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## BRIEF REPORT

# Long-Term Effects of Educational and Peer Discussion Group Interventions on Adjustment to Breast Cancer

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The authors report a 3-year follow-up of the effects of 8-week support group interventions on the quality of life of women with early stage breast cancer. Shortly after diagnosis, women were randomly assigned to 1 of 4 conditions: control, education, peer discussion, and education plus peer discussion. The education group intervention focused on providing information to enhance control over the illness experience, whereas the peer discussion group intervention focused on providing emotional support through the expression of feelings. Consistent with the results that emerged 6 months after the interventions (V. S. Helgeson, S. Cohen, R. Schulz, & J. Yasko, 1999), the authors found that the benefits of the education intervention were maintained over a 3-year period ( $N = 252$ ), although effects dissipated with time. The authors continued to find no benefits of the peer discussion intervention, either alone or in combination with education.

*Key words:* breast cancer, adjustment, support groups

In 1995, Meyer and Mark conducted a meta-analytic review of the literature on psychosocial interventions for people with cancer and concluded that these interventions had a significant impact on quality of life. Around that same time, Helgeson and Cohen (1996) published a narrative review of group support interventions for people with cancer and concluded that there were clear and consistent benefits of education-based group interventions but less evidence for benefits of peer support group interventions. One issue that neither review evaluated was whether the benefits of these interventions are short term or have a lasting impact.

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We extend our appreciation to the patients who enrolled in this study and persisted in the many follow-up interviews that have been conducted over the years. We also are grateful to the facilitators of the support groups, to the many physicians and nurses who referred patients to the study, and to the research staff at Carnegie Mellon who executed this research—Pamela Blair, Laura Bogart, Karen Pealer, and Pamela Snyder.

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The majority of group interventions for people with cancer include only a single posttest, which occurs immediately after the group ends or a few weeks later (Jacobs, Ross, Walker, & Stockdale, 1983; Johnson, 1982; Kriss & Kraemer, 1986; Spiegel, Bloom, & Yalom, 1981; Telch & Telch, 1986). Sometimes a single posttest is used because a wait-list control group receives the treatment after the posttest occurs (Gruber et al., 1993; Manne, Girasek, & Ambrosino, 1994). In other instances, longer term follow-up data cannot be obtained due to patient attrition and death (e.g., Ferlic, Goldman, & Kennedy, 1979). A few studies, including our own, have reported follow-up data collected as long as 6 months after the end of the intervention. Cain, Kohorn, Quinlan, Latimer, and Schwartz (1986) found that the psychological benefits of their individual and group education intervention were maintained for 6 months, and Fawzy et al. (1990) found that the short-term benefits of their psychoeducational group intervention increased by 6 months. However, Cunningham and Tocco (1989) found that the immediate benefits of their education plus peer discussion intervention began to dissipate 2–3 weeks later, and Berglund, Bolund, Gustafsson, and Sjoden (1994) found that the early benefits of their education-based intervention disappeared by 6 and 12 months.

Several years ago, we reported the short-term effects of two support-group interventions on quality of life following a diagnosis of early stage breast cancer. One support intervention focused on education, which was thought to provide informational support, and the other support intervention focused on peer discussion, which was thought to provide emotional support. We tested the

effects of these two kinds of support groups with a 2 (education vs. no education)  $\times$  2 (peer discussion vs. no peer discussion) design. We predicted that women would benefit the most from the receipt of both informational and emotional support and thus that the combined education plus peer discussion intervention would produce the most positive impact on quality of life. Somewhat to our surprise, we found consistent positive benefits of education immediately after and 6 months following the intervention but no benefits of peer discussion (Helgeson, Cohen, Schulz, & Yasko, 1999). In fact, there were some trends toward adverse effects of the peer discussion intervention. One of the unique features of this study is that a large number of groups were run in each of the four conditions (28 groups total).

There were a number of psychological explanations for the benefits of the education intervention. The education intervention increased self-esteem, enhanced body image, instilled control, led to greater discussions with family members, and reduced intrusive thoughts about the illness. The increase in self-esteem and the reduction in intrusive thoughts statistically accounted for the greatest portion of the education intervention's benefits for quality of life.

Women did not benefit from the peer discussion intervention for several reasons. Women in the peer discussion intervention evidenced an increase in negative downward comparisons (i.e., feeling nervous about one's own condition when faced with a worse-off other) and reported more negative interactions with family and friends. Another reason why women may not have benefited from the peer discussion intervention is that it takes time for the therapeutic effects of disclosure and expression of feelings to be realized. One possibility is that peer discussion led to a short-term increase in distress but had a long-term benefit on health. This idea would be consistent with the work of Pennebaker and Beall (1986), who have found that disclosure of feelings through writing has short-term negative consequences but long-term benefits to health.

In this brief report, we examine the implications of the education and peer discussion groups for quality of life over the 3 years that followed the interventions. First, we examine whether the positive effects of a short-term education intervention are maintained for several years. Second, we examine whether positive effects of the peer discussion intervention appear 1 or more years later.

## Method

### *Participants*

Women were eligible to participate in the study if they had been diagnosed with Stage I or Stage II breast cancer and were treated with surgery followed by adjuvant chemotherapy. We enrolled 312 women in the study and randomly assigned them to one of four conditions: education ( $n = 79$ ), peer discussion ( $n = 74$ ), education plus peer discussion ( $n = 82$ ), and control ( $n = 77$ ).

Ages ranged from 27 to 75, with a mean of 48. The majority of patients were Caucasian (93%), 7% were African American, and 1% were Hispanic. Religious background was largely Catholic (49%) or Protestant (44%). There was a wide range of education: 4% less than high school, 30% high school graduate, 28% some college, 24% college graduate, and 14% postgraduate training. Although physicians and nurses referred to the study only patients that they diagnosed as having Stage I or II breast cancer, we found that different offices used different criteria to stage the disease. Using the National Cancer Institute criteria, we later found that 25% of the women in the study had Stage I disease, 69% had Stage II

disease, and 6% had Stage III disease. We opted to retain the women with Stage III disease in the analysis because (a) they believed that they had Stage I or II disease, (b) none of them recurred during the intervention, and (c) they were distributed equally across condition.

Over two thirds (68%) of the women had had lumpectomies rather than mastectomies (32%), which is consistent with the norms for the Pittsburgh area, and the majority were married (67%).

### *Procedure*

Women were recruited from the offices of over 40 oncologists shortly after diagnosis and prior to or early into chemotherapy. They were randomly assigned to one of the four conditions. Seven separate groups of 8–12 women composed each condition. The education intervention consisted of eight weekly meetings, each lasting 45 min. Each meeting had a topic (e.g., nutrition), and an expert (e.g., dietician) provided a standardized lecture followed by a brief question-and-answer period. The intervention was conducted in a classroomlike atmosphere. The emphasis was on providing expert information and enhancing the women's control over the illness experience. Interchanges among patients were inhibited. A master's-level oncology nurse and social worker attended all meetings, either to provide information as the expert or to ensure that the speaker followed the planned outline. The peer discussion intervention consisted of eight weekly meetings, each lasting about 60 min. At each meeting, a master's-level oncology social worker and nurse facilitated a group discussion focused on the expression of feelings, both positive and negative, and self-disclosure. Group members determined the content of the discussion. The facilitators truly "facilitated" the discussion in that they helped to keep it going but did not direct it to any particular issues or provide expert information. The nature of the two interventions was kept as distinct as possible. The combined intervention was a literal combination of all the elements of both, each weekly meeting beginning with the educational lecture followed by an approximately 1-hr group discussion. Each of the facilitators participated in an equal number of groups in each of the three conditions. Thus, facilitator was not confounded with condition.

Women were interviewed in person before the intervention and prior to random assignment to condition (Time 1), which was approximately 3 months after breast cancer diagnosis. Women were interviewed on the phone and completed a mailed questionnaire 1–2 weeks after the intervention (Time 2). The third follow-up occurred 6 months later (Time 3), and the fourth follow-up occurred 6 months after that (Time 4). Time 5 and Time 6 occurred 1 and 2 years later. On average, the Time 6 interview occurred 3.5 years (43 months) after the diagnosis of breast cancer and 40 months after the Time 1 interview.

Health-related quality of life was measured at all waves with the SF-36 Health Survey (SF-36; Ware, Snow, Kosinski, & Gandek, 1993). This instrument has excellent reliability and validity and has been used successfully to evaluate functional status in more than 20,000 depressed, chronically ill, and healthy patients (Wells et al., 1989). It contains eight multi-item scales: general health perceptions, physical functioning, role limitations due to physical problems, bodily pain, social functioning, role limitations due to emotional problems, vitality, and general mental health. The emotional or psychological aspects of functioning are best represented by vitality, mental health, social functioning, and role limitations due to emotional problems. The physical aspects of functioning are best represented by physical functioning, bodily pain, role limitations due to physical problems, and general health perceptions. In this study, principal-components analysis, followed by varimax rotation of the 36 items, revealed eight factors with eigenvalues greater than 1. Items loaded on their respective eight scales. Cronbach's alphas were high for each of the eight scales (above .80) at all times of measurement.

Table 1  
*SF-36 Scores Adjusted for Baseline Across Five Waves of Follow-Up for Each of the Four Conditions*

Measure	Condition				Significance of effects				
	Control ( <i>n</i> = 66)	Peer ( <i>n</i> = 60)	Education ( <i>n</i> = 66)	Combination ( <i>n</i> = 66)	Intervention	Peer vs. C	Educ. vs. C	Comb. vs. C	Peer vs. Educ.
MH	71.48	69.47	73.38	69.33	.09	.30	.30	.24	.04
VT	57.29	55.61	62.72	57.07	.01	.46	.01	.92	.00
SF	84.04	80.06	88.13	83.44	.02	.12	.09	.81	.00
RE	76.98	73.92	81.64	74.91	.23	.47	.24	.61	.06
GH	73.02	73.66	74.13	74.67	.88	.77	.60	.44	.83
BP	75.70	77.40	81.80	74.43	.04	.54	.02	.64	.12
RP	73.88	71.80	78.28	77.09	.38	.62	.27	.43	.12
PF	82.18	83.74	86.30	83.00	.20	.46	.04	.69	.22

Note. SF-36 = SF-36 Health Survey; Peer vs. C = the contrast between the peer group and the control group; Educ. vs. C = the contrast between the education group and the control group; Comb. vs. C = the contrast between the combination group and the control group; Peer vs. Educ. = the contrast between the peer discussion and education interventions; MH = mental health; VT = vitality; SF = social functioning; RE = role limitations due to emotional problems; GH = general health perceptions; BP = bodily pain; RP = role limitations due to physical problems; PF = physical functioning.

## Results

We used the intent-to-treat analysis, which means that all women who agreed to random assignment were retained in the analysis regardless of their level of group attendance. There were no condition differences in meeting attendance. The average attendance was five meetings, and the modal level was seven meetings, which is quite high considering women were undergoing chemotherapy during the intervention. As described in Helgeson et al. (1999), the interventions were distinct. Women who attended the education and combination conditions gained more knowledge as measured by a quiz score than women in the peer discussion and control conditions. There was a trend for women in the combination and peer discussion conditions to feel closer to each other than women in the education condition. Women in the peer discussion condition were more likely than women in either the combination or the education conditions to get together after the group ended. Women in all conditions reported equal satisfaction with the group.

### Overview of the Analysis

We analyzed the longer term effects of the intervention with a repeated-measures analysis of variance. We controlled for baseline adjustment (Time 1) in all the analyses. The repeated measures were the five waves of follow-up: Time 2, Time 3, Time 4, Time 5, and Time 6. To analyze the data, we used the SAS mixed-model procedure (Littell, Milliken, Stroup, & Wolfinger, 1996), for two reasons. First, this procedure uses the maximum number of participants at each individual assessment so that someone who misses one wave is not removed from all of the analyses. Although only 2% (*n* = 6) of the women dropped out of the study, we had varying numbers of women complete the questionnaire at each wave. Second, this procedure allowed us to take into consideration the source of variation due to the individual group of women. Recall that each of the four conditions was composed of seven individual groups. The individual group was considered to be a random effect and did not have an effect on any of the analyses reported below.

For these analyses, we deleted the 54 women who experienced a breast cancer recurrence prior to Time 6. Recurrences were documented by medical records. None of the women had recurrences during the intervention. Of the 54 women who later sustained a recurrence, 23 were still alive by Time 6. These women were equally distributed across the four conditions. We omitted from the analyses women who had recurred because a recurrence is likely to have a profound effect on quality of life. The goal of the intervention was to enhance quality of life among women with a relatively good prognosis. Thus, this analysis was limited to those women who remained disease free by Time 6.

We also departed from the original 2 (education: yes, no) × 2 (peer support: yes, no) design in this follow-up analysis. Because the hypothesized results did not occur, continuing to treat the combination condition as if it resulted in additive effects of education and peer discussion did not make sense. Instead, we evaluated the three interventions separately. Thus, the between-groups factor in the design was intervention, with four levels. This repeated-measures analysis of covariance was followed by planned contrasts of each intervention with the control group. We found several main effects of intervention but no Intervention × Time interactions. Thus, we followed up the intervention main effects with planned contrasts (*t* tests) of each of the three interventions with the control group. We also explicitly compared the education with the peer discussion group. These analyses average across the five waves of follow-up. Along with the *F* and *t* statistics, we report effect sizes as indicated by the product-moment correlation coefficient (*r*). The means for each of the four conditions averaged across the five waves of follow-up adjusted for baseline are shown in Table 1.<sup>1</sup> The sixth column of Table 1 indicates the significance level (*p*) of the intervention effect, the next three columns indicate the significance level of the three contrasts with the control group, and the tenth column compares the education group with the peer discussion group.

<sup>1</sup> The means for each wave of assessment are available from Vicki S. Helgeson upon request.

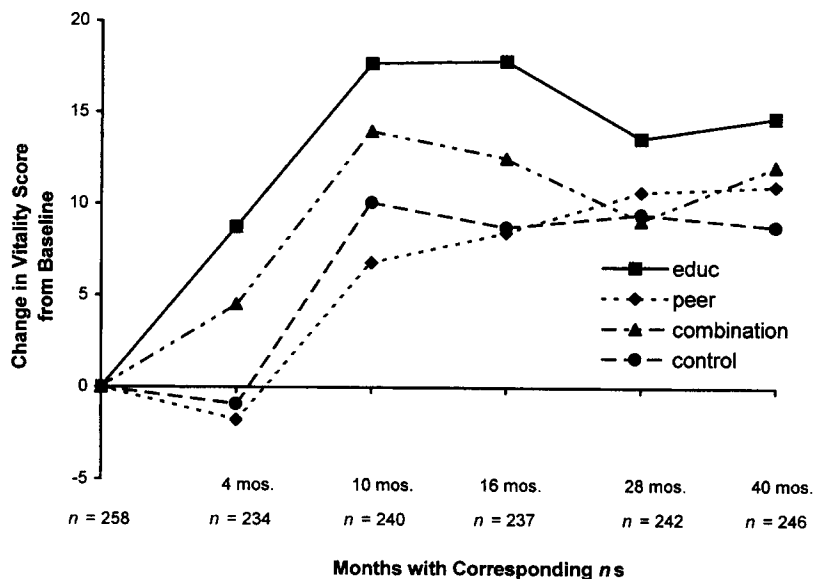


Figure 1. Changes in vitality from baseline over the five waves of follow-up for each of the four conditions. mos. = months; educ = education conditions.

### Effects of Interventions

First, we report the results for the four scales that most strongly represent the mental or emotional aspects of functioning. There was a significant effect of intervention on vitality,  $F(3, 248) = 4.07, p < .01 (r = .22)$ . The contrast of the education group with the control group was significant,  $t(248) = 2.51, p < .05 (r = .16)$ . As shown in Figure 1, the education group sustained greater vitality over time compared with the control group. Figure 1 shows changes in vitality over time for the four conditions. We subtracted baseline scores from follow-up scores to show changes over time in the figures. Plotting change scores made it easier to compare the four conditions to one another. None of the other contrasts were significant. There was a significant effect of intervention on social functioning,  $F(3, 248) = 3.52, p < .05 (r = .20)$ . Contrasts revealed a marginally significant difference between the education group and the control group over time,  $t(248) = 1.69, p = .09 (r = .11)$ . Similar to the findings shown in Figure 1, the education group sustained higher social functioning over the follow-up period compared with the control group. Again, the other two contrasts were not significant. There was a marginal effect of intervention on mental health,  $F(3, 248) = 2.17, p = .09 (r = .16)$ , but none of the contrasts were significant. The pattern of results for mental health are consistent with the other findings, showing higher levels of mental health for the education group compared with the control group, but this difference was not significant. There were no intervention effects on role limitations due to emotional difficulties and no interactions of intervention with time on any of these four scales, indicating that the effects that emerged were relatively consistent across the follow-up periods.

Among the scales that represent the more physical aspects of functioning, there was a single main effect of intervention on bodily pain,  $F(3, 248) = 2.81, p < .05 (r = .18)$ . The only contrast

that was significant was between the education group and the control group,  $t(248) = 2.26, p < .05 (r = .14)$ . Similar to the findings shown in Figure 1, the education group improved in terms of bodily pain more readily than the control group, and this difference was sustained throughout the follow-up period. There were no intervention effects on role limitations due to physical difficulties, general health perceptions, or physical functioning. Although there was no main effect of intervention on physical functioning, as shown in Table 1, the contrast between the education and the control group was significant,  $t(1, 248) = 2.04, p < .05 (r = .13)$ . The education group sustained greater improvements in physical functioning compared with the control group. Again, there were no Intervention  $\times$  Time interactions on any of these scales.

Because we were comparing the effects of two very different kinds of interventions on quality of life, one education based and one discussion based, we thought it would be informative to report the explicit contrast between those two interventions. We report these contrasts in the last column of Table 1. On each of the indicators of mental functioning, the education group fared better than the peer discussion group; the contrasts were statistically significant in three of the four cases. There were no differences in indices of physical functioning.

There were main effects of time on all of the scales except bodily pain (all  $ps < .001$ ), showing improvements over time. Effect sizes were as follows: mental health,  $r = .16$ ; vitality,  $r = .27$ ; social functioning,  $r = .27$ ; role-emotional,  $r = .21$ ; general health,  $r = .17$ ; role-physical,  $r = .43$ ; physical functioning,  $r = .26$ . Figure 2 compares the SF-36 scale scores of women in the four conditions with norms for a population of U.S. women (Ware et al., 1993), and shows that by Time 6 (roughly 3.5 years after diagnosis), the women in this study had returned to normal levels of mental and physical functioning. In fact, by Time 6, the women in this study had actually exceeded the normative data.

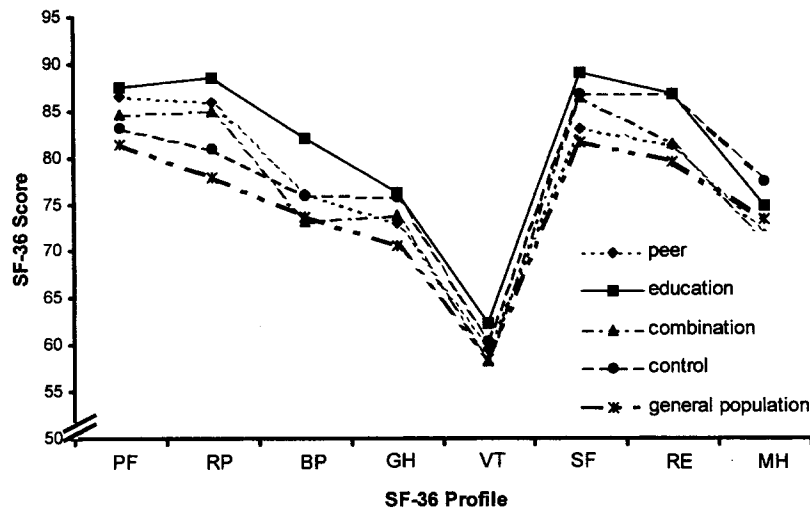


Figure 2. Scores of study participants at Time 6 (approximately 3.5 years after diagnosis) compared with norms for the general population of women. PF = physical functioning; RP = role limitations due to physical problems; BP = bodily pain; GH = general health perceptions; VT = vitality; SF = social functioning; RE = role limitations due to emotional problems; MH = mental health; SF-36 = SF-36 Health Survey.

### Discussion

These results show that some of the benefits of our education intervention remained over a 3-year period. It is somewhat surprising that such a short-term intervention (8 weeks) could have any lasting effects. Women who were randomly assigned to the education-only group retained higher levels of vitality, lower levels of bodily pain, and higher levels of physical functioning compared with women who were randomly assigned to the control group. Vitality and physical functioning may be closely related in these women. Vitality represents having energy and a lack of fatigue, whereas physical functioning represents the extent to which one's health limits physical activities. It may be that the women in the educational intervention received information—for example, information related to nutrition and exercise—that they were able to use (and continue to use) to perform day-to-day activities more easily. It is important to note that these condition effects did not interact with time, indicating that the early benefits of the educational intervention persisted over time on some indices of quality of life. One wonders if these women's higher levels of psychological and physical functioning might have other positive benefits that we did not assess—for example, work productivity. There may have been economic benefits in terms of reduced health care costs. These women may have had less contact with the medical community. These ideas are speculative.

It is not a surprise that some of the benefits of education dissipated with time, especially with respect to role functioning. The two role-functioning indices represent the extent to which emotional problems (i.e., distress) and physical problems interfered with daily activities. Many of the initial deficits in role functioning are likely to have resulted from treatment. These women, who completed chemotherapy between 2 and 3 years ago, are now disease free, and their role functioning, regardless of intervention condition, has returned to normal 3 years later. It appears that the education intervention may have led to a quicker

resumption of role functioning, because there were significant effects of the intervention on short-term follow-up (Helgeson et al., 1999), but in the long term all the women's role functioning returned to normal. The women were moderately impaired at the start of the study, scoring 10–15 points below the mental functioning means shown in Figure 2 and scoring over 20 points below some of the physical functioning means shown in Figure 2. Baseline physical functioning scores lay between patients with mild (e.g., hypertension) versus severe (congestive heart failure) medical conditions, and mental functioning scores lay between patients with mild medical versus psychiatric conditions (Ware et al., 1993). For women who have survived breast cancer, the passage of time without the event of a recurrence has a consistent positive effect on all aspects of their quality of life, such that they return to normal.

Over a 3-year period, we still have not detected any benefits of the peer discussion intervention. Importantly, the short-term negative effect of peer discussion on vitality (Helgeson et al., 1999) has disappeared. Over the 3 years studied, women randomly assigned to the peer discussion are not significantly different from the control group. We have discussed the reasons for the null effects of the peer discussion elsewhere (Helgeson et al., 1999; Helgeson, Cohen, Schulz, & Yasko, 2001) but briefly make a couple of important points here. One possibility is that the provision of emotional support by peers requires a much longer time period than 8 weeks for benefits to be realized. Another possibility is that the mere expression of feelings is not powerful enough to affect psychological or physical functioning. Our peer discussion group was designed to resemble community support groups. Although we adopted some therapeutic principles (e.g., helper-therapy principle, expression of feelings, confrontation of problems), we did not conduct group therapy. Facilitators did not in any way intervene with patients at a level that a therapist would. In other words, effective peer support groups may require a greater

level of intensity either in terms of length or content. For example, Spiegel, Bloom, Kraemer, and Gottheil's (1989) support intervention that predicted survival from metastatic breast cancer lasted over 1 year and was defined as group therapy. Another feature of our study design that distinguishes it from Spiegel et al.'s study is that the women in our study did not have metastatic disease. It is possible that people with different stages of illness require different kinds of support. People who have a more controllable illness or a less severe illness might benefit from a problem-focused intervention that focuses on providing information and enhancing control, whereas people who have a less controllable illness or people who are at the later stages of a disease might benefit from an emotion-focused intervention that focuses on accommodating to the disease.

One of the most perplexing aspects of these data is the results from the combined intervention. The results for this intervention, statistically speaking, more closely resemble the peer discussion condition than the education condition. Why didn't education have benefits when it was supplemented by peer discussion? Our early report showed clear and consistent benefits of education and some hints of adverse effects of peer discussion. We speculated that the positive impact of education and negative impact of peer discussion may have cancelled each other out in the combined intervention. Now that there are simply no effects of peer discussion, it is more difficult to understand why the benefits of education did not emerge. We can only conclude that the combination condition is really a misnomer, that the group did not represent a literal combination of two different kinds of support and that the two different kinds of support may have interacted synergistically. It is unclear why peer discussion detracted from education.

In summary, these findings support our earlier claims that a brief education intervention targeted toward the early adjustment period produces measurable effects on quality of life among women with early stage breast cancer. Some of these effects are long lasting—persisting for over 3 years. All of these effects are small, however. We also do not know the extent to which these findings would generalize to women of other ethnic backgrounds, women who have lower levels of education, and women who have advanced disease.

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