COMPARISONS: PROFESSIONALLY-DIRECTED AND SELF-DIRECTED INTERNET GROUPS FOR WOMEN WITH BREAST CANCER

MORTON A. LIEBERMAN, PH.D.
University of California, San Francisco

MITCH GOLANT, PH.D.
The Wellness Community

ANDREW WINZELBERG, PH.D.
Stanford University

FIONA McTAVISH, MA

DAVID H. GUSTAFSON, PH.D.
University of Wisconsin

ABSTRACT

Psychological interventions for women coping with breast cancer (BC) have embraced the idea that the open expression of negative emotions is beneficial. This study asks if there is a difference in the amount of negative emotions expressed by members of professional-led compared to self-directed on-line support groups. To answer this question we examined the support group messages written by participants of 11 Internet delivered BC support groups. Seven were facilitated by professionals and four were self-directed. We used two text analysis software programs, LWIC and PCAD, to categorize the inter-action. Groups conducted by professionals expressed significantly more nega-tive emotions, anxiety, hostility, and depression and fewer positive emotions than self-directed groups. These differences suggest what leaders encourage, reinforce, model, and may influence members' behaviors. Professionals encour-age the further expression of such emotions, whereas lay leaders more often respond with support and reassurance to members who express painful emotions.

INTRODUCTION

Support groups, either self-directed (self-help) or those led by professionals, have become embedded in our society as an important part of the health care system.

Kessler et al. (1997) reported the lifetime incidence of participation (in 1997) was 25 million, with a one-year incidence rate of 7.1%. While traditional support groups are a very common and effective form of help, there are limitations to these groups, the most prominent of which is needing to be physically at the group (Weinberg, Schmale, Ulken, & Wessel, 1995). If one lives in an isolated area, or is unable to commute due to illness, support groups becomes unrealistic. Support and self-help groups have long been a staple for providing help to women with breast cancer. The vast majority of such groups use professionals of diverse discipline to initiate the group and provide leadership of the ongoing interaction in the meetings. Goodwin et al. (2003), reviewing 20 support group studies, found that the interventions were effective overall in improving measures of quality of life, including reduction in depression and pain and improved social functioning.

More recently, the spread of the Internet has provided an alternative source for such support. Access to computers and the Internet have dramatically increased in every demographic segment of the American population since the mid-1990s. A recent Pew Foundation report (Fox, 2000) on Internet use found that 104 million American adults had Internet access at the end of 2000. A significant number of Internet users are utilizing the Internet to access health information. A Pew Foundation report released July 16, 2003 found that by December 2002, 54% of Internet users (63 million Americans) had visited a Website that provides health-related information or support. Nine percent of health seekers have participated in an Internet-delivered support group.

Internet-delivered support groups are either led by a professional or by members of the group (self-directed). On-line breast cancer support groups are widely available and frequently used by women coping with a diagnosis of breast cancer (BC). Recent research on effectiveness suggests that these groups help women reduce their distress levels and increase their social support and quality of life (Gustafson et al., 1998; Gustafson et al., 2001; Lieberman et al, 2003; McTavish et al., 1995; Shaw, 2001; Winzelberg et al., 2003). Aside by the reports from the Chess program (Gustafson et al., 2001), all the evidence has been for professionally conducted support groups. Despite the absence of effectiveness studies, the bulk of the women served on-line are in self-directed groups, not services organized and led by health professionals.

This study examines some differences between professionally and self-directed on-line groups. Our question is refined by using the best developed and most studied conceptual framework on traditional professionally led breast cancer support groups, Emotional-Expressiveness. The central question of this study asks if there is a difference in the amount of negative emotions expressed by members of professionally-led and self-directed breast cancer support groups.

Developers of psychological interventions for women coping with breast cancer have embraced the idea that the open expression of emotions is beneficial (Fawzy, 1995; Spiegel et al., 1989; Spiegel & Yalom, 1978). Emotional expression of negative emotions has been found to reduce cancer patients' social isolation

whereas emotional suppression and avoidance are associated with poorer coping (Greer, 1991). Those who express strong emotions have been found to cope better with their cancer diagnosis (Derogatis, Abeloff, & Melisaratos, 1979; Greer, 1979, 1991; Pettingale, 1985; Spiegel, 1999; Temoshok et al., 1985). For example, Stanton (2002) found that women high on emotional expression about their BC treatment were less distressed, improved self-perceived health status, and decreased medical utilization. At the same time, studies have linked problems in the expression of emotion with greater incidence of cancer and a poorer prognosis with the disease (see Gross, 1989; McKenna et al., 1999, Spiegel & Kato, 1996).

The idea that repressed negative emotions are related to psychological and physical problems dates back to Freud (1917/1977). Since then many have proposed that expressing (e.g., verbalizing) or working through emotions can be beneficial (Daldrup et al, 1994; Frijda, 1994; Horowitz, 1976; Pelletier, 1985; Perls, Hefferline, & Goodman, 1951; Reich, 1949; Rogers, 1951). Investigators have linked the repression, suppression, or denial of negative emotions (anger in particular) with the development and progression of cancer (Gross, 1989; Kneier & Temoshok, 1984; McKenna, et al., 1999). The implication from the literature is that the expression of negative emotions is at least a treatment mediator if not a sufficient treatment in itself, although few studies have examined the full effects of the expression of negative emotions in randomized trials of psychological interventions with women with breast cancer.

The expression of negative emotions need not be achieved in psychotherapeutic interactions. A number of studies have evaluated the benefits of expressing emotions in expressive writing. Smyth, in a meta-analysis of 13 written emotional expression studies, found an average effect size 0.47 indicating 23% improvement of physical health, psychological and general well-being in experimental groups compared to controls. The results of studies evaluating expressive writing with women with breast cancer are limited. Stanton et al. (2002) found that women who wrote about emotional aspects of their cancer had significantly fewer medical appointments for cancer-related problems than did women in the fact-writing condition at three month follow-up. No significant main effects were found for the three writing conditions on any of the psychological measures.

METHODS

We will examine the support group messages written by participants of 11 Internet-delivered breast cancer support groups. Seven of the groups were facilitated by professionals and four were self-directed. All member messages posted to Internet groups are automatically captured without the need for transcription. With all the messages coded in text it is possible for us to evaluate the expression of emotion quantitatively using computer-assisted text-analysis. Text-analysis

programs have become widely used to analyze the content of written communication and to make predictions regarding psychological adaptation or other measures of health. A complete discussion of computer assisted text analysis can be found in a review by Roberts and Popping (1993).

Participants

Participants were members of 11 Internet-delivered breast cancer support groups. Four were Wellness Community groups (TWC), three were Bosom Buddies (BB) groups, one was a CHESS group (Comprehensive Health Enhancement Support System) group, and three were breast cancer bulletin boards. The TWC and BB groups had closed group membership. The TWC group was a professionally moderated synchronous chatroom. BB was a professionally moderated asynchronous newsgroup-based support. CHESS was a self-directed asynchronous group embedded in their program. The last category consisted of three open-participation self-directed asynchronous support groups (Yahoo Club Breast Cancer Forum, IVillage Breast Cancer Message Board, and WebMD Breast Cancer). Table 1 shows the demographic characteristics of the samples.

The groups we studied differed in the frequency of postings as well as the length of each individual message. Table 2 shows this information.

Table 1. Demographics (Percent)

Age	TWC Chat	BB	CHESS	Newsgroups
Education				
Less than high school	0	0	8	0
High school	10	8	17	14
College	70	50	56	43
Grad/prof	20	42	17	43
Marital				
Married	76	84	70	81
Single	6	6	30	5
Divorced/Separated	20	6	0	14
Widowed	12	3	0	0
Ethnicity				
Caucasian	98	86	72	100
African-American	0	3	25	0
Hispanic	0	8	1	0
Asian	2	3	1	0
Native American Indian	0	0	1	0

Table 2. Size and Number of Messages

Group	TWC	BB	CHESS	Newsgroups
Number of message per woman	879	34	202	16
Message size— Number words	10.1	160	61	66

PROFESSIONAL LEADERS

The professionally-led groups contained a total of 68 participants, 32 participated in one of four chat groups and 36 in one of three BB asynchronous groups.

TWC Chat

The four TWC chat groups met for 1.5 hours each week for 20 weeks. Members (facilitators were omitted from this count) posted 28,154 messages that contained 248,996 words. Licensed psychotherapists facilitate all support groups. The discussions ranged from participants' difficulties in managing their illness and problems with their friendships and marriages, to feelings of work-related discrimination and isolation. TWC is a national non-profit organization whose mission is to help people with cancer and their families enhance their health and well-being through participation in a professional program of emotional support and education. Participants in the four chat groups studied in this article were found, in a previous study (Lieberman et al., 2003), to show statistically significant positive outcomes.

Bosom Buddies, Internet Bulletin Board with Professional Leaders

Thirty-six women coping with a diagnosis of primary breast cancer participated in three Bosom Buddies Internet delivered support groups. Groups were comprised respectively of 10, 11, and 15 members. Participants posted 1,221 messages that contained 183,566 words. Bosom Buddies is a 12-week, structured, asynchronous group facilitated by a mental health professional (Winzelberg et al., 2003). The program introduced a new topic related to breast cancer each week. The themes for the weekly sessions and the theoretical underpinnings of the intervention are adapted from Spiegel's supportive-expressive group therapy for cancer patients (Classen et al., 1993; Spiegel et al., 2000) and Kreshka's text in her workbook-journal on coping with breast cancer (Kreshka & Graddy, 1997). Bosom Buddies encourages participants to openly and honestly express their

thoughts and emotions, receive and offer support, and learn new ways to cope with adjusting to having cancer.

SELF-DIRECTED GROUPS

The self-directed groups contained a total of 542 participants. Thirty-six participated in the CHESS group and 502 in one of three Bulletin Boards asynchronous groups. A total of 997,049 words were written by group members.

Breast Cancer Self-Directed Bulletin Boards

We studied women's posted messages to three active breast cancer newsgroups: Yahoo Club Breast Cancer Forum; IVillage Breast Cancer Message Board; and WebMD Breast Cancer Open Discussion. The bulletin boards do not provide detailed specific guidelines to members about the content of the discussions. Rather, a general orientation is communicated; for example, WebMD offers the following; "our group offers you the opportunity to read what other women are talking about, to share your opinion and ask your questions."

A Web site was created where members of the three groups could complete a series of measures including demographic information. Their posting were anonymous, their group acronym was used. Thirty women completed the online questionnaires during the month-long study. Since 506 women posted 8,264 messages comprised of 553,197 words during the month of data collection, the sample of 30 represents a small fraction of posters. Information they provided cannot be evaluated of how reasonably they mirror the membership at that point in time.

CHESS Self-Directed Support Groups

One 26-week CHESS group provides the data for this study. The group had 36 participants who posted 7,281 messages for a total 443,862 words during the 26 weeks. CHESS is designed to provide health-related information, emotional support, and decision-making guidance to patients with various illnesses. CHESS support groups are unmoderated and unstructured. CHESS integrates 11 services to provide breast cancer information, decision-making tools, and support services: Information Services; Instant Library; Consumer Guide; Referral Directory; Ask an Expert; Personal Stories; Decision Services; Health Charts; Decision Aid; Action Plan; and Support Services. The support service is in a bulletin board format for all the women registered in the 26-week trial. A member of the CHESS staff provides technical assistance if needed, but does not serve as the group's "therapist."

PROCEDURES: SCORING EMOTIONAL EXPRESSIONS

Scoring Negative Emotions

We used two text analysis software programs—Linguistic Inquiry and Word Count (LIWC) software (Pennebaker et al., 1997) and Psychiatric Content Analysis and Diagnosis (PCAD 2000) software—to categorize the support group postings into relevant psychological categories. Messages from each of the Internet-delivered support groups were edited to correct spelling errors.

The PCAD 2000 is a software program that performs content analysis of input text on scales developed by Louis A. Gottschalk and Goldine Gleser. The Gottschalk-Gleser Content Analysis Method for measuring the magnitude of various psychological states and traits from the content analysis of verbal behavior has been successfully applied to many different neuropsychiatric dimensions. Extensive empirical research (Gottschalk, 2000; Gottschalk & Bechtel, 1989) has established the validity and reliability of scales measuring a range of emotional and psychological states including anxiety, hostility (including four subscales), social alienation-personal disorganization, cognitive impairment, hope, depression (including seven subscales), human relations, achievement striving, dependency striving, and health/sickness.

Although the central question we are asking is the frequency of negative emotions, as a check on the comparisons between professional and non-professional groups overall emotional expression and positive emotions were scored. To score these we turned to the LIWC which was used to identify the percentage of positive emotions in support group messages. LWIC was developed by Pennebaker and his colleagues (Pennebaker, 1997; Pennebaker, Mayne, & Francis, 1997). The dictionary provides a method for coding the various emotional, cognitive, structural, and process components present in written speech. The dictionary includes 25 categories tapping psychological constructs (e.g., affect, cognition) LIWC has an internal dictionary of 2,290 words and word stems that can recognize an average of 80% of words in normal texts. The output of the text analysis program is the percentage of recognized words belonging to each category. Many words belong to more than one of the 64 pre-defined categories. Therefore, the cumulative percentages of words detected in several categories can exceed the percentage of detected words. The "Positive Emotions" dictionary used in this study includes 206 words. This linguistic analysis has been used successfully identify differences in writers in a variety of studies (Davison & Pennebaker, 1997).

Although LIWC calculates the percentage of negative emotions as well, we have not found that the data derived from this method correlated with PCAD negative emotions. Similar scales showed that the PCAD's four anger-hostility scales correlation with the LWIC anger dimension were NS, ranging from a low $r = -.09$ to a high of .21. For the seven PCAD depression scales, again all

correlations were NS, ranging from a low of –.10 to a high of .25. For anxiety similar results were obtained, the correlations ranged from a low of $r = –.22$ to a high of .16. In addition, we correlated individual scores on both the PCAD and LIWC depression scales for the first five meetings of the TWC Chat groups with their CESD pre-group scores (Use of Text Analysis to Study Support Groups, unpublished paper, 2002). The PCAD depression scales proved to be significantly associated with their CESD scores $r = .42$, LIWC, $r = .18$. These observations suggested that the PCAD system, which relies on a scoring of phrases rather than single word counts of the LIWC, was the analytic tool of choice.

RESULTS

The unit of analysis in all samples was a week's interactions/postings. Consequently, all messages posted within a week time period were compiled into one file. Scores are the percentage of words that fall into the various categories. Differences in the number of positive and negative emotions discussed were evaluated using multivariate (professional vs. lay led groups) analysis of variance. For each analysis, Bonferroni corrections were employed to reduce the risk of a type I error.

Three multivariate analysis of variance were completed on the negative emotions Anxiety, Hostility, and Depression. Table 3 show the results of these analysis. All three analyses were highly significant (Anxiety: $F = 7.1$, DF = 6,166, $p = .00$; Hostility: $F = 20.5$, DF = 5,167, $p = .00$; Depression: $F = 19.7$, DF = 7,165, $p = .00$). On the anxiety scales, members in the professionally-led groups showed significantly more frequent expressions of death, mutilation guilt, and diffuse anxiety. On the Hostility scales, participants expressed more covert and ambivalent hostility than those in self-led groups. On the Depression scales, members of professionally-led groups expressed more hopelessness, psychomotor retardation, somatic separation, and hostile depression. Those in self-directed groups exhibited more self-effacing expression. The LIWC scores for total emotional words and positive emotional words were compared using independent t-tests. Table 3 also shows the findings of this analysis ($t = 4.5$, $p = .00$ for positive emotions and $t = 2.9$, $p = .01$ for total emotions).

The following sections show excerpts of leader interventions of when the issue is feelings of anger, anxiety, or sadness expressed by the participants.[1]

Bosom Buddies (Professional Leader)

LEADER: I am stunned by all that you have been through. It sounds so painful, frightening, and unfair. Thank you for sharing it with us. That you would have

---

[1] We chose the two asynchronous groups showing the largest differences in rate of negative emotional expression. They were Bosom Buddies and the Newsgroups.

difficult emotions in response to all of this is so completely understandable. I hope you will find this group to be a good outlet for you to both share your feelings and to get the support you need.

LEADER: I appreciate your honesty about the effect this illness has had on you. I'm wondering if others can relate to your feelings of fear and anger and that your body has betrayed you. . . .

LEADER: Good for you for allowing yourself to both feel and express your emotions. And what a wise friend you have. I really like your metaphor for how you want to experience your emotions. Please let us know what you find in those bubbles.

LEADER: This is such an interesting interchange. I want to applaud both of you for saying what you feel. C you are really listening to what people are saying and responding from the heart.

LEADER You are allowing yourself to express some of the more difficult feelings you have.

LEADER: I encourage you to continue doing that. And yes, I do hear that perhaps you didn't mean what you were saying to be taken completely literally. What I think is good is that you gave yourself the freedom to vent. And the good news was that you discovered that someone was really listening to you! You are both an asset to this group!

LEADER: I don't blame you for having a "pity party"; you must feel surrounded by cancer. I think it is so important to let those feelings out otherwise they sit there and eat away at you. This group is a great place for you to do that and I encourage you to use the group as a place to vent, share your feelings, and get support. I also heartily endorse K's and C's suggestions!

Newsgroups Self-Directed (Yahoo Club Breast Cancer Forum, IVillage Breast Cancer Message Board, and WebMD Breast Cancer Open Discussion)

LEADER: Your feeling of being scared is absolutely normal. We've all experienced that. But, you must hold off any unnecessary stress until these additional tests are done. We will walk this bridge together. We're here for you to express your fears, angers, vents, or anything else you need to discuss.

LEADER: Stay with us as we all fight this disease. We are more than delighted that you have chosen to join us.

LEADER: So post us with your concerns, venting, chit-chat, fears, frustrations, or whatever. You'll always find someone here to listen and reply. Scared is a word you will hear on this board a lot. We all live with it every minute of every day. If you had already been diagnosed with breast cancer, I would recommend asking your doctor.

Table 3. Comparison of Expresed Emotions in Professional
vs. Self-Directed Internet Support Groups

PCAD	Mean	Std. error	F	Sig.
Death				
Professional	.79	.02	35.4	.000
Self-directed	.46	.04		
Mutilation				
Professional	.86	.02	12.4	.001
Self-directed	.71	.03		
Separation				
Professional	.77	.02	2.7	.10
Self-directed	.70	.03		
Guilt				
Professional	.77	.02	29.0	.000
Self-directed	.49	.04		
Shame				
Professional	.98	.03	6.5	.01
Self-directed	.82	.05		
Diffuse anxiety				
Professional	.87	.05	12.9	.000
Self-directed	.65	.08		
Hostility out				
Professional	.93	.53	5.3	.04
Self-directed	.88	.02		
Hostility covert				
Professional	.62	.01	2.6	.02
Self-directed	.60	.00		
Hostility inward				
Professional	1.02	.24	26.9	.000
Self-directed	.82	.01		
Hostility ambivalent				
Professional	.75	.02	19.9	.000
Self-directed	.69	.01		
Hopeless				
Professional	.61	.12	10.1	.002
Self-directed	.55	.01		

Table 3. (Cont'd.)

PCAD	Mean	Std. error	F	Sig.
Self-accusation				
Professional	1.4	.49	4.1	.05
Self-directed	1.2	.00		
Psychomotor retardation				
Professional	.34	.00	63.4	.000
Self-directed	.26	.01		
Somatic				
Professional	.84	.30	36.7	.000
Self-directed	.55	.02		
Depression death				
Professional	1.1	.31	10.3	.002
Self-directed	.93	.00		
Despair				
Professional	.76	.23	2.6	.11
Self-directed	.70	.01		
Depression hostility				
Professional	1.1	.11	.2	.70
Self-directed	1.1	.02		
LIWC				
LIWC-positive emotions				
Professional	3.2	.11	4.5	.000
Self-directed	4.0	.15		
LIWC Total emotions				
Professional	4.6	.15	2.9	.005
Self-directed	5.2	.18		

LEADER: So sorry to hear you are feeling blue. I hope things get better for you. I can relate to this as I think we all have times like this. Hang in there and if you need me you have my e-mail address.

LEADER: Isn't it funny how quickly we connect with each other here? We all have a common bond to which others just can't relate! Until a life-threatening illness touches your body, you just can't begin to relate to what someone else is feeling. I feel the same way about each and every woman on these boards. They're the warmest, most loving women I've ever met!

LEADER: I'm so glad this is behind you now! I'm sure you are too! Unfortunately, the waiting, to put it simply, SUCKS! But at least you're past this particular hurdle. You've already had so many! Please let us know when you get the results! I'll be watching for a post Tuesday!

LEADER: Please try not to be too terribly scared. I know it's easy to say, but fear is a horrible thing. I was diagnosed in July of this year and was scared too. You are at Stage 1, so you caught your cancer very early. You can beat the snot out of this thing! We are here for you anytime you want to vent. We've felt everything you're feeling right now. Kick this cancer, sweetie! You can do it. Have faith! We love you!

DISCUSSION

Groups conducted by professional leaders were found to express significantly more negative emotions related to anxiety, hostility, and depression and fewer positive emotions than self-directed groups led by lay leaders. The differences found between professional- and lay-led groups suggests that the leader's postings (i.e., what they encourage, reinforce, model, etc.) may influence members' behavior in the group. The illustrations provided of the difference in how professional and non-professional leaders respond to members when they disclose negative feelings suggest that one source of the differences lies with how leaders respond to members' self-disclosures of painful emotions. The professional leaders appear to encourage the further expression of such emotions, perhaps believing that such expressions are therapeutic, whereas lay leaders more often respond with support and reassurance to members who express painful emotions.

The findings support the idea that groups led by professional leaders, imbedded in a theory that emphasizes the expression of negative emotions, do differ from self-directed groups that do not highlight such emotions. This is simply not a product of emotional expression itself. The self-directed groups were significantly more emotionally expressive than professionally-led groups. Our findings leave many questions unanswered. There is no direct interaction evidence from our study, nor from the research reviewed at the onset of this article, that BC patients that express negative emotions in the support group will show more benefit. Rather, the studies of expressed emotions provide strong indirect evidence, pre-post assessments of expressiveness. Future studies should examine the relationship between the expression of positive and negative emotions and changes in psychological distress.

As indicated in the introduction, studies of effectiveness on three of the four groups examined in this article have reported statistically significant changes associated with group participation. In the TWC chat study we found (Lieberman et al., 2003) significantly reduced depression, reactions to pain, and a trend toward increases on The Posttraumatic Growth Inventory in two

subscales: new possibilities and spirituality. Post-group interview indicated that approximately 67% of patients found the group to be beneficial. The Bosom Buddies studied reported that (Winzelberg et al., 2003), compared to the a wait list control group, the immediate intervention group reported significantly reduced depression, cancer related trauma, and perceived stress scores. Participants perceived a variety of benefits and high satisfaction from their participation in the intervention. CHESS (Gustafson et al., 2001) tested three areas of effectiveness: participation in their own health care; social support; and a standard measure of cancer Quality of Life (FACT B) that included four dimensions—social/family, emotional, and functional well being as well as concerns about BC. They found significant changes for the first two areas, but none for the third. In an ongoing study (Lieberman & Goldstein, 2005) of pre-post (after six months of participation) outcome measures of self-directed BC bulletin boards found that 42 participants improved on measures of depression, quality of life as measured by the FACT-B. They also showed improved New Possibilities, Strength, and Appreciation of Life, as measured by the PTGI.

The fact that women in professionally-directed groups clearly express more negative emotions (a central cornerstone of BC support group mechanism of change) while self-directed groups are less likely to emphasize such expression, does not directly lead to a conclusion of which type is more effective. The summary of outcomes described above suggests that both are effective. Without a direct comparison, relative effectiveness cannot be ascertained. It may be that professionally- and self-directed groups utilize different pathways to effectiveness. On the other hand, the hypothesis that the expression of negative emotions is a critical element in enhancing benefit for WBC in support groups may be a flawed hypothesis.

Our study raises many questions on the particulars. For example, would we expect that successful therapy would show an incremental linear relationship over time as they participate in the group, or, on the other hand, a curvilinear one with negative emotions initially increasing over time and then with "resolution" toward the end of the group with a decrease in such expressions? Future studies need to answer these and other questions about the patterns of expression that unfold over time.

Frankly, many of the implications that we have discussed represent speculation. Several methodological limitations will need to be addressed by further research before the results of this study can be generalized.

First, the tools used to analyze the discourse between group members are crude measures. There are legitimate concerns about the ability of computer programs to analyze linguistic information in complex communications. For instance, the LIWC computer program does not take context into account, which is important for interpreting the meaning of the written communication. Instead it simply counts words belonging to certain categories.

Second, it is unknown if the participant characteristics were equivalent between groups. Members of the professionally-led groups and the CHESS group volunteered to participate in a controlled study. Participants in the other groups did not make the same choice.

Third, it is unknown how much participant expectations about what they should write in the support group influenced their actual discourse as compared to the influence of the group moderator. For example, members of the Bosom Buddies intervention where instructed to express their feelings in the instruction content that guided the intervention. This instruction was repeated on a weekly basis. Without a thorough comparison of professional and lay leaders messages, it is unclear what differences existed between the two types of leaders. In addition, identifying the lay leader can be difficult as leadership roles change regularly.

Fourth, the length of the groups varied. Bosom Buddies, TWC, and CHESS groups were closed groups of pre-determined length whereas the other lay-led groups were open ended with open enrollment. The nature of the relationship (e.g., trust) between group members likely varied as a result of the commitment between members.

Finally, the group format and structure was different among all groups studied. Each asynchronous group used a different interface and newsgroup system. The TWC professionally-led group was synchronous which may have created different member demand characteristics. The average number of words per participant communication was significantly shorter in the self-directed asynchronous groups (66 and 61 vs. 150). And within the professionally-led groups, in the synchronous chat rooms the average message was a little over 10 words compared to 150 in Bosom Buddies. The latter difference is primarily due to the differences in an interactive setting compared to the contemplative not time bound posting in an asynchronous group. To demonstrate this difference, we compared the average message length in TWC face-to-face groups for breast cancer with the Internet chat groups. The mean (using identical meeting times, early, middle, and late for both setting; F2F Mn.= 20.5 (4.8), Chat, 16.6 (1.5), a t-test proved to not be significant ($t = 1.9$, $df = 10$). These limitations need to be addressed future studies.

REFERENCES

Classen, C., Diamond, S., Soleman, A., Fobair, P., Spira, J., & Spiegel, D. (1993). *Brief supportive-expressive group therapy for women with primary breast cancer: A treatment manual.* Stanford, CA: Stanford University School of Medicine.

Daldrup, R. J., Beutler, L. E., Engle, D., & Greenberg, L. S. (1988). *Focused expressive psychotherapy: Freeing the overcontrolled patient.* New York: Guilford.

Davison, K. P., & Pennebaker, J. W. (1997). Virtual narratives: Illness representations in online support groups. In *Perceptions of health and illness: Current research and applications* (pp. 463-486).

Derogatis, L. R., Abeloff, M. D., & Melisaratos, N. (1979). Psychological coping mechanisms and survival time in metastatic breast cancer. *Journal of the American Medical Association, 242*(14), 1504-1508.

Ekman & Lieber, M. A. (1992). Unpublished Emotional Dictionary.

Fawzy, F. I., Fawzy, N. W., Arndt, L. A., & Pasnau, R. O. (1995). Critical review of psychosocial interventions in cancer care. *Archives of General Psychiatry, 52*(2), 100-113.

Fox, S. (2000, November). *Pew Internet & American Life Project* [on-line]. Available at http://www.pewinternet.org.

Fox, S. (2004). Preliminary psychometric testing of the Fox Simple Quality-of-Life Scale. *Journal of Neuroscience Nursing, 36*(3): 157-166. Erratum in: *Journal of Neuroscience Nursing, 35*(5): 288, 2004.

Freud, A. (1966). The ego and the mechanisms of defense. New York: International Universities Press, Inc.

Frijda, N. H. (1986). *The emotions.* Cambridge, England: Cambridge University Press.

Goodwin, P. J., Leszcz, M., Koopmana, J., Arnold, A., Doll, R., Chochinov, H., Nsvarro, M., Butler, K., & Pritchard, K. I. (1996). Randomized trial of group psychosocial support in metastatic breast cancer; the BEST (Breast-Expressive Supportive Therapy) study. *Cancer Treatment, 22*(Suppl A), 91-96.

Gottschalk, L. A. (2000). The application of computerized content analysis of natural language in psychotherapy research now and in the future. *American Journal of Psychotherapy, 54,* 305-311.

Gottschalk, L. A., & Bechtel, R. J. (1989). Artificial intelligence and the computerization of the content analysis of natural language. *Artificial Intelligence in Medicine, 1,* 131-137.

Greer, S. (1991). Psychological response to cancer and survival. *Psychology and Medicine, 21*(1), 43-49.

Greer, S., & Morris, T. (1975). Psychological attributes of women who develop breast cancer: A controlled study. *Journal of Psychosomatic Research, 19*(2), 147-153.

Greer, S., Morris, T., & Pettingale, K. W. (1979). Psychological response to breast cancer: Effect on outcome. *Lancet, 2*(8146), 785-787.

Greer, S., Morris, T., Pettingale, K. W., & Haybittle, J. L. (1990). Psychological response to breast cancer and 15-year outcome. *Lancet, 335*(8680), 49-50.

Gross, J. (1989). Emotional expression in cancer onset and progression. *Social Science and Medicine, 28*(12), 1239-1248.

Gustafson, D. H., Hawkins, R. P., Boberg, E. W., Mctavish, F., Owens, B., Wise, M., Berhe, H., & Pingree, S. (2001). CHESS: Ten years of research and development in consumer health informatics for broad populations, including the underserved. *Medinfo, 10*(Pt 2), 1459-1563.

Gustafson, D. H., McTavish, F., Hawkins, R., Pingree, S., Arora, N., Mendenhall, J., & Simmons, G. E. R. (1998). Computer support for elderly women with breast cancer. *Journal of the American Medical Association, 280*(15), 1305.

Horowitz, M., & Wilner, N. (1976). Stress films, emotion, and cognitive response. *Archives of General Psychiatry, 33*(11): 1339-1344. PMID: 985045

Kessler, R. C., Mickelson, K. D., & Zhao, S. (1997). Patterns and correlates of self-help group membership in the United States. *Social Policy, 27,* 27-46.

Kneier, A. W., & Temoshok, L. (1984). Repressive coping reactions in patients with malignant melanoma as compared to cardiovascular disease patients. *Journal of Psychosomatic Research, 28*(2) 145-155.

Kreshka, M. A., & Graddy, K. (1997). *One in eight: Women speaking to women, a breast cancer workbook–journal.* Sierra Nevada Cancer Center–Stanford University School of Medicine.

Lieberman, M. A., Golant, M., Giese-Davis, J., Winzlenberg, A., Benjamin, H., Humphreys, K., Kronenwetter, C., Russo, S., & Spiegel, D. (2003). Electronic support groups for breast carcinoma. *Cancer, 97,* 920-925.

Lieberman, M. A., & Goldstein, B. (2005). Self help online: An outcome evaluation of breast cancer bulletin boards. Under review. *Journal of Health Psychology.*

McKenna, M. C., Zevon, M. A., Corn, B., & Rounds, J. (1999). Psychosocial factors and the development of breast cancer: A meta-analysis. *Health Psychology, 18*(5), 520-531.

McTavish, F. M., Gustafson, D. H., Owens, B. H., Hawkins, R. P., Pingree, S., Wise, M., Taylor, J. O., Apantaku, F. M. (1995). CHESS (Comprehensive Health Enhacement Support System): An interactive computer system for women with breast cancer piloted with an underserved population. *Journal of Ambulatory Care Management, 18*(3), 35-41.

Pelletier, K. R. (1992). Mind-body health: Research, clinical, and policy applications. *American Journal of Health Promotion, 6*(5), 345-358.

Pennebaker, J. W. (1997). Writing about emotional experiences as a therapeutic process. *Psychological Science, 8*(3), 162-166.

Pennebaker, J. W., Mayne, T. J., & Francis, M. E. (1997). Linguistic predictors of adaptive bereavement. *Journal of Personality and Social Psychology, 72,* 863-871.

Perls, F., Hefferline, R. F., & Goodman, P. (1951). *Gestalt therapy.* New York: Dell.

Pettingale, K. W., Morris, T., Gerer, S., & Haybittle, J. L. (1985). Mental attitudes to cancer: An additional prognostic factor. *Lancet, 1*(8431), 750.

Reich, W. (1949). *Character-analysis* (3rd ed.). Oxford, England: Orgone Institute Press.

Roberts, C. W., & Popping, R. (1993). Computer-supported content analysis: Some recent developments. *Social Science Computer Review, 11*(3), 283-291.

Rogers, C. R. (1959). A theory of therapy, personality and interpersonal relationships as developed in the client centered framework. In S. Koch (Ed.), *Psychology: A study of science: Formulations of the person and the social context* (pp. 184-256). New York: McGraw-Hill.

Shaw, A. (2001). Health on the Internet. *Journal of Research of Social Health, 121*(3), 145.

Spiegel, D. (1999). Healing words: Emotional expression and disease outcome. *Journal of the American Medical Association, 281,* 1328-1329.

Spiegel, D., Bloom, J. R., Kraemer, H. C., & Gottheil, E. (1989). Effect of psycho-social treatment on survival of patients with metastatic breast cancer. *Lancet, 2*(8668), 888-891.

Spiegel, D., & Classen, C. (2000). *Group therapy for cancer patients.* New York: Basic Books.

Spiegel, D., & Kato, P. (1996). Psychosocial influences on cancer incidence and progression. *Harvard Review of Psychiatry, 4,* 10-26.

Spiegel, D., & Yalom, I. (1978). A support group for dying patients. *International Journal of Group Psychotherapy, 28,* 233-245.

Stanton, A. L., Danoff-Burg, S., Lepore, S. J., & Smyth, J. M. (Eds.). (2002). *The writing cure: How expressive writing promotes health and emotional well-being* (pp. 31-51). Washington, DC: U.S. American Psychological.

Stanton, A. L., Danoff-Burg, S., Sworowski, C. A.., Branstetter, A. R. H., Kirk, S. B., & Austenfeld, J. L. (2002). Randomized, controlled trial of written emotional expression and benefit finding in breast cancer patients. *Journal of Clinical Oncology, 20,* 4160-4168.

Temoshok, L., Heller, B. W., Sagebiel, R. W., Blois, M. S., Sweet, D. M., DiClemente, R. J., & Gold, M. L. (1985). The relationship of psychosocial factors to prognostic indicators in cutaneous malignant melanoma. *Journal of Psychosomatic Research, 29*(2), 139-153.

Weinberg, N., Schmale, J., Uken, J., & Wessel, K. (1996). Online help: Cancer patients participate in a computer mediated support group. *Health & Social Work, 21*(1), 24-29.

Winzelberg, A. J., Classen, C., Alpers, G. W., Roberts, H., Koopman, C., Adams, R. E., Ernst, H., Dev, P., & Taylor, C. B. (2003). Evaluation of an Internet support group for women with primary breast cancer. *Cancer, 97,* 1164-1173.

Direct reprint requests to:

Morton A. Lieberman, Ph.D.
University of California, San Francisco
3333 California Street
Suite 475
San Francisco, CA 94118
e-mail: mal@itsa.ucsc.edu