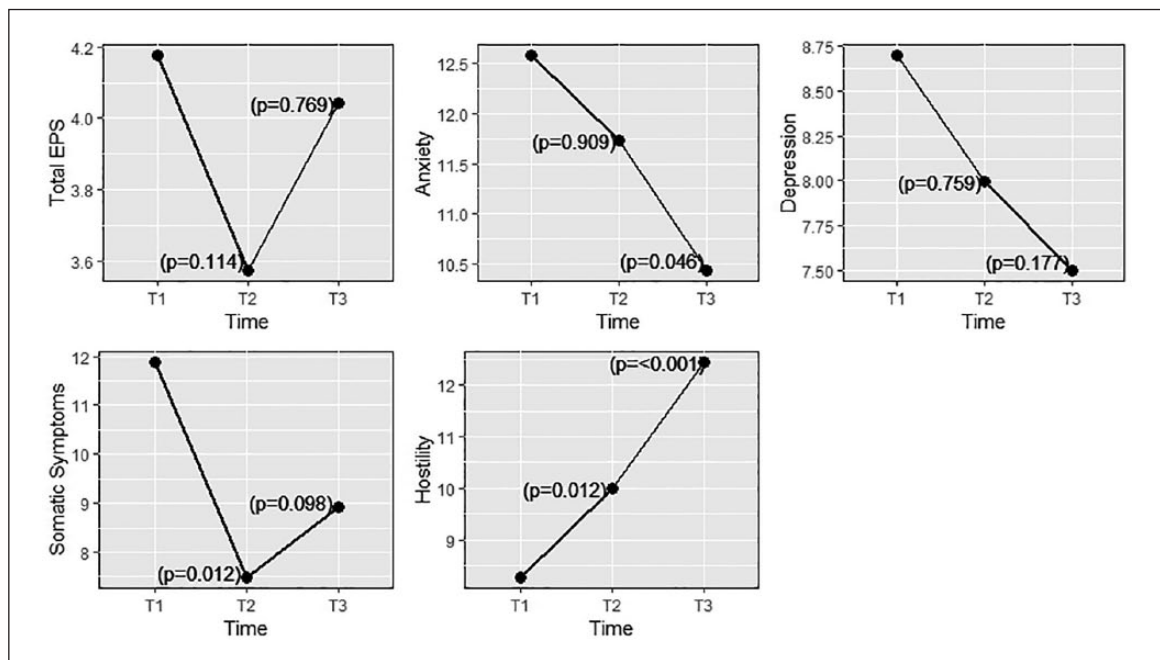


Figure 1. Score means over time (T1–T3). *p* values from mixed-effects longitudinal analysis.

Table 4. Estimated effects through mixed-effects longitudinal analysis.

	Anxiety		Depression		Somatic symptoms		Hostility	
	β	<i>p</i> value	B	<i>p</i> value	β	<i>p</i> value	β	<i>p</i> value*
Total EPS	1.51	<0.001	0.88	<0.001	1.25	<0.001	1.37	<0.001

EPS = Emotional Processing Scale.

*Results from mixed-effects longitudinal analysis. Bold *p* values are significant.

At T2, the after surgery phase, the anxiety scores remained higher compared with the others, followed by those of hostility, which increases at this phase of treatment.

In conclusion, at T3, the phase of the adjuvant therapy, the highest scores were those of hostility, compared with those of other scales, followed by anxiety and somatic symptoms.

Variations of the symptoms at different phases of treatment

From Table 3, we continue to observe the symptomatic transformations of the sample during the different phases of treatment. The results from the mixed-effects model showed a significant change in anxiety at T3 compared with the baseline (*p* value = 0.046). In particular, the level of anxiety decreased significantly during the treatment.

Regarding depression, we observed a not significant variation during the time, even though the scores of this scale decreased gradually.

The somatic symptoms scores changed significantly from T1 to T2 (*p* value = 0.012). However, from a descriptive point of view, the somatic symptoms related to our sample were high at the first phase of before hospitalization, decreased at the second phase of after surgery counselling, and increased again during the third phase of adjuvant therapy.

The findings related to the scale of hostility are particularly interesting. These scores increased significantly during the three phases of treatment, reaching the highest level in the third phase (adjuvant therapy) (*p* value < 0.001). This scale seemed to move in an opposite direction compared with the others.

The longitudinal effect of EP on symptoms

Table 4 shows the longitudinal effect of EP on all the four scales of symptoms. Total EPS has a direct significant effect on all the SQ subscales (*p* value < 0.001). In particular, for a unitary variation of total EPS, there are anxiety increases of 1.51, depression growths of 0.88, somatic symptoms rise of 1.25, and hostility of 1.37. Therefore, the increase in the scores of total EPS, which represents problematic EP for women, had a direct effect on all the scores of SQ increase. In this sense, we can affirm that EP

significantly predicts anxiety, depression, somatic symptoms and hostility.

Discussion

The study aimed to analyse the level and the transformation of EP at three different phases of treatment (before hospitalization, counselling after surgery and adjuvant therapy), and its relation to psychological symptoms.

In our study, we highlighted that EP of the experience of breast cancer in women under 50 years of age does not change significantly during the period of treatment. However, focusing exclusively on our sample, it was possible to register an important variation of EP, which decreases at the post-surgery phase and then increases at the third phase of treatment, in relation to the adjuvant therapy. We interpreted these data considering the specificity of each phase. In particular, it is possible to comprehend the notion that the trend of a healthy EP style in women after surgery is related to the fact that getting rid of the cancer from their bodies allowed them to be calmer and relieved compared with the initial stage of the disease. However, the need to start adjuvant therapies again impacts their EP, which decreases at the third phase. This represents a specific and problematic phase of the disease, where their psychological functioning tends to be negatively impacted, probably owing to the impact and crucial role that the therapy (chemotherapy or radiotherapy) played in their lives and in their elaboration of the whole experience of the disease. Thus, at this specific phase, the body, already proved by medical examinations, analyses and surgeries, undergoes further transformations often induced by aggressive treatments (e.g. hair loss, physical pain and hormonal alterations). Therefore, this phase has a specific and direct effect on the level of EP of the experience of breast cancer in women under the age of 50.

Concerning the symptomatic variations during the phases of treatment, we observed that, during the first phase of pre-hospitalization, the women reported high levels of anxiety and somatic symptoms. The findings evidence high arousal and emotional and bodily activation, which we interpret to be directly linked to the first phase at which the patients are waiting to have a confirmed diagnosis of breast cancer. At T1, there is the waiting for the diagnosis, for the medical definition, which, at the same time, could be a threat to existence lived with the anguish of

death. In our opinion, the shock generated by the impact with the contexts of illness in the life of women and the expectation of the communication of the diagnosis represent emotionally dense events that induce a physiological and physiological activation, which is observable of the clinic and symptomatic level by manifestations of anxiety and somatic symptoms. In this sense, our study is in line with the literature (Iwamitsu et al., 2005), which showed that patients with breast cancer who suppressed their emotions had chronically high levels of anxiety, both before and after diagnosis. We highlighted that anxiety significantly decreases during treatment; maybe the function of the psychic container of the health institution works: the women are seen as patients, are emotively supported and taken medical care of. Therefore, the moment of the diagnosis (which is obtained after the surgery, so at T2) represents a containment phase, which allows to name the anxieties and introduces an action, a movement, that is the treatment.

Hostility and angry reactions increase significantly throughout the course of treatment. We interpreted these findings by assuming that frustration builds up and fuels anger and hostility, which can only come out towards the end of treatment and cure process. The disease event is also processed and managed by projecting out emotions through different forms of hostility.

Depression does not emerge meaningfully in our sample. We interpreted this as a clinical resource for women who can express their distress, first through anxiety and somatic reactions and then through different forms of hostility. In our interpretation, the women are engaged to face the disease, and to do it they need to think about the whole experience of the disease gradually, immersing first through the level of action and corporeity. They should process the experience slowly, working in the direction of healthy EP. In addition, healthy EP in patients with breast cancer predicts fewer depressive symptoms, as shown also in other studies (Marroquin et al., 2016).

From a clinical point of view, the use of diachronic narrative devices that can promote the expression, sharing and containment of emotions (Boursier and Manna, 2018; Dicé et al., 2019; Margherita et al., 2017; Tessitore and Margherita, 2017), especially the negative ones, starting from the diagnosis (T1), may help maintain psychological adjustment in the face of the disease during the different phases of treatment (Martino et al., 2019). Furthermore, actively processing and expressing emotions enhance the adjustment and health status of patients with breast cancer (Weihs et al., 2008), and poor EP predicts more rapid disease progression (Reynolds et al., 2000).

From our results, EP of breast cancer plays a preventive role in the onset of anxiety, somatic symptoms, depression and hostility in women under 50 years of age with breast cancer. It is a strong predictor of all the four types of symptoms in women under 50 years of age with breast cancer at

each phase of treatment. Thus, if EP increases, a sign of a problematic experience, all the symptoms increase.

In particular, we recommend that scholars look deeply into understanding the specificity of the experience, diachronic functioning (EP and psychological symptoms) of the lived experience of breast cancer in women under 50 years of age, focusing at the same time on the synchronic specificity of each phase of treatment (De Luca Picione et al., 2018). Understanding the breast cancer experience in women under the age of 50 is the first step to develop patient-tailored programmes and support interventions (Esposito et al., 2019; Margherita et al., 2014). Furthermore, identifying the psychological specificity of each phase of treatment of the disease, as clinicians, we can develop clinical practices that can intercept the specific needs and the psychological functioning of women at the different phases of treatment.

This study is not free from limitations. We are aware that the lack of a healthy control sample constitutes a limitation for the study; therefore, in our future researches, we will compare the levels of EP between healthy and clinical samples. Furthermore, another limitation is the decrease of our sample of women during the different phases of treatment; however, the mixed-effects statistical models allowed us to control this bias. In our future research, we will consider these numerous physiological changes of the sample and we will improve the sample.

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References

- Ahmad S, Fergus K and McCarthy M (2015) Psychosocial issues experienced by young women with breast cancer: The minority group with the majority of need. *Curr Opin Support Palliat Car* 9: 271–278.
- Baker R, Thomas S, Thomas PW, et al. (2007) Development of an Emotional Processing Scale. *J Psychosom Res* 62: 167–178.
- Baker R, Thomas S, Thomas PW, et al. (2010) The Emotional Processing Scale: Scale refinement and abridgement (EPS-25). *Journal of Psychosomatic Research* 68: 83–88.
- Baker R, Thomas S, Thomas PW, et al. (2015) *Emotional Processing Scale*. Oxford: Hogrefe.
- Bates D, Maechler M, Bolker B, et al. (2015) Fitting linear mixed-effects models using lme4. *Journal of Statistical Software* 67(1): 1–48.
- Bertero C and Chamberlain Wilmoth M (2007) Breast cancer diagnosis and its treatment affecting the self: A meta-synthesis. *Cancer Nursing* 30: 194–202.

- Boursier V and Manna V (2018) Selfie expectancies among adolescents: Construction and validation of an instrument to assess expectancies toward selfies among boys and girls. *Frontiers in Psychology* 9: 839.
- Bower JE, Meyerowitz BE, Desmond KA, et al. (2005) Perceptions of positive meaning and vulnerability following breast cancer: Predictors and outcomes among long-term breast cancer survivors. *Annals of Behavioral Medicine* 29: 236–245.
- Champion VL, Wagner LI, Monahan PO, et al. (2014) Comparison of younger and older breast cancer survivors and age-matched controls on specific and overall quality of life domains. *Cancer* 120: 2237–2246.
- Cohee AA, Adams RN, Johns SA, et al. (2015) Long-term fear of recurrence in young breast cancer survivors and partners. *Psycho-oncology* 26: 22–28.
- Cordova MJ, Giese-Davis J, Golant M, et al. (2007) Breast cancer as trauma: Posttraumatic stress and posttraumatic growth. *Journal of Clinical Psychology in Medical Settings* 14: 308–319. Available at: <http://psycnet.apa.org/doi/10.1007/s10880-007-9083-6>
- De Luca Picione R, Martino ML and Freda MF (2017) Understanding cancer patients' narratives: Meaning-making process, temporality, and modalities. *Journal of Constructivist Psychology* 30(4): 339–359.
- De Luca Picione R, Martino ML and Freda MF (2018) Modal articulation: The psychological and semiotic functions of modalities in the sensemaking process. *Theory & Psychology* 28(1): 84–103.
- Dicé F, Dolce P, Maiello A, et al. (2019) Exploring emotions in dialog between health provider, parent and child: An observational study in pediatric primary care. *Pratiques Psychologiques*. Epub ahead of print 30 January 2019. DOI: 10.1016/j.prps.2018.12.001.
- Dirier A, Burhanedtin-Zincircioglu S, Karadayi B, et al. (2009) Characteristics and prognosis of breast cancer in younger women. *Journal of Balkan Union of Oncology* 14: 619–623.
- Elklit A and Blum A (2011) Psychological adjustment one year after the diagnosis of breast cancer: A prototype study of delayed post-traumatic stress disorder. *British Journal of Clinical Psychology* 50: 350–363.
- Epping-Jordan JE, Compas BE, Osowiecki DM, et al. (1999) Psychological adjustment in breast cancer: Processes of emotional distress. *Health Psychology* 18: 315–326.
- Esposito G, Karterud S and Freda MF (2019) Mentalizing under achievement in group counseling: Analyzing the relationship between members' reflective functioning and counselors' interventions. *Psychological Services*. Epub ahead of print 2019. DOI:10.1037/ser0000350.
- Fatiregun OA, Olagunju AT, Erinfolami AR, et al. (2016) Anxiety disorders in breast cancer: Prevalence, types, and determinants. *Journal of Psychosocial Oncology* 34: 432–447.
- Fernandes-Taylor S, Adesoye T and Bloom JR (2015) Managing psychosocial issues faced by young women with breast cancer at the time of diagnosis and during active treatment. *Current Opinion in Supportive and Palliative Care* 9(3): 279–284.
- Finck C, Barradas S, Zengerc M, et al. (2018) Quality of life in breast cancer patients: Associations with optimism and social support. *International Journal of Clinical and Health Psychology* 18: 27–34.
- Ganz PA, Kwan L, Stanton AL, et al. (2004) Quality of life at the end of primary treatment of breast cancer: First results from the moving beyond cancer randomized trial. *Journal of the National Cancer Institute* 96: 376–387.
- Greenberg LS and Pascual-Leone A (2006) Emotion in psychotherapy: A practice-friendly research review. *Journal of Clinical Psychology* 62: 611–630.
- Gurevich M, Devins GM and Rodin GM (2002) Stress response syndromes and cancer: Conceptual and assessment issues. *Psychosomatics* 43: 259–281.
- Howard-Anderson J, Ganz PA, Bower JE, et al. (2012) Quality of life, fertility concerns, and behavioral health outcomes in younger breast cancer survivors: A systematic review. *Journal of the National Cancer Institute* 104: 386–405.
- Hubbeling HG, Rosenberg SM, GonzaÁlez-Robledo MC, et al. (2018) Psychosocial needs of young breast cancer survivors in Mexico City, Mexico. *PLoS ONE* 13(5): e0197931.
- Iwamitsu Y, Shimoda K, Abe H, et al. (2005) Anxiety, emotional suppression, and psychological distress before and after breast cancer diagnosis. *Psychosomatics* 46: 19–24.
- Janoff-Bulman R (1992) *Shattered Assumptions: Towards a New Psychology of Trauma*. New York: The Free Press.
- Kellner R (1987) A symptom questionnaire. *The Journal of Clinical Psychiatry* 48: 268–274.
- Kirkman M, Winship I, Stern C, et al. (2014) Women's reflections on fertility and motherhood after breast cancer and its treatment. *European Journal of Cancer Care* 23: 502–513.
- Koopman C, Butler LD, Classen C, et al. (2002) Traumatic stress symptoms among women with recently diagnosed primary breast cancer. *Journal of Traumatic Stress* 15: 277–287.
- Lebel S, Beattie S, Arès I, et al. (2012) Young and worried: Age and fear of recurrence in breast cancer survivors. *Health Psychology* 32: 695–705.
- Liamputtong P and Suwankhong D (2015) Therapeutic landscapes and living with breast cancer: The lived experiences of Thai women. *Social Science and Medicine* 128: 263–271.
- Maggard MA, O'Connell JB, Lane KE, et al. (2003) Do young breast cancer patients have worse outcomes? *Journal of Surgical Research* 113: 109–113.
- Manna G, Foddai E, Di Maggio MG, et al. (2007) Emotional expression and coping style in female breast cancer. *Annals of Oncology* 18: 77–80.
- Manne S, Ostroff J and Winkel G (2004) Posttraumatic growth after breast cancer: Patient, partner, and couple perspectives. *Psychosomatic Medicine* 66: 442–454.
- Margherita G and Gargiulo A (2018) A comparison between pro-anorexia and non-suicidal self-injury blogs: From symptom-based identity to sharing of emotions. *Psychodynamic Practice* 24(4): 346–363.
- Margherita G, Martino ML, Recano F, et al. (2014) Invented fairy tales in groups with onco-haematological children. *Child: Care, Health and Development* 40: 426–434.
- Margherita G, Troisi G, Tessitore F, et al. (2017) Teen mothers who are daughters of teen mothers: Psychological intergenerational dimensions of early motherhood. *Children and Youth Services Review* 83: 294–301.
- Marroquin B, Czamanski-Cohen J, Weihs KL, et al. (2016) Implicit loneliness, emotion regulation, and depressive symptoms in breast cancer survivors. *Journal of Behavioral*

- Medicine* 39: 832–844. Available at: <http://psycnet.apa.org/doi/10.1007/s10865-016-9751-9>
- Martino ML and Freda MF (2016a) Meaning-making process related to temporality during breast cancer traumatic experience: The clinical use of narrative to promote a new continuity of life. *Europe's Journal of Psychology* 12: 622–634.
- Martino ML and Freda MF (2016b) Post-traumatic growth in cancer survivors: Narrative markers and functions of the experience's transformation. *The Qualitative Report* 21: 765–780. Available at: <http://nsuworks.nova.edu/tqr/vol21/iss4/11>
- Martino ML, Gargiulo A, Lemmo D, et al. (2019) Cancer blog narratives: The experience of under-fifty women with breast cancer during different times after diagnosis. *The Qualitative Report* 24(1): 154–173.
- Martino ML, Lemmo D, Gargiulo A, et al. (2019) Underfifty women and breast cancer: Narrative markers of meaning-making in traumatic experience. *Frontiers in Psychology*. Epub ahead of print 26 March 2019. DOI:10.3389/fpsyg.2019.00618.
- Martino ML, Onorato R and Freda MF (2015) Linguistic markers of processing trauma experience in women's written narratives during different breast cancer phases: Implications for clinical interventions. *Europe's Journal of Psychology* 11: 651–663.
- Mehnert A and Koch U (2007) Prevalence of acute and post-traumatic stress disorder and comorbid mental disorders in breast cancer patients during primary cancer care: A prospective study. *Psycho-oncology* 16: 181–188.
- Mosher CE and Danoff-Burg S (2006) A review of age differences in psychological adjustment to breast cancer. *Journal of Psychosocial Oncology* 23(2–3): 101–114.
- Paluch-Shimon S and Warner E (2015) Breast cancer in young women: Challenges, progress, and barriers. *Current Opinion in Supportive and Palliative Care* 9: 268–270.
- Rachman S (1980) Emotional processing. *Behaviour Research and Therapy* 18: 51–60.
- Reynolds P, Hurley S, Torres M, et al. (2000) Use of coping strategies and breast cancer survival: Results from the Black/White Cancer Survival Study. *American Journal of Epidemiology* 152: 940–949.
- Ribnikar D, Ribeiro JM, Pinto D, et al. (2015) Breast cancer under age 40: A different approach. *Current Treatment Options in Oncology* 16: 334.
- Roberts NA and Reuber M (2014) Alterations of consciousness in psychogenic non-epileptic seizures: Emotion, emotion regulation and dissociation. *Epilepsy and Behavior* 30: 43–49.
- Ruddy KJ, Greaney ML, Sprunck-Harrilg K, et al. (2013) Young women with breast cancer: A focus group study of unmet needs. *Journal of Adolescent and Young Adult Oncology* 2(4): 153–160.
- Schmidt JE and Andrykowski MA (2004) The role of social and dispositional variables associated with emotional processing in adjustment to breast cancer: An internet-based study. *Health Psychology* 23: 259–266.
- Shaha M, Cox CL, Talman K, et al. (2008) Uncertainty in breast, prostate, and colorectal cancer: Implications for supportive care. *Journal of Nursing Scholarship* 40: 60–67.
- Somerset W, Stout SC, Miller AH, et al. (2004) Breast cancer and depression. *Oncology* 18: 1021–1034.
- Stanton AL, Kirk SB, Cameron C, et al. (2000) Coping through emotional approach: Scale construction and validation. *Journal of Personality and Social Psychology* 78: 1150–1169.
- Tessitore F and Margherita G (2017) A review of asylum seekers and refugees in Italy: Where is the psychological research going? *Mediterranean Journal of Clinical Psychology* 5(2). DOI: 10.6092/2282-1619/2017.5.1612.
- Thewes B, Bell ML, Butow P, et al. (2013) Psychological morbidity and stress but not social factors influence level of fear of cancer recurrence in young women with early breast cancer: Results of a cross-sectional study. *Psycho-oncology* 22: 2797–2806.
- Weihls KL, Enright TM and Simmens SJ (2008) Close relationships and emotional processing predict decreased mortality in women with breast cancer: Preliminary evidence. *Psychosomatic Medicine* 70: 117–124.
- Yazdani-Charati R, Hajian-Tilaki K and Sharbatdaran M (2019) Comparison of pathologic characteristics of breast cancer in younger and older women. *Caspian Journal of Internal Medicine* 10(1): 42–47.