

treatment when they know that they will be able to participate in their treatment decisions, to express their feelings, and to have their emotional and psychological needs acknowledged.

Although more research is needed to determine what effect if any psychosocial factors have on survival in cancer, it is quite clear that if they can enhance the quality of the patient's life during a very stressful disease and treatment, if these factors can add to the humanizing of cancer therapy, they deserve further consideration and research.

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To the Editor. Cassileth et al draw a conclusion that cannot be inferred from their data. Although the seven psychosocial variables studied are relevant to survival (on the basis of the literature cited), the authors' assessment of these constructs is open to question since no data on reliability or validity are provided to support the measures (the authors state "With the exception of the well-validated Beck scale, all factor items were assessed by factual criteria or simple indexes rather than by scales or instruments"). Three of the seven variables (psychotropic medications, subjective view of health, and adjustment to diagnosis) were each measured by using only one item. One cannot determine the reliability of a one-item index, because by definition, one must repeatedly measure a construct to assess its reliability. Also, in measuring social ties the authors added items assessing "views on the number and adequacy of social relationships." Research on social support indicates that the number and adequacy of supports are not necessarily linearly related,^{1,2} suggesting that the addition of such items may not yield a reliable total (i.e., one may be adding apples and oranges). Furthermore, in contrast to the many prospective studies cited by the authors, the study by Cassileth et al assessed psychosocial variables retrospectively. Hence, retrospective bias³ may have confounded the study's results; that is, patients' responses about pre-morbid life factors may have been distorted by a knowledge of their disease. The above problems call into question the reliability or validity of the measures used.

Since measurement error (unreliability) reduces statistical power (a phenomenon well known in psychometrics^{4,5} and biostatistics⁶), the results in Table 2 of the article are especially troubling: of the seven variables studied, the relation between hopelessness and time to relapse came closest to significance, with a probability of 0.12 (we assume that 0.12 is an error). It is ironic that hopelessness is the only variable for which the authors make claims of validity, and even this was measured inappropriately. The hopelessness scale was developed to measure an "unrealistically negative attitude toward the future,"⁷ which hardly applies to the sample studied. This begs the question: What is the psychometric worth of the other six measures? Although brief indexes may be useful in medical epidemiology, in which the variables assessed are readily observable (e.g., ability to tan or complexion^{8,9}), such indexes provide inadequate measures of psychosocial constructs such as social relations or coping. In assessing coping¹⁰ and distress,¹¹ more sophisticated measures with documented reliability and validity must be used, rather than the one-item indexes employed by the authors. In their belief that psychosocial factors can be adequately represented by seven

poor measures, the authors ignore the dynamic richness and variety of human experience.

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To the Editor. We believe that the conclusion drawn by Cassileth et al — that psychosocial factors do not predict the outcome of cancer in patients with advanced disease — was unwarranted by the study as it was conducted. The study is interesting and certainly deserves attention. However, in our view it was methodologically limited on two counts: the patient sample and the measures that were used.

First of all, if one is going to consider behavior as a potential modifier of biologic response, accounting for some of the variance in disease outcome, then in our view it would be most appropriate to study a homogeneous group of patients in whom disease is not so aggressive or so far advanced that the disease process itself would probably override any role that behavior might have. Given this criterion, more than half the patient sample — with aggressive, end-stage disease — was inappropriate for studying the relative contribution of behavior to the course of the tumor.

Secondly, in our opinion the measures used to evaluate the patients with Stage II breast cancer and those with melanoma (more appropriate populations for study) were not sufficient to address the question at hand adequately. Methodologically, the authors collected parts of measures — each developed and validated for other purposes in other populations (except for the one-item Rogentine scale), merged them into a single self-report scale, and used this scale as the measure of their major independent variable. They reported individual "factor" statistics for patient groups, but did not report whether they had factor-analyzed their data or whether they had assessed the stability of factor structure over time. Therefore, the validity and reliability of this measure for this study's purpose remain in question.

We also believe that the measure of particular variables was quite limited. For example, their measure of social support was based on the selection of six items from the Berkman and Syme Social Network Index.¹ This is primarily a measure of the number of community contacts that a person possesses — e.g., the number of friends seen per week. It is not a measure of the perceived quality of the patient's social support system. (Obviously, the fact that one is married, or is not, can operate as a buffer or induce stress, as a function of the quality of that relationship.)

In fact, in our investigation² we found that the quality of family support as perceived by a patient with breast cancer was prognostically important.

No one questions that the major determinant of outcome in cancer is the biology of the tumor. But we and other investigators are asking whether behavior is also a biologic-response modifier to be investigated in carefully selected tumor systems. Recent research with animal models³⁻⁵ and a handful of clinical studies^{2,6-8} suggest plausible mediating pathways and a direction of influence. In our view, the Cassileth study is not the definitive answer to the question. We believe that it is premature to close the scientific door on this issue.

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The above letters were referred to the authors of the article in question, who offer the following reply:

To the Editor: We are delighted that our study has helped to open the scientific door by drawing attention to the importance of investigating the relation between psychosocial factors and disease. We hope that additional hard data, objectively and carefully obtained, will begin to replace the cultural beliefs, anecdotes, and religious fervor with which this area has been tainted.

In response to Dr. Funch, Table 1 provides results of total score calculations exclusive of job satisfaction, as well as other updated and corrected data. In all cases, conclusions remain unchanged: no variable studied influenced medical outcome. Additional analyses were performed with age as a covariate and with sex, occupation, and education as factors (with the latter two indicating socioeconomic status). None were significant ($P < 0.10$).

Dr. Fiore is right on target in noting the guilt and other unfortunate consequences associated with the notion that attitude and determination can cure cancer. He cites two reports said to demonstrate a positive relation between survival and "negative" emotions such as anger. Because we did not study the same variables, our data cannot be claimed to support or contradict these reports. However, there are many other such studies, and the best critical reviews of them note that no firm conclusions can be drawn yet.^{1,2} Anger or other psychological variables may bear some relation under some circumstances, but if psychosocial factors influence medical outcome, they do so in small degree, only in certain people, and under

Table 1. Mantel-Cox (M-C) Survival Statistics for Highest, Middle, and Lowest Psychosocial Score Categories *

FACTOR/SCALE	GROUP I PATIENTS			GROUP II PATIENTS		
	NO.	M-C	P	NO.	M-C	P
Social ties and marital history	204	2.1	0.34	155	4.2	0.12
Job satisfaction	203	1.4	0.49	155	1.1	0.57
Use of psychotropic drugs	202	3.3	0.18	154	2.6	0.28
General life evaluation/satisfaction	204	1.0	0.60	154	1.7	0.43
Subjective view of adult health	204	2.4	0.30	155	0.18	0.91
Hopelessness/helplessness	200	4.2	0.12	154	3.9	0.14
Adjustment to diagnosis	195	2.7	0.26	151	0.32	0.85
Total psychosocial profile score	188	1.3	0.51	143	1.7	0.44
Total psychosocial profile score excluding job satisfaction	188	2.2	0.33	143	0.08	0.96

*This table incorporates updated information on death and relapse collected since submission of the original data.

circumstances specific to their coping capabilities, hormone response, tumor status, genetics, and psychological states.^{3,4}

Drs. Vitaliano and Levy and their respective colleagues take issue with the variables studied. In the absence of a methodologically acceptable means of quantifying "the dynamic richness and variety of human experience," we selected instruments and questions that had been found valid and reliable by others (Measures employed in research cannot be validated in the study population itself.)

A Spearman rank-order matrix for the factors studied produced a modal r value below 0.10; the largest r was 0.54. This analysis suggests that the seven factors represent independent dimensions. It was conducted in lieu of the suggested factor analysis, because factors cannot be generated from categorical data.

We include ourselves among those who value and encourage psychosocial well-being, not only because it is central to the quality of life but also because it may contribute to the complex of events that affect physical status even in malignant disease. Both the contributions and the limitations of emotional factors in cancer require acknowledgment and study.

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DISEASE AS A REFLECTION OF THE PSYCHE

To the Editor: As past-president, president, and president-elect of the Society of Behavioral Medicine, we have several concerns regarding the recent editorial by Dr. Angell (June 13 issue)¹ that relate to her belief that "The evidence for mental state as a cause and cure of today's scourges is not much better than it was for the afflictions of earlier centuries."

Angell cites two negative *Journal* studies regarding prediction by assessment of psychosocial factors of outcome in patients with cancer² or coronary disease³ as raising the possibility that we have been too ready to accept the "venerable belief" that mental state can be important in the cause and cure of disease. She ignores the conclusion of Cassileth et al.⁴ that failure to predict outcome once cancer is established does not rule out the involvement of psychosocial factors in the initiation of disease. Angell also appears unconcerned that the measure of Type A behavior used in the Case et al. study⁵ is not the best measure of that behavior, particularly the