

# Changes in psychological adjustment over the course of treatment for breast cancer: the predictive role of social sharing and social support

Diane Boinon<sup>1,2\*</sup>, Serge Sultan<sup>3,4</sup>, Cécile Charles<sup>1,2</sup>, Alexandra Stulz<sup>1</sup>, Claire Guillemeau<sup>1,2</sup>, Suzette Delaloge<sup>2</sup> and Sarah Dauchy<sup>2</sup>

<sup>1</sup>Institut de Psychologie, Université Paris Descartes, Paris, France

<sup>2</sup>Unité de Psycho-Oncologie, Institut de Cancérologie Gustave Roussy, Paris, France

<sup>3</sup>Département de Psychologie, Université de Montréal, Montréal, Quebec, Canada

<sup>4</sup>Centre de Recherche du CHU Sainte-Justine, Montréal, Quebec, Canada

\*Correspondence to:

Unité de Psycho-Oncologie,  
Institut de Cancérologie Gustave  
Roussy, Paris, France. E-mail:  
boinon@igr.fr

## Abstract

**Background:** Although research on social sharing suggests it could be an important factor in subsequent adjustment, it has rarely been examined in combination with the nature of the support received by patients. The goal of this study was to determine whether and to what extent social sharing concerning the disease and perceived social support after breast surgery explain psychological adjustment at the end of the treatment.

**Methods:** One hundred two participants were recruited consecutively at a large cancer care center (Gustave Roussy, France). After surgery (T1) and at the end of the adjuvant treatment (T2), patients responded to self-report questionnaires assessing psychological adjustment (depressive symptoms and cancer-related distress), social sharing concerning the illness, and perceived social support (generic and cancer specific).

**Results:** When the initial levels of adjustment were controlled for, hierarchical multiple regression models showed that greater instrumental support at T1 accounted for favorable changes in depressive symptoms at T2. In contrast, the perception of aversive attitudes in the environment and the avoidance of social sharing explained an increase in intrusive cancer-related thoughts.

**Conclusion:** The results suggest a negative impact of aversive attitudes from the environment on adjustment during treatment. It also confirms the importance of practical aspects of social support after surgery. In line with Lepore theory, sharing about the illness in a supportive environment may be of primary importance in the cognitive processing of cancer and thus may promote adjustment. These results have original implications for the counseling of patients and their relatives.

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## Introduction

Although early detection of cancer by screening programs and new treatment methods have increased the number of breast cancer (BC) survivors, a diagnosis of BC can nevertheless affect both short-term and long-term psychological adjustments. Side effects of treatment, impairment of body image, and uncertainties about recurrence can worsen psychological distress [1–4]. After initial surgical treatment, 18% of BC patients reported experiencing depressive symptoms [5], whereas 19% reported intrusive thoughts about the cancer [6]. Following treatment, the prevalence of persistent depressive symptoms ranged from 12% to 25% [7,8], with 16% of patients experiencing intrusive thoughts 6 months after surgery [6].

Social support has been identified as an important factor associated with lower psychological morbidity in BC [9–12]. Social interactions between patients and caregivers have been found to be essential factors contributing to an understanding

of psychological adjustment to cancer. According to the social-cognitive processing model, the expression of one's thoughts and feelings about cancer ('social sharing') in a supportive context may facilitate cognitive processing and psychological adjustment. In contrast, unsupportive social contexts may impede this cognitive processing [13].

Numerous studies agree on the links between the availability and perceived adequacy of social support and improved psychological adjustment to cancer [9,11,14,15]. The studies that have distinguished between three types of support (emotional, instrumental, and informational) have shown that emotional support is most highly correlated with psychological adjustment to cancer [12,16]. Instrumental support, which has been less frequently assessed, appears to be related only to certain factors of adjustment such as physical recovery [16]. Although most studies have emphasized the links between positive social support and patients' psychological adjustment, they have devoted less attention to the effects of *negative* support. This negative

support, also referred to in terms of social constraints, designates attitudes from the environment involving avoidance, criticism, minimization, or the reluctance to discuss illness-related topics [17]. The few studies conducted among women with BC show that this negative support would be associated with high levels of intrusive thoughts and depressive affects [18,19] and with avoidance of cancer-related thoughts [19,20]. In contrast, the availability of partners and their readiness to talk about the disease would be associated with a reduction in psychological distress [21]. Yet, the fact that most of these studies have adopted a cross-sectional design makes it difficult to formulate causal interpretations.

### Aim of research

The current research had two aims. First, it aimed to describe the evolution of psychological adjustment, social sharing, and perceived support between before adjuvant treatment (T1) and after adjuvant treatment (T2). We expected to observe an increase in depressive symptoms and cancer-specific distress as well as a reduction in the availability of perceived support between T1 and T2. Second, it aimed to identify predictors of psychological adjustment at T2 among social sharing and perceived support factors at T1. We expected that women who frequently share the emotions associated with the disease and who perceive a high level of emotional and instrumental support at T1 would exhibit lower levels of depressive symptoms across the study period. In contrast, women who avoid talking about their experience and who perceive a high level of negative support at T1 should exhibit higher levels of depressive symptoms and cancer-specific distress across time.

## Method

### Study design and participants

The study was conducted at Gustave-Roussy cancer campus (France). Women considered for inclusion were screened by a team of physicians according to the following criteria: (1) 18 years and older; (2) with first diagnosis of BC; (3) proposed for adjuvant treatment by chemotherapy and radiotherapy after surgery; (4) with no recurrence or metastases; (5) with the ability to read and write in French; and (6) with no psychiatric diagnosis or serious personality disorders. Psychiatric diagnoses were explored by the oncologist at the initial interview and collected from the medical history. This was then cross-checked by the nurse who proposed participation in the study.

Data were recorded at two assessment points. At the first assessment, before adjuvant treatment (T1), the study was presented to the women during the in-person nurse consultation. Patients agreeing were contacted by phone,

then gave written informed consent, and were mailed questionnaires. At the second assessment (T2), questionnaires were mailed after adjuvant treatment. At T1, one telephone follow-up call was made if the questionnaire was not returned before adjuvant treatment. At T2, one telephone follow-up call was made if the questionnaire was not returned in the month following the end of adjuvant treatment. The study received full approval from the local ethics committee.

## Measures

Sociodemographic and medical data were recorded from medical files (Table 1).

### Outcome variables

#### Depressive symptoms

The short-form Beck Depression Inventory has 13 items covering depressive symptoms over a 7-day period [22,23]. The patients rated the severity of each symptom. As suggested by research in medical settings, we excluded physical symptoms in order to evaluate core depressive symptoms in cancer (range of 0–24;  $\alpha = 0.70$ ) [24].

#### Cancer-related psychological distress

To further evaluate psychological distress, we used the Impact of Event Scale [25], a 15-item self-report scale that

**Table 1.** Demographic and medical characteristics of participants with breast cancer ( $N = 102$ )

	N (%)
Mean age (SD)	52.9 (10.2)
Marital status	
Married/living with someone	76 (74.5)
Divorced/separated/widowed	15 (14.7)
Single	11 (10.8)
Educational level	
No degree	7 (6.9)
Primary	37 (36.3)
High school diploma	17 (16.7)
Second year university level	13 (12.7)
Degree level or higher	28 (27.4)
Tumor grade	
1	14 (13.7)
2	51 (50)
3	37 (36.3)
Surgery	
Conservative	70 (68.6)
Mastectomy	32 (31.4)
Axillary node dissection	
Yes	79 (77.5)
No	23 (22.5)
Treatment by chemotherapy and radiotherapy	102 (100)
Mean time since surgery in days at T1	47.5 (18.1)
Mean time since surgery in days at T2	244.7 (29.9)

T1, before adjuvant treatment; T2, after adjuvant treatment.

assesses intrusive thoughts relating to BC and patients' attempts to avoid such thoughts. The Impact of Event Scale provides a total distress score (range of 0–75;  $\alpha = 0.86$ ) as well as scores for the intrusive thoughts (range of 0–35;  $\alpha = 0.84$ ) and avoidance symptoms (range of 0–40;  $\alpha = 0.81$ ) subscales.

### Predictor variables

#### Social sharing

We focused on the core aspects of social sharing: expression of emotions relating to the experience of cancer, satisfaction with confidant's reaction, and frequency of avoidance of sharing. In the absence of validated measures to assess these characteristics of social sharing in cancer, we have screened the items available in the existing literature. The work carried out by Zech *et al.* [26] and Luminet *et al.* [28] appeared as the most recognized and well cited in the domain of social sharing [26–29]. It allowed us to identify the following three questions: (1) emotional involvement during social sharing ('Following the diagnosis, to what extent have you talked about your feelings (emotions) with your confidant?'); (2) satisfaction with confidant's reactions ('Overall, are you satisfied with the reactions of your confidant?'); (3) frequency of avoidance of social sharing ('Following the diagnosis, how many times have you avoided talking about certain subjects relating to your disease experience with your confidant?'). Ratings were made on a 7-point Likert scale.

#### Perceived social support

The perceived amount of available support ('quantity of social support'; score range of 0–54;  $\alpha = 0.90$ ) and the degree of satisfaction with social support ('quality of social support'; score range of 6–36;  $\alpha = 0.94$ ) were evaluated with the Social Support Questionnaire Short Form (SSQ6) [30].

To estimate distinct components of recently perceived social support, we used a cancer-specific social support questionnaire [31–33]. The 20 items of this self-questionnaire assess the intensity of social support received by cancer patients on a 5-point Likert scale and provide a quantitative assessment of four distinct components of support: emotional (nine items, 'one or more persons have taken time to reassure me', range = 9–45,  $\alpha = 0.90$ ), instrumental (five items, 'one or more persons have helped me in the tasks that I could not do myself', range = 5–25;  $\alpha = 0.85$ ), informational (two items, 'one or more persons have taken time to explain the disease to me'; range = 2–10,  $\alpha = 0.88$ ), and negative support (four items, 'one or more persons have distanced themselves from me', range = 4–20,  $\alpha = 0.73$ ). In this scale, negative support is measured on the basis of withdrawn reactions, an exclusive focus on disease, and dramatization. Higher scores are indicative of more frequent social support received on any of these dimensions.

Previous results indicate that the consistency of the scale in cancer patients is good to excellent [32]. We confirmed the original factor structure by means of a confirmatory factor analysis conducted on the present sample [33]. Descriptive statistics for variables at T1 and T2 are provided in Table 2.

### Statistical analyses

Hierarchical linear regression analyses were led to examine the role of social support and social sharing at T1 on psychological adjustment at T2. Firstly, we calculated bivariate correlations in order to select variables to incorporate into multivariate analysis. In the models predicting for psychological distress measures at T2, block 1 included baseline psychological distress (in order to control initial levels), and block 2 contained control variables known to impact psychological adjustment (such as age, educational level, and tumor grade). In block 3, we have alternatively and separately entered three different predictors (firstly, generic social support; secondly, specific social support; and thirdly, social sharing) to test their relations with psychological distress measures at follow-up. Because of space limit, all results were grouped in one table.

## Results

### Participants

Among the 217 eligible patients, 114 (52%) agreed to participate in writing following surgery (T1). Fifty-nine refused to participate, primarily because they lack interest ( $n = 42$ ), had no confidence ( $n = 10$ ), or were too tired ( $n = 7$ ). Forty-four initially gave their verbal consent but did not subsequently return the written informed consent form and self-report questionnaires. One of the returned questionnaires was invalid, with the result that the study sample at T1 consisted of 113 patients. An analysis of nonresponders at T1 showed that participants were younger than nonparticipants ( $M = 52.8 \pm 10.2$  vs  $M = 57.2 \pm 11.7$ ;  $t = 2.96$ ,  $p < 0.01$ ). At T2, 102 patients responded (Table 1).

### Change over time

As displayed in Table 2, participants reported a decrease in emotional support ( $t = 4.3$ ,  $p < 0.001$ ), instrumental support ( $t = 3.4$ ,  $p < 0.01$ ), informational support ( $t = 4.2$ ,  $p < 0.001$ ), quality of support ( $t = 3.61$ ,  $p < 0.001$ ), and quantity of support ( $t = 2.9$ ,  $p < 0.01$ ), from T1 to T2. The women also reported a decrease in cancer-related psychological distress ( $t = 2.8$ ,  $p < 0.01$ ) and intrusive thoughts ( $t = 3.6$ ,  $p < 0.001$ ) from T1 to T2. The effect sizes were small, except in the case of the quality of support for which a moderate change was observed.

**Table 2.** Means and standard deviations for predictor and outcome variables at T1 and T2 and bivariate *t*-test comparing T1 and T2 (*N* = 102)

	T1		T2		<i>t</i>	<i>p</i>	<i>d</i> <sup>a</sup>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Predictor variables							
Social sharing							
Emotional involvement	4.5	1.5	4.4	1.4	1.0	ns	0.07
Satisfaction with confidant's reaction	5.3	1.2	5.1	1.4	1.0	ns	0.15
Frequency of avoidance (times)	1.1	1.7	1.4	1.9	-1.6	ns	-0.16
Perceived social support							
SSQ6							
Quantity of social support	23.8	11.5	20.8	11.1	2.9	<0.01	0.27
Quality of social support	30.2	6.2	27.1	8.4	3.6	<0.001	0.41
QueSSSC							
Emotional support	36.7	6.6	34.3	6.9	4.3	<0.001	0.18
Instrumental support	18.3	4.7	17.1	4.5	3.4	<0.01	0.13
Informational support	6.7	2.2	5.8	2.2	4.2	<0.001	0.21
Negative support	7.5	3.1	7.9	3.1	-1.3	ns	-0.13
Outcome variables							
BDI-SF Depressive symptoms (with somatic items)							
BDI-SF Depressive symptoms (somatic items excluded)	5.6	3.5	5.5	3.8	0.4	ns	0.03
Impact of Event Scale							
Total	27.9	15.7	23.8	14.9	2.8	<0.01	0.13
Intrusion	15.2	8.9	12.1	8.1	3.6	<0.001	0.18
Avoidance	12.7	9.2	11.7	8.9	1.1	ns	0.11

BDI-SF, Beck Depression Inventory short form; T1, before adjuvant treatment; T2, after adjuvant treatment; SSQ6, Social Support Questionnaire short form; QueSSSC, cancer-specific social support questionnaire.

<sup>a</sup>In Cohen's rules of thumb, small, moderate, and large effect sizes are generally defined as 0.2, 0.5, and 0.8, respectively [47].

## Role of social support and social sharing concerning the disease

### Impact on depressive symptoms

In bivariate analyses, a higher level of depressive symptoms at T2 was associated with lower quantity of support ( $r = -0.20$ ,  $p < 0.05$ ), lower instrumental support ( $r = -0.26$ ,  $p < 0.01$ ), and informational support at T1 ( $r = -0.20$ ,  $p < 0.05$ ).

As displayed in Table 3, regression analyses indicate that women who perceived a higher instrumental support at T1 reported a lower level of depressive symptoms ( $\beta = -0.27$ ,  $p < 0.05$ ) at T2.

### Impact on cancer-related psychological distress

In bivariate analyses, a higher negative support at T1 was associated with a higher level of intrusive thoughts ( $r = 0.36$ ,  $p < 0.01$ ) and cancer-related psychological distress ( $r = 0.27$ ,  $p < 0.01$ ) at T2. A higher level of avoidance of social sharing at T1 was also related to a higher level of cancer-related psychological distress ( $r = 0.32$ ,  $p < 0.01$ ), intrusive thoughts ( $r = 0.32$ ,  $p < 0.01$ ), and avoidance symptoms ( $r = 0.25$ ,  $p < 0.05$ ) at T2. Moreover, higher tumor grades were associated with a higher level of intrusive thoughts ( $r = 0.25$ ,  $p < 0.05$ ) and cancer-related psychological distress ( $r = 0.24$ ,  $p < 0.05$ ) at T2.

As displayed in Table 4, regression analyses indicate that higher tumor grades were associated with a higher level of intrusive thoughts and greater total distress at T2 ( $\beta = 0.21$ ,  $p < 0.05$ ). Women who frequently avoided sharing their disease experience at T1 reported more intrusive thoughts and more avoidance symptoms at T2 ( $\beta = 0.25$ ,  $p < 0.01$ ), whereas those who perceived greater negative support at T1 reported more intrusive thoughts and more avoidance symptoms ( $\beta = 0.18$ ,  $p < 0.05$ ) at T2.

Moreover, women who perceived a higher level of negative support at T1 reported more intrusive thoughts ( $\beta = 0.30$ ,  $p < 0.001$ ) at T2. In addition, women who frequently avoided sharing their disease experience at T1 also reported more intrusive thoughts ( $\beta = 0.25$ ,  $p < 0.01$ ) at T2.

Finally, more intense avoidance symptoms were reported at T2 when the women frequently avoided sharing their disease experience ( $\beta = 0.32$ ,  $p < 0.001$ ) and when they were less satisfied with their confidant's reactions at T1 ( $\beta = 0.23$ ,  $p < 0.01$ ). Moreover, the women who perceived a greater amount of social support at T1 reported a lower level of avoidance symptoms ( $\beta = -0.22$ ,  $p < 0.05$ ) at T2. In contrast, those who reported a higher level of satisfaction with social support at T1 reported more avoidance symptoms ( $\beta = 0.18$ ,  $p < 0.05$ ) at T2. These effects were observed earlier, whereas other factors (age, educational level, and tumor grade) were controlled (Table 4).

**Table 3.** Hierarchical linear regressions of depressive symptoms (BDI-SF) at T2 on social support (Social Support Questionnaire short form, cancer-specific social support questionnaire) and social sharing concerning the disease at T1 ( $N = 102$ )

Predictors variables	T2 depressive symptoms (BDI-SF)				
	$R^2$	$\Delta R^2$	B	SE	Beta
Block 1: T1 initial level of outcome					
Depressive symptoms (BDI <sup>a</sup> )		0.23***	0.48	0.09	0.48***
Block 2: control variables		0.03			
Age			0.00	0.09	0.00
Educational level			-0.12	0.09	-0.12
Tumor grade			0.14	0.09	0.14
Block 3(a): T1 social support (generic)	0.29	0.03			
Quantity of social support			-0.15	0.09	-0.15
Quality of social support			-0.07	0.09	-0.07
Block 3(b): T1 social support (cancer)	0.34*	0.08*			
Emotional support			0.10	0.12	0.10
Instrumental support			-0.27	0.11	-0.27*
Informational support			-0.12	0.11	-0.13
Negative support			-0.01	0.09	-0.01
Block 3(c): T1 social sharing	0.28	0.02			
Emotional involvement			-0.04	0.10	-0.04
Satisfaction with confidant's reactions			-0.01	0.10	-0.01
Frequency of avoidance			0.14	0.09	0.14

$R^2$  is the amount of variance explained in the initial level of outcome, then the addition of the sociodemographic variables, and one of the predictor variables of interest (3a or 3b or 3c). BDI-SF, Beck Depression Inventory short form; T1, before adjuvant treatment; T2, after adjuvant treatment.

<sup>†</sup> $p < 0.10$ ;

\* $p < 0.05$ ;

\*\* $p < 0.01$ ;

\*\*\* $p < 0.001$ .

<sup>a</sup>BDI scores exclude for somatic items. Results are similar when the total BDI-SF scores are used.

## Discussion

The initial descriptive results of this longitudinal study testify to a significant reduction in the availability and quality of various types of social support (emotional, material, and informational) between the time of BC surgery and the end of adjuvant treatment. In the literature, this reduction has been reported and linked to the fatigue experienced by caregivers after the treatment period or to the patients' psychological status improvement [14,34]. Indeed, our results reveal a small decrease in cancer-related psychological distress at the end of treatment. Some authors have suggested that this reduced expression of negative emotions is a way for these patients to maintain satisfactory social relations, protect their social network, and enable them to maintain a positive self-image in their interactions [35].

One main result of our study was that the perception of a high level of instrumental support received by women with BC after surgery was associated with a decrease in their depressive symptoms at the end of treatment. Our results thus complement those of an earlier study that found an association, albeit only in the short term, between the instrumental support provided by the partner prior to surgery and a lower level of distress 7–10 days afterwards [36]. The beneficial role of instrumental support observed here

is consistent with the fact that the limitation of functional capabilities and the impairment of social roles have been identified as risk factors for depression in patients suffering from BC. Patients have reported extremely concrete complaints (such as limitations to their physical functioning, post-surgical pain, and fatigue) in response to which instrumental support would be particularly helpful [37]. Providing concrete help in everyday life and encouraging the maintenance of links with other people, family, and friends would help reduce the feeling of physical limitation and the losses caused by the disease [38].

Our results also show that a perceived high level of negative support after BC surgery is associated with an increase in intrusive cancer-related thoughts at the end of treatment. Only one earlier longitudinal study had reported close results, according to which unsupportive behavior by partners was associated with an increase in psychological distress and avoidance symptoms in women undergoing treatment for BC [20]. Some authors have attributed the long-term persistence of intrusive thoughts to an incomplete processing of the emotional experience [39]. Negative support attitudes in the social network such as dramatization might hinder cognitive processing and give patients fewer opportunities to confront the various representations associated with the disease and to elaborate outlooks other than pessimistic [13].

**Table 4.** Hierarchical linear regressions of cancer-related distress (IES) at T2 on social support (SSQ6 and QueSSC), and social sharing concerning the disease at T1 (N = 102)

	T2 IES-total				T2 intrusion				T2 avoidance							
	R <sup>2</sup>	ΔR <sup>2</sup>	B	SE	Beta	R <sup>2</sup>	ΔR <sup>2</sup>	B	SE	Beta	R <sup>2</sup>	ΔR <sup>2</sup>	B	SE	Beta	
Block 1: T1 initial level of outcome																
IES-Total		0.29***	0.54	0.08	0.54***											
Intrusion						0.23***		0.48	0.09	0.48***						
Avoidance											0.27***		0.52	0.08	0.52***	
Block 2: control variables		0.05 <sup>†</sup>				0.06*					0.04					
Age			-0.04	0.08	-0.04			-0.01	0.01	-0.09			0.02	0.09	0.02	
Educational level			0.03	0.09	0.03			-0.06	0.09	-0.06			0.12	0.09	0.12	
Tumor grade			0.21	0.08	0.21*			0.23	0.08	0.23**			0.15	0.09	0.15 <sup>†</sup>	
Block 3(a): T1 social support (SSQ-6, generic)	0.36	0.02				0.30	0.00				0.35*	0.048*				
Quantity of social support			-0.15	0.09	-0.15 <sup>†</sup>			-0.05	0.09	-0.05			-0.22	0.09	-0.22*	
Quality of social support			0.09	0.09	0.09			-0.04	0.09	-0.04			0.18	0.09	0.18*	
Block 3(b): T1 social support (QueSSC, cancer)	0.40 <sup>†</sup>	0.06 <sup>†</sup>				0.41***	0.12***				0.32	0.01				
Emotional support			-0.09	0.12	-0.09			-0.08	0.12	-0.08			-0.07	0.13	-0.07	
Instrumental support			0.14	0.11	0.14			0.15	0.10	0.15			0.08	0.11	0.08	
Informational support			-0.13	0.11	-0.13			-0.16	0.10	-0.16			-0.07	0.11	-0.07	
Negative support			0.18	0.09	0.18*			0.30	0.09	0.30***			0.05	0.09	0.05	
Block 3(c): T1 social sharing	0.43**	0.09**				0.36*	0.06*				0.41***	0.11***				
Emotional involvement			0.02	0.08	0.02			0.03	0.09	0.03			0.01	0.08	0.01	
Satisfaction with confidant's reactions			0.13	0.08	0.13			-0.01	0.09	-0.01			0.23	0.09	0.23**	
Frequency of avoidance			0.32	0.08	0.31***			0.25	0.09	0.25**			0.32	0.09	0.32***	

R<sup>2</sup> is the amount of variance explained in the initial level of outcome, then the addition of the sociodemographic variables, and one of the predictor variables of interest (3a or 3b or 3c). IES, Impact of Event Scale; T1, before adjuvant treatment; T2, after adjuvant treatment; SSQ6, Social Support Questionnaire short form; QueSSC, cancer-specific social support questionnaire.

<sup>†</sup>p < 0.10;

\*p < 0.05;

\*\*p < 0.01;

\*\*\*p < 0.001

Our results are consistent with this social environment-oriented approach and show that repressing one's desire to talk about the experience of the disease after surgery is associated with an increase in psychological distress at the end of treatment. Previous studies have revealed a positive association between the emotional repression of BC women and higher levels of distress [40,41] compared with women who expressed their negative emotions, in particular following the disclosure of the diagnosis [41] and 3 months after surgery [42].

Finally, contrary to our expectations, we observed no beneficial effect of social sharing concerning the disease or of perceived emotional support on psychological adjustment. The familiar adage 'it helps to talk about it' cannot therefore be considered to be unambiguously borne out in the field of oncology. Experimental research on the effect of expression conducted among healthy subjects has reported similar results. However, a qualitative assessment of the participants revealed subjective benefits (reassurance, better understanding of the situation, and support received from someone else) [26]. The authors of this study believe that these benefits would be associated with the reinforcement of the affective links yielded by expression and not so much the emotional support *per se* [26]. In our study, the association between the availability of support and a decrease in the avoidance of intrusive thoughts at the end of treatment supports this hypothesis.

Results from our study may be limited because of limited sample size (refusal rate of 48%) and the sociodemographic characteristics of the sample (three quarters of the women lived with a partner, and more than half had higher education). These variables are known to have an influence on emotional states and access to social resources [43,44], and thus, our results could only concern a subset of women having crossed BC. Second, our evaluation of psychological adjustment was limited to the treatment phase and cannot be generalized to long-term follow-up [45,46]. Thirdly, our sample size with regard to the number of variables is limited, which may limit statistical power and probability to find significant effects involving social sharing. This could also explain why some of our results were not in line with expectations. However, previous studies carried out on healthy populations inform of similar results regarding the absence of social sharing effect on emotional adjustment criteria. Despite these

limitations, the present study is one of the rare pieces of longitudinal research available concerning the combined roles of social sharing and social support in BC.

## Implications

The results of this study argue in favor of specific interventions to address the negative reactions of the social network and the way these are perceived and processed by patients. Encouragement to strengthen links with 'well-meaning' family members and friends could constitute an avenue of approach that focuses on maintaining the feeling of social integration. This study also shows that it is valuable to work with patients in order to identify and limit their use of repression strategies given their detrimental long-term effect on the cognitive processing of the experience of the disease. Finally, family members and friends could be encouraged to make themselves available for instrumental support.

## Conclusion

This longitudinal study on the psychological adjustment of BC patients revealed the beneficial role of instrumental support and, on the other, the detrimental role of negative social support and the avoidance of social sharing with regard to the disease. Consequently, the effect of support should be construed differently depending on the attitudes of the friend or family member as well as the individual resources of the patient. It may be possible to explain the effects of negative support and the avoidance of social sharing on psychological adjustment in terms of their negative effects on the processes involved in the cognitive processing of cancer. This hypothesis should be tested in future studies.

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## Conflict of interest

There are no conflicts of interest to declare.

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