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“How psychological therapy may prolong survival in cancer patients: new evidence and a simple theory”

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Abstract

This paper presents new data and attempts to draw together converging lines of evidence on the mental attributes that may favor prolonged survival in the face of metastatic cancer. We interviewed 10 individuals with medically incurable cancers who had outlived their prognoses by from 2.2 to 12.5 years (and have all survived, a further 2 more years in most cases, between interview and publication). We derived, by qualitative analysis, a number of themes common to most or all of them. Three major qualities emerged: “authenticity”, or a clear understanding of what was important in one’s life, “autonomy”, the perceived freedom to shape life around what was valued, and “acceptance”, a perceived change in mental state to enhanced self esteem, greater tolerance for and emotional closeness to others, and an affective experience described as more peaceful and joyous.

Previous descriptions of “remarkable survivors” have suffered from a serious limitation: the research to date has not clarified to what extent they differed psychologically from their many peers who did not survive. We attempted to address this question in two ways. Six of our subjects were part of a protocol (the “Healing Journey study”) in which patients belonged to a larger group, all of whom were medically assessed prospectively, by an expert panel. A prediction of the likely duration of survival was made for each of the patients in this study, and it could be shown that those who subsequently survived were not a random sample of the whole, but displayed a much higher degree of early involvement in their psychological self help than most of their non-surviving peers. We also compared our long survivors with two other groups: 6 individuals with similar diseases who had not yet received psychological help, and 6 individuals from the Healing Journey study whose survival duration was at the lower end of the whole group. The patients in these comparison groups also lacked many of the most salient qualities identified among the long survivors.

Many of the attributes we found in our long survivors were, however, also noted in the earlier reports of “remarkable survivors” in the literature, which suggests that our observations may be generalizable. Putting these joint findings together with the early work of Temoshok on “type C” adaptation as a risk factor for cancer, we see that there is a mirrored symmetry between the psychological patterns possibly promoting disease, and the changed adaptations that may lead to longer survival in some cases. We arrive at a commonsense hypothesis: to the extent that the progression of cancer, or other chronic disease, is favored by a distorted psychological adaptation such as type C, healing may be assisted by a reversal of that adaptation - in the case of cancer, towards greater authenticity of thought and action.

Keywords: remarkable survivors; type C; qualitative analysis; mind and cancer; psychological correlates of survival; “authenticity” promotes survival

Introduction

While it is obvious that simple behavioral choices, like whether or not to accept medical treatment, can influence the course of cancer, there is still no consensus on whether the psychological state of a person with cancer (mental “attitude”) can affect the disease more directly. Not only do we lack conclusive evidence, but little attention has been paid to developing testable theories as to how any such mental influence might operate. The present communication is of the theory-generating kind. We first make a brief case for exploratory or discovery-oriented research in this field, in the face of almost universal current preoccupation with hypothesis testing. Second, we present new data from interviews of “remarkable survivors” whose psychological adaptation may suggest what coping mechanisms and attitudes to the disease, and to life, are worth cultivating in the effort to survive cancer. Our investigation attempts to remedy some of the design limitations of previous reports on such individuals. We note the substantial similarities between our results and those of the earlier, more anecdotal reports. Third, we show that both sets of results complement the findings and theory of Temoshok.¹ In brief, what remarkable survivors appear to do is to reverse the kind of adaptation to life shown by Temoshok to be associated with onset of some types of cancer. When combined with the views of McEwan^{2,3} on “allostatic load”, this leads to a simple, rather commonsense theory on the nature of psychological changes that may assist healing from cancer, and possibly from many other chronic diseases.

Hypothesis testing

Hypothesis testing has dominated the research in the mind-cancer field, as in many other areas of health psychology and behavioral medicine. Two main types of hypothesis testing or verification experiments have been done: the first, correlational studies, in which a theory about the psychological attributes associated with longer survival is tested using psychometric tools; the second, evaluation of the effects of psychotherapy on the course of cancer.

Correlational studies attempting to relate psychological attributes (“personality”) to cancer progression have been carried out over several decades, without a clear consensus being reached.⁴⁻⁷ This could mean that no measurable relationship exists, but it could also reflect limitations in the current approaches to measurement. Two such limitations are important, although generally ignored.

The first derives from the cross-sectional protocol that is almost invariably used in correlational studies. By the time a cancer is diagnosed, it has grown in its host for many months if not years, and has become well adapted to the microenvironment in which it finds itself. The rate of growth of the cancer will only change if there is some alteration in its local environment. This change could, in principle, be induced by a psychological change, which through neural, endocrine and immune pathways affected the tissue regulators of cell growth. The key point is change: if the mind is to have an impact, some aspects of its functioning, and hence its influence on distant parts of the body, must change significantly. Yet virtually all surveys have been done at a single point in time, in people not receiving psychotherapy, precluding assessment of change.⁸

A second serious drawback of the usual research protocols in this field is the pencil-and-

paper self-report tests that are almost invariably used to assess psychological qualities. These tests can provide only rather rudimentary information about a patient's mental processes - while the presence of anxiety may be assessed, more complex meaning structures (ambivalence about survival caused by low self esteem?) would not be measurable. They may also elicit invalid answers, as when subjects pay little attention to the questions, or give socially desirable responses, or when unconscious defense mechanisms interfere. As other authors have noted,⁹⁻¹³ interview-style assessments allow a deeper and more reliable insight into the patient's experience.

Clinical trials have enjoyed a brief vogue as a means of testing the power of psychological interventions to influence cancer progression. This dates back to an influential, post-hoc analysis by Spiegel et al¹⁴ of survival patterns among women with metastatic breast cancer who had received a year of group supportive therapy 10 years earlier. The analysis showed that these women lived, on average, twice as long as a control group (although median survival figures were the same for the two groups). This result could not, however, be replicated when a much larger experiment was done recently using a similar protocol.¹⁵ Nine other trials of the effects of psychotherapy on survival duration in cancer patients have been published at the time of writing: 4 of these have given small positive results,¹⁶⁻¹⁹ and 5 have not shown a significant effect.²⁰⁻²⁴ This inconsistency makes conclusions uncertain. A likely difficulty is that surviving longer may require considerable psychological change, and if only a small proportion of subjects make such change, any prolongation of life in these subjects may be obscured by lack of change in a majority. We also learn very little about the adaptations made by individuals in these experiments where statistical analysis of group means or medians is the main method of analysis. Another limitation is the variable and usually non-intensive nature of the psychological therapies tested so far: again, we need to know, as pointed out by Temoshok and Wald,²⁵ whether the therapies have "psychogenicity", that is whether they do in fact have the potential to induce sufficient change to affect physiology, and hence the cancer.

Hypothesis generation

Since hypothesis testing has not, after several decades of research, definitively shown whether or not the mind can influence cancer progression, it seems logical to devote more current attention to generating new hypotheses. Such discovery-oriented work is most efficiently done by focusing on individual patients, asking, for example: "what characteristics, if any, are common to people who survive much longer than expected, compared with those who fail to live longer"? As Rogers²⁶ has noted, much of the most influential investigation in psychology has been of this exploratory nature (for example, Freud's clinical observations and subsequent case studies and theories,²⁷ Erikson's theory of psychosocial development,^{28, 29} Piaget's theory of cognitive development of children,³⁰ the personality theories of Murray³¹ and of Allport,^{32,33} and Kurt Lewin's work on group processes³⁴).

An ideal discovery-oriented approach would be prospective and longitudinal, with thorough medical documentation and objective analysis of statements made and therapists' observations for each patient. We might begin by recruiting a large number of people diagnosed with incurable cancers. Medical histories would be compiled at the time of study entry, and predictions made by experts as to likely survival time for each individual. Psychological

therapies would be incorporated (ideally, a range of therapies, matched to the individuals, and all aimed at promoting substantial change), and a dynamic psychological “profile” put together from interviews, patients’ written accounts, and notes from therapy sessions over a period of years. As in all hypothesis-generating research, rather than specifying in advance what psychological qualities to measure, one would allow new themes, new constellations of psychological adaptation to emerge from the data. Analysis of the data would use qualitative techniques, followed by quantitative rating of derived themes, to allow investigators to relate survival to psychology by statistical regression. Given this framework, it would be possible to determine in what respects if any long surviving patients were unusual or unique, by contrasting their patterns with the profiles of others who had not been so fortunate. While this would not prove that the psychology affected disease progression, it could be used to build a detailed picture of attributes associated with long survival. Subsequent experiments with verification designs, such as randomized controlled trials, could then employ the therapies that had shown most promise, to demonstrate that these therapies were causally related to living longer. Such investigations are obviously extremely costly, perhaps impossible to do completely, but it is feasible to attempt them in part. We can examine what is known at present against this “ideal” study.

Considerable work has been done to describe the adaptations people make to a diagnosis of cancer. For example, Dunkel-Schetter et al³⁵ noted the following strategies in a sample of over 600 patients: seeking social support, focusing on the positive, distancing, and cognitive and behavioral escape-avoidance. While interesting in themselves, descriptive cross-sectional studies like this do not generate information on characteristics that might subsequently be associated with longer survival. Studies of the latter kind are rare, although the work of Greer and colleagues³⁶ is an outstanding example. Greer found that women with primary breast cancers were more likely to be alive 15 years later if they showed active coping styles: fighting spirit, or a refusal to accept that the disease would kill them.³⁷ Patients exhibiting more passive styles, helplessness and hopelessness, “stoic acceptance” (fatalism) or anxious preoccupation, were less likely to survive. Identifying coping styles was done with a mixture of techniques including interviewing and self-report measures. It is of interest, however, that a later verification experiment³⁸ did not confirm the “fighting spirit” construct, although it is doubtful whether the means used to test this were adequate.³⁹

An exploratory study that attempted to meet the requirements of the “ideal” experiment outlined above (on a small scale, because it was highly labor-intensive) has recently been published.⁴⁰⁻⁴² It was prospective and longitudinal; 22 patients with medically-incurable metastatic cancers were enrolled in a long term, stepwise therapy program, called the “Healing Journey”,⁴³ and followed for a year. A weekly group therapy intervention was incorporated.⁴³ Extensive psychological data were collected, from written homework done by the subjects in response to set assignments, and from therapists’ notes made during group sessions and individual interviews. These verbal data were analyzed using standard, grounded, qualitative techniques. The emerging themes were rated (for the intensity of their expression, e.g. “dedication to self help work”), by a team of psychologists. The scores for the psychological themes were then related to survival duration. To control for differences in the medical status of each patient, we obtained median survival predictions for each from a panel of 14 oncologists who reviewed chart data at the time of study entry; this median prediction was entered into the

statistical model. To allow for possible bias from the therapists' knowledge of the subjects' medical status, independent scoring of the data was later done by blinded raters who had no personal or medical knowledge of the subjects (with closely similar results – in preparation).

The principal finding from this study was a highly significant dose-response relationship between the patients' survival beyond the predicted time, and the level of their involvement with psychological and spiritual self help work.^{40,41} The detailed qualitative analysis allowed us to compare patterns of thought and behavior, after a year of therapy, in those surviving well beyond expectation and those dying close to the time predicted. Long survivors showed flexibility and dedication in responding actively to their diagnosis by practicing such self-control strategies as relaxation, meditation, mental imaging, goal setting and cognitive restructuring. By contrast, those dying within the time expected displayed many obstacles to "involvement": skepticism about the efficacy of self help, or of their ability to make changes (often associated with low self esteem), a defensive emotional and intellectual style, lack of reinforcing experiences from the meditation and other practices, an external locus of control (or in some cases, an over-reliance on personal control), and tendency to be distracted from the healing focus by other activities.⁴²

Studies on "remarkable survivors"

A number of reports have appeared based on interviews with individuals who far outlived their prognoses. For the comparative analysis presented in the "Results" we reviewed nine objective studies,⁴⁴⁻⁴⁹ including three unpublished reports of high quality.⁵⁰⁻⁵² Not represented in our analysis, but reviewed, were various non-technical books, of which the most helpful was "Cancer as a Turning Point" by LeShan⁵³; we also read "Healing Yourself" by Pennington,⁵⁴ and (in part) "Remarkable Recovery" by Hirshberg and Barasch,⁵⁵ and a compendium of cases and commentary on spontaneous remission by O'Reagan and Hirshberg.⁵⁶

All of these studies exemplify one small portion of the "ideal" experiment described earlier, and lack most of the design features outlined in it. The design, in all cases, was retrospective, and the data collection cross-sectional. Patients were not part of a therapy conducted by the investigators; instead a convenience sample of patients, previously unknown to the investigators, was recruited. Medical documentation was often scanty or not fully described (authors often relying simply on a prognosis by a single physician who was not a specialist), and standard qualitative methods were used to analyze the psychological data in only two cases. Because of these design limitations, this body of work has failed to interest most professionals in psycho-oncology or medical oncology, the major objection perhaps being that there is no way of knowing how many patients with characteristics similar to those of the interviewees failed to survive. Nevertheless, there is a remarkable consistency in the qualities that these studies report among the remarkable survivors. In the present investigation we will be comparing these data with those from a more rigorous study, reported below.

Temoshok's work

In her pioneering work, Lydia Temoshok used a combination of interviews, psychometric tests and other methods to relate the coping styles and psychological adaptation of cancer patients to disease progression.^{1,12,13,57-61} In her studies the outcome measure was not survival but other markers of disease progression and severity such as tumor thickness, level of invasion, mitotic

rate, and number of lymphocytes located near the tumor. As a result of this work she developed and greatly extended an earlier proposal by Morris and Greer⁶² for a “type C” adaptive style, characterized by a placatory, emotionally repressed presentation, that appeared to be related to increased risk of contracting and faring poorly with malignant melanoma (and in later work, with HIV/AIDS⁶³⁻⁶⁶). Temoshok’s conclusions fit well with the one relatively consistent observation to emerge from psychometric surveys, that emotional repression is associated with poorer outcome in cancer patients^{13,67-70} (although a contrary opinion has been expressed by Kreitler and colleagues⁷¹).

Methods

The long-lived survivors, and their medical documentation

All the long survivors interviewed in this study were well known to us because they had participated for at least a year in the Healing Journey program⁴³. We had medical confirmation that their survival greatly exceeded what was expected for all of them. Six of the 10 had also been members of our Healing Journey study⁴⁰⁻⁴², and as such their medical charts had been carefully reviewed by a panel of oncologists; for the other 4, medical charts were reviewed by one consulting oncologist. To distinguish these two degrees of medical documentation, we have called the first 6 “group A”, and the second 4 “group B” (Table 1). Three additional long survivors were also interviewed, but later removed from the study, because it could not be unequivocally established that their disease was incurable (their psychological adaptation was, however, very similar to that of the final study group).

The 6 patients in part A of Table 1 are the sole survivors of a total of 47 enrolled either in the original “Healing Journey” study (HJ study #1),⁴⁰⁻⁴² or its current replication (HJ study #2, in progress). Three were enrolled in 1994, and 3 in 1998. We have median predictions of their likely survival made prospectively and independently, at the time of their enrollment, by 9 - 14 oncologists (except for one patient, for whom 6 estimates were made). The number varied because certain members of the panel chose not to make an estimate for some patients with diseases for which they had insufficient experience. By the time interviews were conducted for the present study, these patients had survived between 2.2 and 7.4 years longer than predicted. (At the time of writing, in February 2004, about 20 months after most of the interviews, all remain alive, and the minimum duration of survival beyond that predicted has now been extended to approximately 4 years). Another way of indicating the factor by which these patients outlived expectations is with an “observed/predicted” ratio, which varied from 2.93 to 7.45 (calculated at the time of interview).

The remaining 4 long survivor interviewees (the “B” group) were individuals who had been associated with our therapy program for many years. They were not, however, subjects in the Healing Journey study, so prospective predictions of survival for them were not available. Instead, their charts were reviewed retrospectively by one oncologist, and their survival has been expressed in terms of years beyond the metastatic diagnosis. Medical details for these people are shown in Table 1-B; all have survived more than 8 years post metastases.

Comparison groups

It would obviously be informative to compare people who had greatly outlived their prognosis with others who did not live longer than expected, although this has not been attempted in previous studies of “remarkable survivors”. While it is not possible or relevant to select a “control group” of the kind used in experimental designs, we did interview 2 sets of patients who were not long-lived survivors. The first group of 6 were individuals who had applied to enter our therapy program, but had not yet begun in it (“new registrants”, Table 2-A). These people had been informed by their oncologists that they had incurable metastatic cancers. They were chosen to provide some idea of attitudes in the cancer population at large, before receiving psychotherapeutic help. A second comparison group was formed from those 6 individuals among the 22 enrolled in the first Healing Journey study who had the lowest ratios of observed survival to that predicted (“poor outcome”, Table 2-B); all had died at approximately the time expected. Their medical records had been subjected to the same scrutiny by an expert panel as had the 6 in the “A” group. We used their written home assignments and therapists’ notes as verbal data, applying the same data matrix (below) used to analyze transcripts of interviews.

Interview procedure

At the beginning of each interview, during the informed consent process, the purpose of the study was described as an inquiry into the role of mental attitudes in coping with, and possibly surviving, cancer. Interviews were semi-structured and 1 to 1.5 hours in length. All interviews began with the opening questions: “What are your thoughts and feelings as you review your cancer experience, and how has it affected your life?” If participants responded at length regarding physical and medical events, they were steered back to discussion of the psychological and emotional aspects of the illness experience. While interviews remained primarily discovery-oriented, in that the participants set the pace and content for conversation, the interviewer did ask open-ended probe questions on several pre-determined topics such as: what the interviewee would do should the cancer return or worsen; whether or not the interviewee used self-help techniques; what might have changed in the interviewee’s thinking about his/her life since being diagnosed with cancer; and how the interviewee would describe her quality of life at all levels (physical, mental, social, spiritual).

Data analysis

Audiotapes of the interviews were transcribed by paraphrasing and summarizing the interviews. Later, when sections of the transcripts were identified as potential exemplars of themes, we returned to the tapes and transcribed those sections verbatim. For the subsequent qualitative analysis, the primary approach was thematic analysis,⁷²⁻⁷⁴ followed by rating the presence/absence of themes on a data matrix.^{74,75}

_____ Both authors independently immersed themselves in the data by reading and re-reading each transcript (when necessary referring back to the audiotapes for confirmation), and making note of recurring patterns of content, or “themes” in each conversation. We then did a cross-comparison of the interviews to refine and differentiate the themes. This process of independent immersion and interpretation of each participant’s transcript, followed by a collaborative

discussion of the full data set was repeated 3 times before we agreed upon the final list. We then created a final definition and description of each theme. Finally, we interpreted the relationships between themes and arranged them accordingly, subsuming some themes under others.^{73,74}

In order to apply some quantitation to our analysis, we then rated the intensity with which a given theme was present in each interview (0 = not present/opposite quality present; 1 = somewhat present; 2 = strongly present; ND = not discussed, or unable to interpret). By summing the ratings across subjects, we arrived at a total score for each quality, (expressed as a percentage of the possible maximum of $2 \times 10 = 20$). Thus we could identify the more central, or “core” themes; for example, “autonomy” (which had 95% of the total possible rating score, being present in all 10 interviews, and in all but one instance to a “strong” degree). We also applied the established rating process to the two sets of comparative data (described above): the interviews from 6 new registrants, and the archival data from the 6 with poor outcomes.

In keeping with the thematic analysis method⁷² we turned to the relevant literature to compare the themes from our analysis to the findings of previous studies. We attempted to apply the same rating to the 9 articles from the literature on remarkable survivors cited in the Introduction, although when themes were not expressed it was not possible to determine why - that is, whether they had not been part of the subject’s experience, or simply not investigated or reported.

Finally, we compared the total ratings for each theme in our three groups: the long survivors (Tables 1-A and 1-B), the 6 “new registrants” (Table 2-A), and the 6 from the Healing Journey participants who had “poor outcomes” (Table 2-B). Using this summary matrix, we further identified patterns of themes and sub-themes, and again collapsed some of the themes into others, to create Table 3.

Results

A simple model, shown in Figure 1 was derived from the thematic analysis. Themes fell into 2 main sets: those describing the process of change, clustered under the heading “doing what is desired and valued”, and those relating to the “mental state achieved”. A third, less predominant set was “view of cancer and medical treatment” arrived at as an apparent outcome of a shift in views and behavior. The responses of the 6 survivors in part A of Table 1 differed little from those of the 4 in part B, and hence are considered together.

“Doing what is desired and valued” was further divided into 2 main sub-themes, closely related but not identical, which we called “authenticity” and “autonomy”. Authenticity is defined by Goldman & Kernis⁷⁶ as “an unobstructed operation of one’s true or core self in one’s daily enterprise”. It was often expressed by patients as being aware of one’s own experience, needs, and values, typically entailing a re-evaluation of one’s life and lifestyle and subsequently choosing what was important, while discarding other activities, for which an unwelcome obligation was perhaps previously felt. Examples:

“I don’t see it as a gift but it certainly was cancer that made me step back and reflect on what I want to do, and why I want to do it, and to make better choices for myself and enjoy life a little bit more.”

(Participant # 07)

“It’s just putting it [the cancer] in priority. It’s down there and it’s not that important in life and the things that I value, those are the important things. I guess that’s the gift that cancer gives me, to know what’s important and what’s not.” (Participant # 27)

“As much as possible, and I have to watch this because I can fall into a rut, but I’m doing what I enjoy doing, e.g., I’ve proven I can do housework (laughs) and I don’t want to do it anymore. But I love to garden or I love to go and take my granddaughter to the park, or just all kinds of things. I have the freedom to do, and I just don’t seem to have the shackles that “oh well I’m duty-bound to do this or that”, and ... so many times I say to myself “Five years down the road is this really going to matter? Is it going to be more important to me or more important to someone else?” (Participant # 11)

In some ways it [the cancer experience] was devastating, but in other ways it’s been a growing experience, although I can’t believe I’m saying that (laughs). It was a gradual realization. I’ve come a long way in some ways, in relationships and what’s important. I think I’m no longer obsessed with worrying about what other people think. I do things because I feel I want to do things, and just generally [I have] closer relationships with people. ... I’ve stopped wasting time.” (Participant # 08)

“Autonomy” refers to the more behavioral consequence of authenticity: acting in accord with the above self-awareness. Initially, we called this theme “making my own choices (independence/responsibility)” because participants reported a shift to choosing what matched their needs rather than acting to please others, get rewards, or avoid punishment. In reviewing this theme, we decided that the word “autonomy” better captured its full meaning. Autonomous behavior has been defined as that which has an “internal perceived locus of causality [in that it is] initiated by and congruent with the self ... [and accompanied by] a feeling of choicefulness and freedom.”⁷⁷ Thus, when people act autonomously, they do so with a sense of personal freedom and volition, rather than out of fear, obligation, or undue concern or dependence on others.^{77,78} Examples of autonomy from our interviews are:

“I definitely have learned to be more selfish over the years, if you want to call it that, and do the things that I want to do ... I guess I don’t take as much nonsense from people as I used to. ... I was one to follow the rules quite a bit and please everybody. ... I think I feel more comfortable with my place in the world now than I did before I was diagnosed, definitely. I think just learning all that I have has changed that. I’m learning to accept myself, I guess, for who I am and learning to choose what path I want, and it doesn’t matter about anybody else, it’s what I’m doing.” (Participant # 27)

“Now I even say “no”, but before I would’ve been paranoid to say “no”. Now I can say “no, not today, that doesn’t suit me”. [*Q: any guilt there?*] No, no guilt there. And there was no guilt when I made the decision not to go back to work next year. ... It’s not what I want to do. ... I’m very happy with what I do now, and it’s much easier to make a decision on the spur of the moment, and go to see a movie because you feel like going to see a movie, or sitting down and trying to sketch even though you know you’re not good at it but it’s so peaceful and pleasant. That’s all. (Participant # 02)

These twin themes of authenticity and autonomy were the most consistently expressed among our long survivors, and were also consistently found in the reports of remarkable survivors in the literature. Expressions of “authenticity” were largely absent from the data of the new registrant and poor outcome comparison groups, although there was considerable assertion

of autonomy, particularly among new registrants, who had, after all, taken the step of registering in a self-educational program.

Under the major theme “doing what is desired and valued” (Figure 1) we included, as sub-themes: “perception of having changed profoundly”, and “using and valuing self-help techniques”, in particular meditation. A feeling of having changed profoundly was also consistently reported among the patients described in the literature. Examples from our set:

“[The cancer] sort of shifted the way I was developing in life and the goals I was pursuing..... I was totally focused on building a ‘bigger me’ ... I was sort of following what our culture says is the approved path and then when I faced the fact that I might not live very long, I realized that all of that would die ... and I started to question who I was really, if all that went. ... Out of that questioning and exploring things I’d never explored before (“what is pain”, “what is suffering”, “who am I”, “what is healing”, “what brings me joy in my life”, “what are my fears?”) ... it seemed like the whole focus of my life then shifted. [and now] I think it would be to experience life today more fully [and] ... to accept life as it comes to me and be part of that and just enjoy...” (Participant # 10)

“It’s profoundly affected my life, both the outward conditions in my life, what I’ve been doing with my time, what I’ve been able to do with my time. ... It’s given me the motivation to really examine what I want out of my life, how I want to live in the time I have left, in a way that’s much more intense and conscious than it would’ve been before, I think. ... [The discovery of metastases] really intensified my search for meaning in my life, my quest to find out, discover how I really wanted to live. ... There are a few kind of principles of living I guess, or ways of living, that I have found help me to live a richer life, or what feels to me a more meaningful life.” (Participant # 09)

Participants talked about the importance of self-help techniques and meditation, as well as the flexible manner in which they employed them as tools for coping. For example:

“I’ve realized that what works for us today is a changing thing; sometimes meditation is where I need to be, sometimes it’s just journaling, sometimes it’s just quiet reflection, sometimes walking meditation. I’ve learned to look and say is this what I need right now?” (Participant # 07)

“[I use meditation] more when I feel the need. I haven’t gotten back into a routine. ... I don’t find it easy but I find it useful. ... It’s satisfying, I feel good after. ... I feel much more contained, put together. If you could draw it, before would be like a fuzzy image and after would be just clear.” (Participant # 08)

The view that our long survivors came to adopt towards their cancer and medical help was also markedly different from that commonly encountered in clinical practice with cancer patients; the survivors tended to see the cancer as a motivator for change, but not in itself of overwhelming significance:

“I try not to give it [cancer and treatment] and the misery of going to the hospital, I try not to give that too much importance now. I try to give it a really low profile...and keep it totally in the background. [Instead], I try to keep good things in high priority. ... Denial’s got me this far so I’m just going to keep on being in denial, if that’s what you want to call it. [*Q: Is that what you call it?*]. I don’t really call it that. It’s just putting it in priority. It’s down there, it’s not that important, and the things I have fun with are the important things. I guess that’s the gift cancer has given me: to know what’s important and what’s not.” (Participant # 27)

“When I was first diagnosed, [the focus was] “I want my cancer healed”. ... [I was] really focusing on the physical healing. ... Then when it came back with a poor prognosis, then I didn’t know where to turn next.

People were telling me to go to various parts of the world. ... [Someone I consulted said] “If there’s healing anywhere in the world, surely it’s here in Toronto”. And that just shifted my whole focus: well, what is healing?, because I’d been going for a cure. ... And I started exploring “what is healing”, and ... [that] made me aware of the broader aspects of healing, that it wasn’t just my physical self. Sure, I wanted to be physically cured of cancer but if that wasn’t going to be, what would I need for the rest of my life, whether it’s short or it’s long? ... So, I started to explore what is healing for me. ... And I think what we’ve depended upon is ... that which is outside of ourselves to heal us, and it may be part of it, but also I think there’s also a personal search that’s involved, that is our personal healing. So that’s become my focus more.”(Participant # 10)

By contrast, our 6 “new applicants” to the therapy program, and the “poor outcome” subjects, had very little to say about their cancer in this regard. Instead, they spoke of their cancer in terms of the turmoil it created in their lives, and a desire to lessen their distress and to heal physically, but there was little or no discussion of healing in the broader sense described above. Part of this difference may be due to the much shorter time for which they have been living with their diagnosis.

The “mental state achieved” by long survivors could be characterized under two main headings, each with a number of subthemes. Included under the first sub-heading, “equanimity and social harmony”, were 4 sub-themes: “increased peace/joy”, “increased self-understanding and reflection”, “more tolerance and love (less conflict)”, and “more expression/sharing of feelings”. Examples of “equanimity”:

“I’ve experienced a peacefulness and a joy that I’m not having to run after the whole world and catch it by the tail. I don’t have to do anymore, I just have to learn to be.” (Participant # 10)

“I have a lot of joy in my life. I feel very blessed. I’m very often very happy with, and very content with, what I’ve accomplished and who I am.” (Participant # 07)

In terms of the “social harmony” aspect of this theme, our long survivors expressed themselves as having become much more tolerant and accepting, and more apt to share emotionally and to seek to help other people.

“I think I’m a whole lot easier to be around. [A friend] told me that when she first met me, I was the most uptight (laughs) ... type of person. ...[and] was such a perfectionist ... everything had to be done well and completed, and so I wasn’t an unpleasant person but ... I just was not the type of person to go down and sit in the staff room for the sake of sitting there. ... I’m at a very different place now. I’m a much easier-going person and more tolerant. ... I was a very judgmental person ... and so that’s where I think I’ve really grown a lot. ... I just feel a whole lot freer and sillier and more child-like.” (Participant # 11)

“Since the cancer I’ve been able to talk about things as opposed to holding them in. I guess maybe I used to feel that what I had to say wasn’t that important and now maybe it is.” (Participant # 05)

The second sub-category within the “mental state achieved” theme (Figure 1) was increased “meaning and spiritual connection”, a sense of greater meaning in life and, frequently, of connection to a larger or spiritual order. Once again, the long survivors tended to endorse this, while those with poorer or uncertain outcomes did not. The following are quotes from long survivors:

“I’ve tried to bring more of a sense of the sacred into my life. ... I have a prayer that I often say during the

day that kind of centers me and it's a prayer that you could say to God, or the Spirit Mother ... I use that time as a time to express gratitude. ... It's a practice that makes me feel calm and ... warm, a kind of feeling of opening in my heart that, to me, is a spiritual experience. ... Sometimes I have those feelings toward people around me who I don't know ... sometimes it's spontaneous and sometimes I think about it and that

evokes that feeling ... and some kind of feeling of love for a Being, this sort of female spirit I feel.”
(Participant # 09)

“I see God in just about everything, especially in nature. That has been a real, very meaningful part of my life. It's given me strength I think and hope to go on, and sometimes it's nice thinking that you're not in control ... even though we like to think we are (laughs).” (Participant # 27)

Gratitude, for the way their lives had improved as a result of responding actively to their illness, was also quite common in the long survivors, and much less so in the other groups studied.

“I know that God certainly hasn't forsaken me because he has given me so many gifts. I've met the most amazing people along the way and I've encountered the most amazing experiences, and I'm still here, and I have the pleasure of watching my children grow up. ... So he's really been amazing to me and I'm very grateful for that.” (Participant # 02)

Comparison of the main themes across the groups

The percentages recorded in Table 3 compare the frequency and strength of expression of the major themes expressed by the 3 groups of patients we studied. The most striking aspect of the adaptation made by long-term survivors was also that most reliably reported in the literature accounts: these survivors now identified what was of value to them (“authenticity”), and felt free to make choices as to how to live their lives (“autonomy”); as a result, they almost all reported that their lives had changed profoundly. By contrast, those faring poorly, and the “new registrants” were much less prone to express these views, although their “autonomy” figures may be somewhat inflated (by comparison with the cancer population at large) since new registrants had taken the unusual step of applying to join a program of training in self-management, and “poor outcome” subjects had been through a year of psychoeducational therapy. Possibly contributing to the high scores for “authenticity” and “autonomy” among the long survivors was the value they placed on self-regulation strategies. This was also much less prevalent among new registrants (who had not yet had the opportunity to learn such methods). Those subjects from our earlier study who had “poor outcomes”, did report considerable use of self help techniques (58%), without any strong belief in their efficacy.⁴² Related to the new attitude to life that our long survivors displayed was a tendency to see cancer and medical treatment as intrinsically less salient, and their own healing efforts as more important. This view was not expressed by our comparison groups.

As noted in “Methods”, we attempted to rate the literature reports using the same set of themes as for our study subjects, acknowledging that a low level of endorsement was uninterpretable. What was most clearly evident in the 9 studies we scrutinized was the near universal expression of 3 of our main themes: “authenticity”, “autonomy” and “perception of profound change” (rated at 78%, 89% and 72% respectively). Most other themes were represented in at least some of these studies, but at a level of 40% or less.

As Table 3 shows, there was also a striking difference in the affective and interpersonal

experience between, on the one hand, the long survivors in our sample, and on the other hand, the new registrants and the 6 individuals who had fared poorly in our program. Peacefulness, joy, greater self understanding, more sharing and less conflict with others, were exhibited by our long survivors, along with a strong sense of meaning in life and spiritual connectedness. In the literature reports of remarkable survivors, such qualities may be inferred from the improved quality of life and “spiritual-existential shift” often referred to although these observations were usually not expressed in a way that we could rate using our theme matrix. However, these qualities and experiences were largely absent from the new registrants and those faring poorly. While it is not formally possible to tell whether these desirable attributes preceded or followed the prolonged survival, we have noted and documented⁴² a transition towards this state of mind in patients who made dedicated use of a year of group therapy.

Evidence that our long survivors were unusual psychologically, from the start

The 3 subjects from Healing Journey study #1 were the only long-term survivors of the 22 people enrolled in that study. In terms of their “involvement” in helping themselves⁴⁰: one had the highest score, another the fifth highest, while the third was rated ninth amongst the 22 subjects of the study. In the replication study (#2) the 3 long survivors interviewed were the only individuals surviving out of 25 enrolled before 10 May 2001; they ranked 2, 4 and 5 in their involvement scores. From these data it can be inferred that, at least in the qualities contributing to “involvement”, these 6 exceptional survivors were not a random sample psychologically. Rather, all but 1 of them were rated within the top 25% in terms of their efforts to help themselves. They were not unique - some with similar involvement scores failed to live substantially longer than the time predicted for them. Yet it is clear that they differed from the norm, something that it has been impossible to rule out previously. As further support for this, patients with “involvement” scores in the lowest third do not live much longer than medically predicted, only 1 having outlived the prediction by as much as 2 years. Exceptional survival thus seems not to be an entirely chance event, but instead correlates strongly with certain initial psychological attributes. We have shown evidence elsewhere^{40,41} that “involvement” is unrelated to physical health at the outset of therapy.

For the 4 subjects in part B of Table 1, “involvement” ratings were not made, since they were not part of a research protocol. However, they all participated for years in the Healing Journey program; 3 of them were clearly “highly” involved in their psychological and spiritual self help, while the remaining individual was “moderately” involved.

Discussion

The rationale for a study of this kind is that if common psychological attributes can be found among long-term survivors of serious cancers, such qualities may have contributed to the favorable outcome, and so may indicate what to aim at therapeutically. In selecting patients for interview we need to know that they did, indeed, live much longer than reliably predicted, and that this was not simply a chance effect - i.e. that such patients were not the “tail end” of a survival distribution curve. The psychological characterization of the subjects is also critical: we need to be sure that the data obtained are truly representative of the subjects’ thoughts and

actions, and that the qualities shown by long survivors are different from those of most of their less fortunate peers. While it is probably impossible to put such questions beyond all doubt, the current study is much more rigorous in these respects than those previously published.

First, our subjects, both long survivors and comparison groups, were all part of a long-term therapy program. Having had regular contact with all but the “new registrants” over a long period, we feel confident that their statements about their adaptation to cancer represented enduring attitudes. By contrast, previous studies have generally involved a single contact with previously unknown patients. Second, because the study was conducted in a large cancer hospital with a large team of collaborating oncologists, thorough medical documentation of subjects was possible (described in the “Methods” section), providing reasonable assurance that our “long survivors” were exceptional. Although this can never be established with certainty for a single individual, a pattern across cases is persuasive. Such medical documentation was not provided in earlier studies.

A third requirement for validity of the study is that the subjects are not simply chance survivors, perhaps with biologically anomalous disease. This is more difficult to establish, and had not been addressed at all in earlier publications. If it could be shown that those who subsequently live a long time differ psychologically at an early stage from those who do not survive, this would strongly suggest that (a) they are not a random sample, and (b) there is an association between the psychology and long survival. Prospective studies are needed to verify this. We have been able to contribute some data on this question, because 6 of our 10 subjects were part of a research protocol in which they, and 41 others, were rated psychologically by the same team of psychologists at an early stage of participation in a group therapy. As noted in the “Results”, these 6 long survivors displayed a much greater involvement in psychological self-help than most of their peers at a time when their ultimate survival duration was unknown. Further, we subjected to a similar qualitative analysis prospective data from 6 people who did not outlive medical predictions, and we also compared the responses of 6 more individuals with metastatic cancers who were interviewed just before entering a therapy program. Both comparison groups were quite unlike the long survivors in many respects.

In our qualitative analysis of the data from long-term survivors “saturation” of categories⁷⁹ was rapid; in other words, the main themes were usually expressed by all subjects. For this reason 10 represents an adequate sample from which to draw conclusions relating to the subject population. Results from this study alone can not be generalized to different populations however, and further work of this kind is needed. Nevertheless, our results do show many similarities to earlier descriptions of “remarkable survivors”, indicating that the qualities our survivors displayed may be widespread among such cancer patients.

Long survivors, both in the present study and in most of the earlier accounts, saw their lives as having changed profoundly; most notably they came to understand what was important and meaningful to them (“authenticity”) and to exercise freedom of choice in determining how to live their lives (“autonomy”). The two characteristics are obviously closely related, although it is possible to be authentic, yet fail to act on what one believes to be important, or to be autonomous but mis-directed. Most of our survivors described using a variety of self-help strategies, such as relaxation, mental imaging, monitoring thoughts, reflection and journaling, and in particular, meditation. This is hardly surprising since they were taught these techniques, and more, in their

therapy program. However, there was a clear indication from most that they used the methods when needed, rather than in any slavish way - which fits with the assumption of autonomy in their behavior. It was less clear to what extent the subjects in most of the earlier, retrospective accounts of “remarkable survivors” made use of such specific techniques, although all of the common self help modes were mentioned in at least some of the papers.

Spiritual or existential issues were important to the long survivors, but less so than we had expected, given the emphasis placed on such matters in the therapy. Again, it appeared that these people had made their own assessment of priorities, which generally meant using meditation, prayer, spiritual reading and meeting with others in spiritual settings as they felt it was needed, without being compulsive about it. The “spiritual-existential” shift identified in a number of the earlier, more anecdotal, descriptions of remarkable survivors was less dramatic in our interviews, although a perception of having changed profoundly was typical. It may be that when people fighting for their lives can access a structured program, the healing change becomes a more gradual and reliable process, whereas in people not given such help, a more sudden and perhaps less common kind of sudden shift in attitudes is needed to generate the same impact on the physiology. The cancer itself was, however, of diminished significance to our long survivors; their focus was more on helping themselves, although all sought medical help whenever they felt it could benefit them. This would appear to be a more mature attitude towards healing than the practice, still prevalent in western society, of relinquishing all responsibility to physicians.

Probably as a result of considerable self-reflection and change, including the application of mental quieting techniques such as meditation, our long survivors commonly experienced peace and joy in their lives. The existence of similar states was implied in most of the anecdotal studies. Such affective states were conspicuously absent from reports by the “new registrants” or those patients who ultimately died at the times expected. Greater acceptance of others and closer emotional bonds were common themes among long survivors, but were largely absent from the interviews with the new registrants or poor survivors, who seemed preoccupied with their disease, to the relative exclusion of other aspects of their lives.

Our observations on the qualities promoting longevity fit well with recent research on psychological attributes favoring health generally. For example, Ryff and Keyes,⁸⁰ in a factor-analytic study which came to our notice only after our own analysis was completed, defined the following 6 dimensions of wellness: self-acceptance, positive relations with others, autonomy, environmental mastery (i.e, mastery over circumstances), a sense of purpose in life, and meaningfulness expressed as “personal growth”. All 6 attributes are well represented in our sample of long survivors. This concordance of results also speaks to the generalizability of our findings. Other authors have reviewed the importance to health of meaning and self-realization⁸¹ and positive emotional states generally.⁸²

Could the desirable affective state reached by the long survivors be a result, rather than a cause, of their longevity? We do not think this is likely, mainly from clinical experience. People from whom the burden of a fearful diagnosis is lifted, even temporarily, tend to revert to “life as it was before”. Conversely it is the constant threat, over years, of a metastatic diagnosis and progression of disease, that maintains in some individuals a willingness to change and evolve. The earlier “Healing Journey” study⁴⁰⁻⁴² also shows that people who subsequently do well tend to make substantial psychological changes long before the outcome of their disease is known.

Nevertheless, it is not possible to conclude that the change in psychology causes the survival from these data alone. What helps make a case for this is the way our results complement the earlier work of Temoshok.

We referred in the “Introduction” to the work of Temoshok, who showed that people who adopt, early in their lives, a placatory, self-denying style of thinking and acting may be at increased risk of contacting some kinds of cancer (notably malignant melanoma), or of suffering faster progression than usual of their disease.^{1,13} She also provided some anecdotal evidence that therapy aimed at reversing this defensive pattern helped patients live longer.^{1,83} Relating these observations to our own we see that there is a mirrored symmetry between what appears to favor cancer progression (the “type C” adaptive style), and the qualities of authenticity and autonomy that appear to oppose progression and prolong life. Long survivors appear to have “un-type C’d” themselves! Likewise, a need to discover and pursue what is authentic for oneself has long been advocated as a route to healing of cancer by the psycho-oncology pioneer LeShan, based on his extensive clinical experience.⁵³ The clinical evidence is supported by studies showing that repression may be a risk factor^{13,67-70,84,85} The convergence of observations here is persuasive.

How might an authentic and accepting adaptation to the disease affect the rate of cancer progression? If we grow up unduly fearful, or for that matter, with any other kind of maladaptation like constant anger or depression, we may place a life-long stress on the regulators of our health, in particular the cardiovascular, immune, respiratory, and sympathetic and central nervous systems of the body, and on the cellular-level micro-regulators that they in turn influence. The neurophysiologist McEwen, calls this “allostatic load”. He has documented extensively the impact of such chronic stress on disease susceptibility.^{3,86-88} Note that this is a general theory, applicable to many diseases, not just to cancer. Likewise, Kiecolt-Glaser et al⁸⁹ have shown the harmful effects of negative emotional states on health via immune dysregulation. Tacón⁶¹ has further discussed the likely importance of secure attachment in early childhood to the development of lifelong coping and stress response patterns, and how these relate to health and susceptibility to disease. The important point is that some persistent early distortion of the healthy, authentic adaptation to life occurs, and that this causes strain. Reversing this distortion, and achieving an autonomous, accepting relation to the world as our subjects and many of those reported in the literature seem to have done, would be expected to free the body’s defenses to oppose disease more effectively. Figure 2 shows diagrammatically this view of the symmetry between mental promotion and amelioration of disease.

This explanation of events is simple and commonsense. It does not claim simplistically that “the mind cures cancer” or other disease; the prediction is merely that to the extent the mind and its distortions are important, reversal of the harmful adaptation will be helpful. There is parallel evidence for this in the cardiac field.⁹⁰⁻⁹⁴ Progress in understanding will depend, in our view, on first completing more studies of an exploratory nature. We need to know much more about the dynamics of psychological healing change through prospective, longitudinal studies, and about the states of mind that are associated with physical healing, by intensely studying those who manage to do well in the face of many kinds of chronic disease. Comparisons across diseases should be revealing. The emerging theories will be both disease-specific and at a higher level of abstraction, embracing factors common to many conditions. A knowledge of the obstacles to healing change in patients will also help us tailor our therapies for better results. As

argued in the Introduction, verification designs are ultimately needed to confirm causality, but a rush to experiments of this kind is premature, although currently fashionable. Once the psychological determinants of healing and how to promote them therapeutically are better understood, they can be accounted for as mediator variables in randomized controlled trials.

Table 1-A: Healing Journey Study Survivors

Partic. #	Age at Interview & Gender	Primary Disease	Metastatic Site(s)	Pred. Surv. [†] (years)	Obs. Surv.*	O/E [@]	Time Past Pred. ⁺ (years)
04	70 F	Multiple Myeloma	N/A	2.75	8.07	2.93	5.32
05	56 F	Malignant Melanoma	Lymph nodes & extensive subcutaneous metastases in abdomen, femoral & gluteal areas	1.10	8.19	7.45	7.09
07	48 F	Breast	Lung	1.00	3.66	3.66	2.66
08	61 F	Uterine	Aortoclaval node inferior to kidney	1.00	3.20	3.20	2.20
09	50 F	Breast	Mediastinal & brain	0.60	3.72	6.20	3.12
11	57 F	Breast	Mediastinal & hilar adenopathy	1.80	9.21	5.12	7.41

† Predicted Survival is the median of 9-14 oncologists' estimates, based upon medical chart information up to the time of entry into the Healing Journey study

* Observed Survival calculated from date entered the Healing Journey study to date of interview

@ O/E is the ratio of observed to predicted survival time

+ Time Past Predicted is the length of survival at interview date in excess of that predicted

⁰⁴ Diagnosed in 1993; underwent bone marrow transplant (BMT) Nov 2001 and was well until she relapsed in July 2003.

⁰⁵ Complete remission continues in Feb 2004.

⁰⁷ Treated by BMT; however, residual lung disease still evident after the procedure.

⁰⁸ Node incompletely resected and treated with radiation. Endometrial cancer in remission but now diagnosed with recurrent superficial bladder cancer.

⁰⁹ Treated with radiation and chemotherapy. Currently (Feb 2004) undergoing further chemotherapy and treatment for bone metastases.

¹¹ Breast cancer, poorly differentiated, ER and PR negative (1992).

Table 1-B: Healing Journey Clinical Program Survivors

Partic. #	Age at Interview & Gender	Primary Disease	Metastatic Site(s)	Date of Metastatic Diagnosis	Survival Time from Met. Dx. to Interview ⁺ (years)
02	49 F	Colorectal	Liver in 1994, Lung in 1998, both resected	Liver in May, 1994	8.09
				Lung in Jan, 1998	4.42
06	48 M	Lymphoma (low-grade)	Spine (multiple); Brain lesion; Predilection for bone & epidural involvements	Jan, 1991	11.45
				with CNS relapse in Jan, 1996	6.45
10	70 F	Breast	Supra & Infraclavicular mass (5 x 6 cm) with compression of axillary vein	Jan, 1990	12.52
27	55 F	Breast	Chest; hip	Jan, 1990	13.88

⁺ Calculated from date of metastatic diagnosis to date of interview

⁰² Two liver metastases successfully resected in 1994 but then relapsed in 1998 with lung metastases which were also resected. Now in fair health.

⁰⁶ Low grade with ongoing relapses. Treated with BMT and interferon; currently well (Feb 2004).

¹⁰ Treated with radiation and Tamoxifen. Now has no evidence of disease.

²⁷ Patient is now generally well with ongoing treatment for bone metastases.

Table 2-A: New Registrants to the Healing Journey Program

Partic. #	Age at Interview & Gender	Primary Disease	Metastatic Site(s)	Date of Metastatic Diagnosis
12	65 F	Follicular Lymphoma (Stage IV)		
13	63 F	Multiple Myeloma	See primary	2001
14	57 F	Leiomyosarcoma	Liver	2003
15	54 F	Breast	Liver	2001
16	53 F	Leukemia (positive acute biphenotypic)	See primary	
18	64 F	Bowel, ovaries, nodes involved, appendix	Mets in both bowels and ovaries	

¹² Stage IV lymphoma (follicular), very slow progression, primary diagnosed approx. Oct 2001. At time of interview, patient was not receiving treatment but was about to start chemotherapy.

¹³ Received stem cell transplant in 2002 but relapsed about one year later. Being treated with chemotherapy.

¹⁴ Leiomyosarcoma of the ilium in 1995, then spread to small bowel with complete bowel blockage in 2002, successfully resected. In 2003 several lesions found in liver.

¹⁵ Breast cancer in 1995; 2001, liver metastases; the disease progressed while on chemotherapy.

¹⁶ Jan 2003, Philadelphia positive acute biphenotypic leukemia. Treated with BMT and in Sept 2003, at 3 month follow-up for the BMT, was in remission.

¹⁸ Medical chart not available; however, patient reported that her oncologist had given her a diagnosis of incurable metastatic disease.

Table 2-B: Healing Journey Study “Poor Outcome”

Partic. #	Age at Death & Gender	Primary Disease	Metastatic Site(s)	Pred. Surv.† (years)	Obs. Surv.* (years)	O/E@	Time Past Pred.+ (years)
20	33 M	Pancreatic (1995)	Liver (1995)	0.40	0.38	0.95	-0.02
21	45 F	Cholangio-carcinoma (1995)	Unresectable because of size and location	1.00	0.87	0.87	-0.13
22	53 M	Adenoid cystic carcinoma of the larynx (1988)	Lungs (1994)	2.00	1.29	0.65	-0.71
23	48 M	Renal cell (1988) & colorectal (1988)	Anastomotic recurrence of bowel cancer resected (1992) and then metastatic to the abdominal wall (1994)	1.40	1.35	0.96	-0.05
24	32 F	Breast (1994)	Multiple metastases in both lungs and liver	0.80	0.99	1.24	0.19
25	45 F	Colorectal (1996)	Ovarian mass, and lung metasases	1.00	1.63	1.63	0.63

† Predicted Survival is the median of 9-14 oncologists’ estimates, based upon medical chart information up to the time of entry into the Healing Journey study

* Observed Survival calculated from date entered the Healing Journey study to date of death

@ O/E is the ratio of observed to predicted survival time

+ Time Past Predicted is the length of survival at interview date in excess of that predicted

Table 3: Degree to Which the Main Themes Were Expressed**

Theme	1 Long Survivors (Tables 1A & 1B)	2 New Registrants (Table 2A)	3 Poor Outcome (Table 2B)
Doing What is Desired & Valued	–	–	--
Authenticity	95	17	17
Autonomy	95	42	33
Perception of Profound Change	75	25	0
Using & Valuing Self-Help	80	25	58
View of Cancer & Medical Treatment <i>Cancer Less Salient</i>	65	0	0
Mental State Achieved	–	–	--
Equanimity & Social Harmony*	70	13	21
Meaning & Spiritual Connection ⁺	80	9	13

** As a percentage of total possible rating score

* Includes 4 sub-themes: Peace/Joy; Self-Understanding & Reflection; More Tolerance and Love (Less Conflict); and More Expression & Sharing of Feelings

⁺ Includes 2 sub-themes: More Meaning in Life; and Spiritual Connection

Figure Legends

- Figure 1. A simple model of the main themes expressed by the long survivors, and their interrelationships.
- Figure 2. The process of developing psychological predisposition to disease during childhood, then counteracting this by compensating change later in life.

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