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# Defensive Functioning Among Women With Breast Cancer and Matched Community Controls

J. Christopher Perry, Jesse Metzger, and John J. Sigal

*Objective*. The general theory of defense mechanisms posits that stress is associated with using defenses lower on the hierarchy of defensive adaptation. Some have observed that individuals with cancer use certain defenses, such as repression, denial, and immature defenses. This cross-sectional study examined four hypotheses about defensive functioning in a sample of women who are mothers with a recent history of breast cancer (BC), compared to a matched sample of healthy mothers in the community. *Method*. We rated defenses from interview transcripts about interpersonal vignettes, using the Defense Mechanism Rating Scales quantitative method. Measures of symptoms and functioning were also gathered. *Results*. The BC group displayed lower ($z = 5.39$, $df = 1{,}231$, $p < .0001$) overall defensive functioning than controls: 5.32 [95% CI: 5.13 to 5.51] versus 5.63 [95% CI: 5.50 to 5.76], which is equivalent to a medium effect size (0.62). Compared to controls, the BC group displayed more denial, idealization, displacement, isolation of affect, and splitting of others' images; conversely, they used less altruism, anticipation, intellectualization, and undoing. Controls used a mixture of high adaptive (35.5%), neurotic (43.0%), and immature defenses (21.4%). In contrast, the BC group used fewer high adaptive (30.7%) and neurotic (38.8%) and more immature defenses (30.5%). Both groups scored in relatively healthy ranges on other measures. Correlations with other measures supported the hierarchy of defense adaptiveness. *Conclusions*. The relationships among stress, defensive functioning, and adaptation were largely as predicted. Future studies should examine defenses in the process of seeking care, diagnosis, and treatment response for breast cancer.

Defense mechanisms are automatic psychological processes that protect the individual against anxiety and internal and external dangers or stressors (American Psychiatric Association, 1994, p. 751). They are the individual's first response in dealing with stress. The theory of defensive functioning suggests that individuals have a repertoire of defenses from which they usually draw, but on a given occasion defenses vary depending on the stressor. Defenses can be ordered in a theoretically and empirically

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Dr. Sigal passed away August 12, 2012. *Requiescat in pace.*

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validated hierarchy by their general level of adaptation (Vaillant, 1977; Perry, 1993; Bond & Perry, 2004; Perry & Bond, 2004, 2012), allowing calculation of a person's overall defensive functioning with each defense used weighted by its place in the hierarchy.

Stress causes an individual to employ defenses that are lower in the hierarchy of defenses than the norm (Cramer & Gaul, 1988; Cramer, 1991, 2006). Individuals may differ in their resilience in responding to stress partly because of the propensity to regress to less adaptive defenses lower in their repertoire, something seen early in the treatment of personality disorders (Perry, Beck, Constantinides, & Foley, 2008). To date there has been little examination of whether serious chronic stressors, such as a diagnosis of cancer, are associated with such shifts in defensive functioning.

We chose to study women who were mothers with a diagnosis of breast cancer, a common form of cancer, compared to a matched sample from the community. Empirical research on defensive functioning in cancer patients has mostly focused on repression and denial (Bahnson & Bahnson, 1966; Goldstein & Antoni, 1989), but others have found evidence for autistic fantasy and passive-aggression (Ho & Shiu, 1995). Stiefel (2006) posited that anxiety-induced defenses, particularly denial, are factors in delaying seeking diagnosis and treatment, which Salander, Bergenheim, and Henriksson (1996) described as "cognitive maneuvers" to create protection and preserve hope. In reviewing 40 papers, Vos and de Haes (2007) found evidence of denial of diagnosis, its impact, and/or affect in 4% to 70% of patients. Moyer and Levine (1998) noted a lack of consensus on whether denial is conscious or unconscious, a trait or a state, or indicative of psychological disturbance or a normal response to serious illness.

Research suggests a relationship between defenses and disease characteristics and progression, as well as survival probabilities. Giese-Davis, Conrad, Nouriani, and Spiegel (2008) and Giese-Davis, Sephton, Abercrombie, Duran, and Spiegel (2004) reported that a repressive emotion-regulation style was a risk factor among metastatic breast cancer patients for higher sympathetic activation and cortisol dysregulation. Jensen (1987) found that repressive coping style was associated with breast cancer's spread, after controlling for medical variables such as disease stage and length of follow-up. Beresford, Alfers, Mangum, Clapp, and Martin (2006) found significant differences in survival probability in breast cancer, comparing those with mature versus immature defensive functioning after 18 months (87% versus 50%) and after 36 months (57% versus 19%), respectively.

This report examines defensive functioning in mothers with recent histories of breast cancer. Breast cancer is the most common cancer in adult women, with a lifetime probability of about 10%, and an increasing incidence rate from age 30 onward, coinciding with the ages of rearing children (Bryant & Basher, 1994). A mother's defensive functioning may also have secondary effects on her child's functioning. We obtained a matched community sample of mothers without recent serious stressors as a comparison, which also provided estimates of community norms for defensive functioning, Finally, we applied an observer-based method, rating defenses as they were actually used in interviews, rather than relying on self-report measures. We proposed the following hypotheses.

**H1:** Defensive functioning in the community sample would consist of a mixture largely of high adaptive and neurotic defenses, with few immature defenses.

**H2:** Women with a breast cancer history would have lower overall defensive functioning, reflecting the need to protect themselves from anxiety and self-image concerns related to cancer. Specifically, there would be a greater reliance on certain neurotic and immature levels, which function to limit or

disavow awareness and up-regulate self-esteem.

**H3:** Women with histories of the more advanced stages of cancer would have slightly lower defensive functioning compared to those with more circumscribed cancers, reflecting the greater chronic stress associated with the more severe diagnoses.

**H4:** Measures of symptoms and functioning would correlate with defenses in line with the hierarchy of adaptation, offering convergent validation.



## METHODS

### Subjects, Setting, and Sampling

*Breast cancer patients.* We collected lists of women with a diagnosis of breast cancer from the practice registers of 10 participating oncologists at three hospitals serving adjacent areas of Montreal. Eligibility criteria included women who (a) had been given a diagnosis of breast cancer by their physician at least six months prior but had not completed treatment more than four years prior to the interview; (b) were aged 35 to 55; (c) had a child between 6 and 18 years old; (d) and spoke either French or English. The six-month to four-year limits from time of diagnosis were chosen to avoid the transient distress around the time of initial diagnosis and treatment. The women's age range encompassed those most likely to have children in the desired age range. A recent illness or death in the family was an exclusion criterion, representing a potential serious confound affecting distress and functioning.

From the list of 474 women obtained, the women's oncologists refused permission to contact 52. Of the remaining 422, 44 (10.4%) refused to be interviewed or declined to give some information, yielding 378 (89.6%) who agreed to participate. Of these, 291 (77%) did not fulfill eligibility criteria. The final sample consisted of 87 women, 45 with a first occurrence of non-metastatic breast cancer and 42 with metastatic or recurrent breast cancer.

*Community matched controls.* The selection criteria were designed to assure similarity of the control mothers to the index study group. The inclusion criteria were (a) a mother with at least one child within four years of age of the child of a matched index mother; (b) living within four blocks of the index group mother; and (c) speaking either French or English. Criterion (b) aimed to assure similarity of socioeconomic level and possibly ethnic background to the index mother. Two control mothers were matched for each index group mother with breast cancer.

Using the directories containing names, addresses, and phone numbers of all residents of the metropolitan area of Montreal, we randomly selected people who lived within a two-block radius of each index participant. We continued until we obtained two who met the selection criteria and agreed to participate. Of the 4,327 potential controls we telephoned, 1,167 (27.4%) refused to be interviewed, while 3,160 (72.6%) accepted. Of these, only 172 met the selection criteria for matching an index case.

### Interview Procedures

All interviewers were female, master's-level psychologists or equivalent in interviewing experience. After training, they conducted all interviews in the subjects' homes.

First, questionnaires and structured interview questions were administered about the mother, family, and index child (Sigal, Perry, Robbins, Gagne, & Nassif, 2003). The interviewer then administered the Relationship Anecdote Paradigm (RAP) interview (Luborsky & Crits-Christoph, 1990). Our adaptation of the RAP was semi-structured, with specific open-ended questions to elicit two spontaneous recent life vignettes in each of three areas of life: the spouse/partner, the index child, and dealing with help-giving professionals or agencies.

This provided some standardization of the type of stories obtained to ensure comparability of the data across individuals. The RAP is close to unstructured interviews like the dynamic interview or psychotherapy sessions in providing dynamically relevant data (Beck & Perry, 2008), requiring from 15 to 45 minutes. The interviews were audio-recorded and transcribed.

### Measures and Ratings

The Defense Mechanism Rating Scales, Fifth Edition (Perry, 1990; Perry & Henry, 2004), is an observer-rated method, nearly identical to the Provisional Defense Axis in Appendix B of the *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition (*DSM*-IV; American Psychiatric Association, 1994; Perry et al., 1998). Raters identify each defense in order of occurrence in the interview. This method differs from other observer-rated methods that yield qualitative or semiquantitative ratings based on global ratings for the whole interview (Perry & Ianni, 1998). Three levels of scoring are used, yielding continuous, ratio scales. Individual defense scores are proportional or percentage scores, calculated by dividing the number of times each of 30 defenses was identified by the total instances of all defenses for the session. Defense level scores are proportional or percentage scores of each of seven defense levels. The defenses are arranged hierarchically into seven defense levels based on their general level of adaptiveness (Perry, 1993), as displayed in Tables 1 and 2. Overall defensive functioning is a summary score obtained by taking the average of each defense level score, weighted by its order in the hierarchy, yielding a number between 1 (lowest) and 7 (highest). Finally, defense level scores are combined into superordinate categories: mature, neurotic, immature, and psychotic—although psychotic defenses were not included in this study. The interrater reliability (all $n = 62$)

TABLE 1. Prevalence of Defenses Levels Among Women With Breast Cancer ($n = 76$) and Community Controls ($n = 157$)

| | Frequency of Any Use | | | | Mean Percentage Use | | | |
|---|---|---|---|---|---|---|---|---|
| | Controls | | Cancer | | Controls | | Cancer | |
| Defense Levels | *n* | % | *n* | % | *n* | % | *n* | % |
| 7. High adaptive | 155 | 98.7 | 74 | 97.4 | 35.5** | 14.0 | 30.7 | 14.5 |
| 6. Obsessional | 156 | 99.4 | 74 | 97.4 | 29.9*** | 11.7 | 24.0 | 11.2 |
| 5a. Hysterical | 103 | 65.6 | 52 | 68.4 | 5.7 | 6.6 | 5.3 | 6.1 |
| 5b. Other neurotic | 122 | 77.7 | 66 | 86.8 | 7.4* | 6.4 | 9.5 | 6.6 |
| 4. Minor image distorting | 112 | 71.3‡ | 71 | 93.4 | 8.2*** | 8.3 | 11.9 | 7.9 |
| 3. Disavowal | 129 | 82.2* | 70 | 92.1 | 11.6** | 9.8 | 16.0 | 12.8 |
| 2. Major image distorting | 3 | 1.9 | 4 | 5.3 | 0.1 | 0.5 | 0.2 | 0.8 |
| 1. Action | 42 | 26.8 | 24 | 31.6 | 1.5 | 3.2 | 2.2 | 4.0 |
| **Tripartite categories** | | | | | | | | |
| High adaptive (level 7) | 155 | 98.7 | 74 | 97.4 | 35.5** | 14.0 | 30.7 | 14.5 |
| Neurotic (levels 5–6) | 157 | 100.0 | 76 | 100.0 | 43.0* | 12.9 | 38.8 | 12.7 |
| Immature (levels 1–4) | 151 | 96.2 | 76 | 100.0 | 21.4‡ | 13.1 | 30.5 | 14.2 |
| a. Depressive | 106 | 67.5 | 59 | 77.6 | 7.9 | 8.4 | 8.6 | 7.4 |
| b. Nondepressive | 141 | 89.8† | 74 | 97.4 | 13.6‡ | 9.7 | 21.9 | 13.4 |
| **Summary scores** | | | | | | | | |
| No. of defenses identified | | | | | 27.2 | 12.2 | 26.6 | 10.4 |
| Overall defensive functioning | | | | | 5.63‡ | 0.50 | 5.32 | 0.53 |

*Note.* *P* value for frequency table is for Fisher's exact test, while *p* value for mean scores is by Wilcoxon rank-sum test.
†$p = .06$; *$p < .05$; **$p < .01$; ***$p < .001$; ‡$p < .0001$; §*t* test with equal variances.

TABLE 2. Prevalence of Individual Defenses Among Women With Breast Cancer ($n$ = 76) and Community Controls ($n$ = 157)

| | Frequency of Any Use | | | | Proportional Scores | | | |
|---|---|---|---|---|---|---|---|---|
| | Controls | | Cancer | | Controls | | Cancer | |
| Defenses | *n* | % | *N* | % | *M*% | *SD* | *M*% | *SD* |
| 7. High adaptive level | | | | | | | | |
| Affiliation | 94 | 59.9 | 49 | 64.5 | 4.7 | 5.7 | 4.7 | 5.0 |
| Altruism | 120 | 76.4$^{\dagger}$ | 39 | 51.3 | 7.1$^{\dagger}$ | 6.0 | 3.7 | 4.8 |
| Anticipation | 29 | 18.5* | 6 | 7.9 | 0.9* | 2.0 | 0.3 | 1.2 |
| Humor | 47 | 29.9 | 27 | 35.5 | 1.6 | 3.1 | 2.3 | 4.1 |
| Self-assertion | 147 | 93.6 | 72 | 94.7 | 17.0 | 9.4 | 16.4 | 10.8 |
| Self-observation | 46 | 29.3 | 17 | 22.4 | 1.4 | 2.5 | 1.0 | 2.1 |
| Sublimation | 1 | 0.6 | 2 | 2.6 | 0.0 | 0.4 | 0.1 | 0.8 |
| Suppression | 72 | 45.9 | 28 | 36.8 | 2.8 | 3.9 | 2.1 | 3.3 |
| 6. Mental inhibitions (neurotic) | | | | | | | | |
| 6. Obsessional | | | | | | | | |
| Isolation of affect | 13 | 8.3** | 16 | 21.1 | 0.3** | 1.3 | 1.0 | 2.0 |
| Intellectualization | 143 | 91.1* | 62 | 81.6 | 14.4** | 9.5 | 10.7 | 7.3 |
| Undoing | 148 | 94.2 | 69 | 90.8 | 15.2* | 9.1 | 12.4 | 8.0 |
| 5a. Hysterical | | | | | | | | |
| Repression | 103 | 65.6 | 52 | 68.4 | 5.7 | 6.6 | 5.1 | 5.9 |
| Dissociation | 1 | 0.6 | 3 | 4.0 | 0.0 | 0.1 | 0.2 | 0.9 |
| 5b. Other neurotic | | | | | | | | |
| Reaction formation | 39 | 24.8 | 19 | 25.0 | 1.3 | 2.6 | 1.3 | 2.6 |
| Displacement | 113 | 72.0** | 66 | 86.8 | 6.2** | 5.9 | 8.3 | 6.0 |
| 4. Minor image distorting | | | | | | | | |
| Omnipotence | 4 | 2.6 | 6 | 7.9 | 0.1 | 0.6 | 0.4 | 1.5 |
| Idealization | 58 | 36.9$^{\dagger}$ | 56 | 73.7 | 2.8$^{\dagger}$ | 5.6 | 6.1 | 6.2 |
| Devaluation | 96 | 61.2 | 51 | 67.1 | 5.4 | 6.1 | 5.4 | 5.4 |
| 3. Disavowal | | | | | | | | |
| Denial | 55 | 35.0*** | 45 | 59.2 | 2.1$^{\dagger}$ | 3.7 | 5.6 | 9.4 |
| Projection | 28 | 17.8 | 13 | 17.1 | 0.9 | 2.3 | 0.8 | 2.0 |
| Rationalization | 122 | 77.7 | 65 | 85.5 | 8.6 | 7.6 | 9.5 | 8.0 |
| Autistic fantasy | 3 | 1.9 | 2 | 2.6 | 0.1 | 0.5 | 0.2 | 1.3 |
| 2. Major image distorting | | | | | | | | |
| Splitting of self images | 2 | 1.3 | 0 | 0.0 | 0.1 | 0.5 | 0.0 | 0.0 |
| Splitting of others' images | 0 | 0.0** | 4 | 5.3 | 0.0** | 0.0 | 0.2 | 0.8 |
| Projective identification | 1 | 0.6 | 0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 |
| 1. Action | | | | | | | | |
| Acting out | 10 | 6.4 | 10 | 13.2 | 0.2 | 1.0 | 0.7 | 2.0 |
| Passive aggression | 33 | 21.0 | 16 | 21.1 | 1.1 | 2.8 | 1.2 | 2.9 |
| Help-rejecting complaining | 7 | 4.5 | 4 | 5.3 | 0.2 | 0.8 | 0.3 | 1.4 |

*Note.* $P$ value for frequency table is for Pearson chi square, while $p$ value for mean scores is by Wilcoxon rank-sum test.
*$p < .05$; **$p < .01$; ***$p < .001$; $^{\dagger}p < .0001$.



was $I_R$ (2, 1) = .85 for the number of defenses in each RAP interview, and .48 for the overall defensive functioning (ODF) score. The defense levels had a median $I_R$ = .60 (range .43 to .67). These reliability figures for ODF and the defense levels were lower than those usually obtained (Perry, 2001; Perry & Henry, 2004; Perry & Bond, 2012),

principally because of the brevity of the RAP interview and low number of defenses identified in comparison to standardized psychiatric interviews or psychotherapy sessions. Whenever available, consensus ratings were used for substantive data analysis (31% of cases), as they have been shown to have higher reliability (Perry & Cooper, 1989); the remainder were individual ratings.

The Profile of Mood States (POMS) is a self-report checklist of 65 items yielding scores for six mood states—tension-anxiety, depression-dejection, anger-hostility, vigor-activity, fatigue, and confusion—as well as a total score. Higher scores reflect a more distressed state (McNair, Lorr, & Droppleman, 1971). In a normative sample for women the mean POMS total score was 20.3 (*SD* = 33.1) (Nyenhuis, Yamamoto, Luchetta, Terrien, & Parmentier, 1999).

The Medical Outcomes Study Health Survey Short Form (SF-36) is a 36-item self-report instrument that assesses aspects of physical health and functioning (Ware & Sherbourne, 1992). A Canada-wide community survey study reported that the mean scores for the SF-36 physical and mental component scales in women aged 35 to 44 years were 51.5 (*SD* = 8.7) and 50.2 (*SD* = 9.2), respectively; for women aged 45 to 54 years they were 50.5 (*SD* = 9.2) and 50.8 (*SD* = 9.5), respectively (Hopman et al., 2000).

The Locke-Wallace Marital Adjustment (LWMA) is a 14-item self-report measure of marital adjustment and satisfaction (Locke & Wallace, 1959). We applied it whenever the mother had either a spouse or partner. Kimmel and Van der Veen (1974) reported normative scores of means of 110 for wives and 108 for husbands. Scores lower than 90 were considered indicative of marital distress (Weiss, Hops & Patterson, 1983). However, Barkley and Murphy (2006) consider these norms "sorely dated."

### Statistical Analyses

All data were analyzed using SAS for Windows PC, version 9.2 (SAS Institute, 2008). Interrater reliability was calculated for the Intraclass R (2, 1) using Proc Varcomp. The Wilcoxon rank-sum test was used for group comparisons as many variables were non–normally distributed. Correlations were Spearman rank order.

Of the 259 patients admitted into the study, one refused to have the RAP interview recorded, and 20 patients had RAP interviews that were not usable due to technical difficulties with the audio-recording, making transcription impossible. This left 238 (91.9%) ratable cases, divided as follows: index metastatic group (36 of 38: 94.7%), index nonmetastatic group (42 of 49: 85.7%), and controls (160 of 172: 93.0%). Missing data further reduced some analyses. Because the defense categories are intercorrelated and our hypotheses with each dependent variable are directionally the same, we display the nominal $p$ values when significant, without a Bonferroni corrected alpha level, as these would be overly conservative.

## RESULTS

Of the sample, 123 (52.8%) were French speaking and 110 (47.2%) English speaking. The mean ages were 44.8, *SD* = 4.9, for the breast cancer (BC) mothers, and 39.9, *SD* = 6.1, for the control mothers ($t$ = 6.12, $df$ = 231, $p$ = .0001). However, there were no correlations between age and ODF within either BC ($r_s$ = .06, $n$ = 76, $p$ = .61) or control groups ($r_s$ = –.03, $n$ = 157, $p$ = .71). There were no differences in civil status; 60 (79.0%) of the BC group and 128 (81.5%) of the control group were married or cohabiting. There were no differences in economic status between the two groups.

### Psychological Defenses

We began by examining whether there were any differences between the uninodal and metastatic BC subgroups, our third hypothesis. Because the two subgroups were highly similar, each with a median ODF =

5.32, we combined them for all subsequent analyses.

Tables 1 and 2 present two sets of figures. The left-most columns display the *n*s and percentages of the control and BC groups that used each defense level at least once. The right-hand columns display the mean proportional scores for each group. Table 1 displays the defense level scores for the combined BC group and controls. For the control group, the percentages using each defense level at least once fall into three ordinal groups: obsessional and high adaptive levels (99.4% to 98.7%), followed by disavowal, other neurotic, minor image-distorting, and hysterical levels (82.2% to 65.6%), and then the lowest action and major image-distorting levels (26.8% to 1.9%). This order was reflected in the tripartite categories (range: 100% to 96.2%). This indicates that virtually all control subjects used some defenses from each group. The BC group had a similar profile, with two exceptions. Compared to controls, the BC group had a significantly higher percentage using any minor image-distorting defense (93.4% versus 71.3%) and any disavowal defense (92.1% versus 82.2%).

Table 1 shows the mean proportional defense level scores. The control group used high adaptive (35.5%) and obsessional levels (29.9%) the most, followed by disavowal, minor image-distorting, other neurotic, and hysterical levels (11.6% to 5.7%). Action and major image-distorting levels were lowest (≥ 1.5%). The means for the BC group followed the same order as those of the control group, but five significant differences emerged. Compared to controls, the BC group relied on fewer obsessional and high-adaptive defenses, but more disavowal, minor image-distorting, and other neurotic defenses. The tripartite categories paralleled this order. Compared to controls, the BC group used less mature and neurotic defenses but more immature defenses.

Table 1 indicates that both control and BC groups on average used the same number of defenses (27) in the RAP interviews. However, ODF scores differed significantly ($z = 5.39$, $df = 1{,}231$, $p < .0001$). Controls had a mean ODF of 5.63 [95% CI: 5.50 to 5.76] versus5.32 [95% CI: 5.13 to 5.51] for the BC group. The raw difference of 0.31 reflects a medium effect size of 0.62. Weighting ODF by the number of defenses did not significantly alter the results, nor did ODF differ by whether the interview was in French or English.

Table 2 displays the individual defenses. The majority of controls used nine individual defenses at least once. In descending order of magnitude, these were undoing, self-assertion, intellectualization, rationalization, altruism, displacement, repression, devaluation, and affiliation. The majority of the BC group also used the same defenses at least once, in addition to idealization and denial. However, eight significant differences existed between the two groups. The BC group had higher percentages using idealization, denial, displacement, isolation of affect, and splitting of others' images at least once, and lower percentages of altruism and anticipation. By chance, one would expect 1.4 differences at alpha = .05.

Table 2 shows that the control group had eight defenses contributing 5% or more to total defensive functioning, our cutoff for "frequent usage." The highest mean was that for self-assertion (17.0%), followed in decreasing order by undoing, intellectualization, rationalization, altruism, displacement, repression, and devaluation. The BC group had nine defenses contributing 5% or more, in descending order: self-assertion, undoing, intellectualization, rationalization, displacement, idealization, denial, devaluation, and repression. There were significant differences between the two groups on 9 of 28 defenses, whereas by chance one would expect 1.4 differences. In decreasing order of magnitude and statistical significance, the BC group relied more on denial, idealization, displacement, isolation of affect, and splitting of others' images, although the base rate of the latter was very low (0.2%). Conversely, the BC group used less altruism, intellectualization, undoing, and anticipation than controls.

Next we compared ODF by each vignette type (see Table 3). Within the control group, ODF was significantly higher in the child than either the partner or health professional vignettes. ODF was also significantly lower in partner than health professional vignettes. Within the BC group, ODF was also significantly higher in the child than in either partner or health professional vignettes, while the latter two did not differ between themselves. Finally, the control group had a higher ODF than the BC group in child and health care professional vignettes, while partner vignettes was only $p = .07$.

### Other Maternal Variables and Maternal Defenses

Next we examined the other maternal variables, rated by the mothers themselves. In general, our fourth hypothesis expected level of defense adaptiveness to be negatively associated with symptom scores and positively with functioning scores.

*Mood.* On the POMS total score (see Table 4), the control group scored significantly higher than the BC group, although both means were within a non-ill range (McNair et al., 1971; Nyenhuis et al., 1999). We therefore conducted the correlational analyses separately for each group. In the BC group, POMS total did not correlate with ODF: $r_s = .02$, $n = 76$, $p = .85$. Table 5 therefore displays the correlations for the control group only. The POMS total score was significantly, positively correlated with immature defenses and negatively correlated with the high-adaptive defense category and ODF. In an earlier study, we previously found that the group of eight so-called depressive defenses correlated with the course of depression (Høglend & Perry, 1998). We therefore correlated this group of defenses with the POMS total score, finding $r_s = .20$, $n = 157$, $p = .01$.

*Physical functioning.* Compared to the BC group, the controls scored significantly higher

TABLE 3. Pair-Wise Comparisons of Overall Defensive Functioning Scores by Vignette Type for Control and Breast Cancer Groups

| | A. Partner | | | B. Index Child | | | C. Professional | | | A vs. B | | | A vs. C | | | B vs. C | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Group | *N* | *M* | *SD* | *N* | *M* | *SD* | *N* | *M* | *SD* | *t* | *p* | ES | *t* | *p* | ES | *t* | *p* | ES |
| Controls | 140 | 5.47 | 0.66 | 157 | 5.83 | 0.60 | 155 | 5.70 | 0.76 | 7.10 | .0001 | .68 | 3.58 | .0004 | .43 | 2.14 | .03 | .25 |
| BrCa | 72 | 5.29 | 0.76 | 76 | 5.61 | 0.80 | 76 | 5.18 | 0.81 | 3.39 | .001 | .60 | 1.15 | .25 | .21 | 4.62 | .0001 | .81 |
| Δ [a] | | −0.18 | | | −0.22 | | | −0.52 | | | | | | | | | | |
| Z [b] | | 1.83 | | | 2.00 | | | 4.75 | | | | | | | | | | |
| *p* | | .07 | | | .04 | | | .0001 | | | | | | | | | | |
| ES [c] | | .26 | | | .33 | | | .67 | | | | | | | | | | |

*Note.* *t* = paired *t*-test value; ES = effect size of difference [calculated $ODF_{difference}/ODF_{s.d.}$]; $\Delta^a$ = difference between two groups; [b] Wilcoxon rank-sum test; [c] effect size calculated as $ODF_{difference}/ODF_{pooled\ SD}$.

TABLE 4. Comparison of Means and Standard Deviations for Maternal Variables by Group

| | POMS Total | | | SF-36 (Physical) | | | SF-36 (Emotional) | | | Lock-Wallace Marital Adjustment | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Study Group** | ***M*** | ***SD*** | ***N*** | ***M*** | ***SD*** | ***N*** | ***M*** | ***SD*** | ***N*** | ***M*** | ***SD*** | ***N*** |
| Breast cancer | 10.3 | 26.2 | 76 | 62.5 | 8.7 | 75 | 54.5 | 9.5 | 76 | 70.5 | 16.2 | 60 |
| Controls | 14.5 | 24.4 | 157 | 67.1 | 4.9 | 157 | 56.0 | 8.4 | 157 | 72.4 | 13.4 | 128 |
| Combined | 13.1 | 25.0 | | 65.6 | 6.7 | | 55.5 | 8.8 | | 71.8 | 14.3 | |
| $Z$ [a] | 1.97 | | | 3.44 | | | 1.16 | | | 0.39 | | |
| $P$ | .05 | | | .0006 | | | .25 | | | .70 | | |

[a]Wilcoxon rank-sum test.

TABLE 5. Intercorrelations Between Maternal Defense Variables and Other Maternal Variables Rated by Mother

| Defense Category | POMS | SF-36 (Physical) | SF-36 (Emotional) | Lock-Wallace Marital Adjustment |
|---|---|---|---|---|
| *N* | 157[a] | 233 | 233 | 188 |
| High adaptive | −.20** | .13* | .12† | .17* |
| Neurotic | .00 | .02 | .04 | .05 |
| Immature | .19* | −.16** | −.16** | −.20** |
| ODF | −.20** | .19** | .18** | .26*** |

All figures are Spearman rank-order correlations: †$p < .10$; *$p < .05$; **$p < .01$; ***$p < .001$.
[a]Control group only; BC group had dissimilar matrix and no significant correlations.



on the SF-36 physical component scale, reflecting greater physical health. We anticipated that the recency of treatment might be associated with lower physical health within the BC group. Excluding five patients still receiving some treatment, duration since last treatment correlated with the physical component scale, $r_s = .40$, $n = 68$, $p = .0007$. Examination of the correlations with defense categories separately for the BC and control groups indicated similar patterns, and therefore we combined both groups for the correlational analyses. Table 5 shows that the SF-36 physical functioning component score correlated significantly positively with the high-adaptive defense category and ODF and negatively with immature defenses.

*Emotional functioning.* As Table 4 shows, the BC and control groups did not differ on the mean SF-36 emotional functioning component scale. Examination of the correlations with defense categories showed similar patterns, and therefore we combined the control and BC groups. As Table 5 shows, the SF-36 emotional functioning component score correlated significantly positively with ODF and negatively with immature defenses. The correlation with the high-adaptive defense category did not reach significance ($r_s = .12$, $n = 233$, $p = .08$).

*Marital adjustment.* As Table 4 indicates, the BC and control groups did not differ on the mean Locke-Wallace marital adjustment score. The groups had similar patterns of correlations and therefore we combined both for the correlational analyses. Table 5 indicates that marital adjustment was correlated significantly positively with high-adaptive defenses and ODF, and negatively with immature defenses. Defensive functioning with the partner/spouse should differentially relate to marital adjustment, so we examined each vignette type separately. As expected, the partner vignettes displayed the largest magnitude correlation with ODF ($r_s = .29$, $n = 187$, $p = .0001$), compared to the child and health professional vignettes (both respectively, $r_s = .08$, and $p = .27$).

## DISCUSSION

This study examines the relationship between one chronic stressor and defenses. We selected women with a history of breast cancer, which represents a specific, chronic stressor, given the potential for recurrence, deterioration, or death. While others have examined defensive functioning in women with breast cancer, this is the first study to examine a comprehensive list of defenses, rated by trained observers from verbatim transcripts of standardized interviews, eliciting real-life stories. It is also the first to examine defenses in a systematic sample of women in the community. Thus, our study informs on defensive functioning in both groups as well as their differences.

The control group's mean ODF of 5.63 ($SD$ = 0.50) is consistent with healthy functioning. Supporting our first hypothesis, the high-adaptive and neurotic categories made up the bulk of defensive functioning (respectively, 35.5% and 43.0%), confirming that healthy people use neurotic defenses to a significant degree. These findings are consistent with the term "healthy-neurotic" defensive functioning as applied to non-ill individuals. Strikingly, using a mean of 21.4% immature defenses is apparently not so high as seriously to diminish healthy functioning. These conclusions are supported by the convergence of the means across all the measures. The POMS measure of mood symptoms, the SF-36 measure of physical and emotional functioning, and the Lock-Wallace assessment of marital adjustment were also all within or near normative, healthy levels.

Consistent with our second hypothesis about chronic stress, the BC group demonstrated significantly lower defensive functioning than controls, with greater reliance on minor image-distorting and disavowal defense levels but less reliance on high-adaptive defenses. However, within the neurotic category, the BC group also used fewer obsessional defenses while using more other neurotic defenses than controls. Last, there were no differences in hysterical defenses between the groups, not upholding that aspect of our hypothesis. All of these differences followed the hierarchy of defenses. As a result, the BC group had lower ODF, equivalent to a medium effect size (0.62).

The BC group used both repression and denial more than 5% of the time, as well as another disavowal defense: rationalization. While they did not use repression more than the controls, they did use denial, as predicted, more than twice as often. Compared to controls, the BC group also used more isolation of affect, displacement, idealization, and splitting of others' images, along with less altruism, anticipation, intellectualization, and undoing. These differences suggest greater difficulty acknowledging and handling troubling affects and ideas, alongside the use of image distortion to dismiss threats to self-esteem and safety.

Comparison of the vignette types indicated that, on average, the controls displayed a higher ODF than the BC group across all vignette types, although the partner vignettes produced only a trend. These differences were evident even though vignettes displayed an average of only nine defenses. This suggests that our findings are robust: true across different types of social interactions. Nevertheless, examining other data sources—such, as recording actual dialogue with health care professionals—would further validate this.

Remarkably, both control and BC group mothers displayed their most adaptive defensive functioning with their index children (ODF of 5.83 and 5.61, respectively). These were significantly greater than the ODF for the partner and health care professional vignettes. Greater use of adaptive defenses in dealing with one's child than with others, including one's partner, is consistent with a primary goal of raising the child and preserving the species. More likely, though, it speaks to the salience of the mother–child attachment bond. At a personal level, these findings lead us to profess our admiration and respect for mothers. While the partners got "second best," in some

sense, ODF with the partner was still sufficient for fairly good marital adjustment.

Across vignette types, the lowest ODF was found in the BC group's health care professional vignettes, which also displayed the greatest divergence from that of the control group (ODF difference = 0.52). This divergence is readily understandable, as many of the BC group's vignettes recounted experiences with their cancer, treatment, and its sequelae, reflecting the stressor upon which the BC group was predicated.

Marital adjustment correlated most highly with the ODF within partner vignettes, indicating that better defensive functioning in interactions with the partner was associated with report of greater marital adjustment. This offers clear convergent and discriminant validation.

Our third hypothesis was not upheld. Compared to those with the less severe form, women with histories of the more severe form of recurrent or metastatic breast cancer did not display lower ODF, nor did they rely more on the hypothesized defense levels. Because ODF was virtually the same, the results are unlikely attributable to statistical power issues. The data presented do not permit a clear explanation of why no differences were found, except a possible role for recency of treatment. By default, it appears that having had the cancer at all, not its initial form or severity, was the major determinant of the association with lower defensive functioning.

The fourth hypothesis was largely upheld. The patterns of associations of defensive functioning with mood symptoms, physical and emotional functioning, and marital adjustment were remarkably consistent. High-adaptive defenses and ODF were positively associated with the healthy or less symptomatic end of each measure, while the converse was true for the immature defenses. Eleven (68%) of 16 correlations in Table 5 were significant, whereas by chance one would expect 0.8 findings. Neurotic defenses generally bore no relationships to health or mood symptoms. For the POMS, the findings held only for the larger control group, not the smaller BC group. We can only speculate that, within the BC group, other factors outside of defensive functioning may operate to diminish any relationship of defenses to mood scores. While the magnitude of the correlations suggests small effects—Spearman correlations between .10 and .30 (Cohen, 1992)—one must consider that both study groups reflected limited variation around essentially healthy levels on all measures. By contrast, studies in ill samples with multiple assessments generally demonstrate significantly larger associations. For example, in a recent study of long-term dynamic psychotherapy for mood, anxiety, and personality disorders, we reported correlations between changes in ODF and changes in measures of functioning and symptoms of $r_s$ = .60 and $r_s$ = .58, respectively (Perry & Bond, 2012).

This study has several limitations. The cross-sectional design obviated observing defenses in relationship to longer-term outcomes, such as time to recurrence or mortality in the BC group. We cannot ascertain whether the differences obtained between the BC and control groups antedated or resulted from the experience of breast cancer and its treatment (i.e., a pathoplastic response). Furthermore, any causal directions in the associations between defenses and other measures cannot be determined. The use of a single RAP interview with a mean of 27 defenses provided a less stable estimate—consistent with findings in a previous study (Perry et al., 2005)—than would be obtained by longer interviews or multiple assessments over time. This resulted in lower interrater reliability than usually obtained with this measure. Nevertheless, power was sufficient to examine our hypotheses about differences between the groups, and the comparisons of ODF by vignette type suggest that our findings are robust.

This study did not address what it is about stress that is associated with lower defensive functioning. We posit that the meaning of a stressor may activate the individual's

motives and/or emotional responses and any relevant psychological conflicts. This constellation requires defenses that deal both with the external stressor itself together with the internal conflicted experiences. For example, palpating a breast lump would lead one women to call her physician promptly and go to the appointment (self-assertion), tolerate waiting for the appointment (suppression), and share her distress with her partner (affiliation). Another woman may have previously experienced a traumatic illness in her family of origin in which no one addressed any emotional responses, resulting in a conflict over facing illness and concomitant emotional reactions. She palpates the lump then says, "It's nothing" (denial) or "It's just my hormones" (rationalization). Later, when diagnosis becomes inevitable, she finds the decision making frightful and asks no questions (repression), just telling her doctor, whom she idolizes as very intelligent and an expert, to do what he or she thinks best (idealization). Thus the choice of defenses relies both on the individual stressor and other aspects of the individual's psychodynamics that the stressor activates.

This study demonstrates the importance of defenses in one common form of cancer. Further studies of defenses based on real-life data may help elucidate risk factors for delays in the recognition of symptoms and seeking diagnosis, as well as problems in accepting or responding to treatment. This would further delineate the findings of Beresford and colleagues (2006)—that one's defenses may have a sizable effect on outcome and mortality.

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