

*Guys - This study is a long term one I've followed for years. There are insights, things I don't understand, and items I disagree with, I think, but worth reading. Gene*

# Lessons Learned from Living

by George E. Vaillant

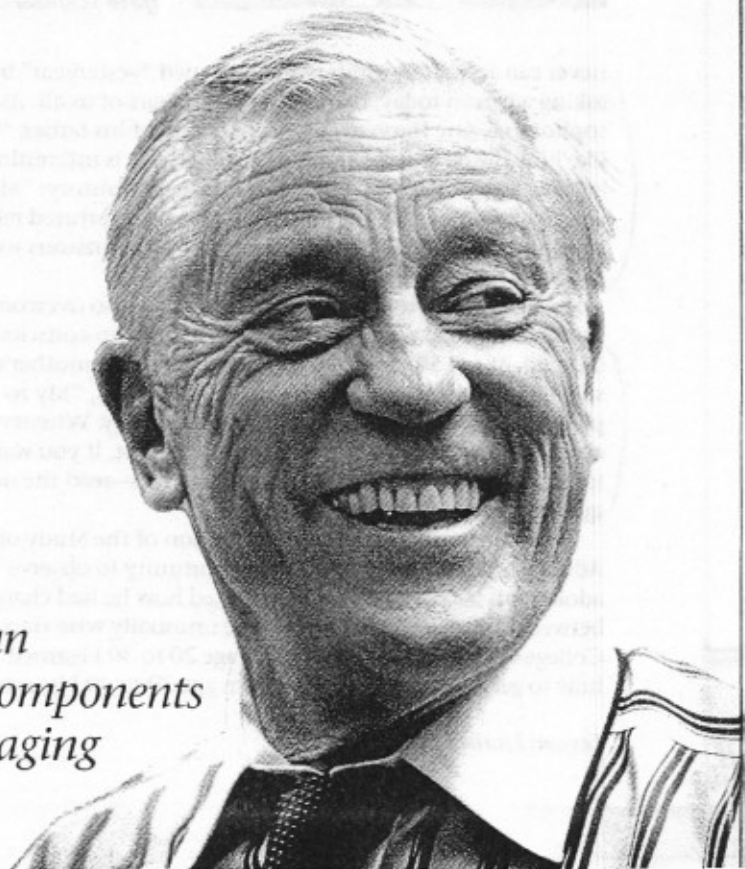
**V**igorous octogenarians offer us rare role models for growing old. An appreciation of how they become that way provides object lessons for coming generations. After all, the demographers have noted that about half of the children born after 1970 can expect to live past the age of 80. But to truly understand successful adaptation to aging requires more than mere supposition and anecdote to shape our prescriptions for the future.

For the first time in the history of science, both the physical and mental health of a group of men have been studied from adolescence to age 80. The final chapters are now being written on the life history studies that have already allowed us to gain an understanding of what constitutes successful adaptation to the process of living. These investigations have made major contributions to our understanding of the stages of adult development, psychological defense mechanisms and the causes of alcoholism, perhaps the strongest predictive factor of early mortality and arrested adult maturation. The lives studied also suggest that factors within a person's control—drinking, smoking and maintaining productive relationships, among others—are more important than genetic makeup in determining whether someone reaches a vigorous old age.

More than 60 years ago, in 1938, the Grant Study of Adult Development began at the Harvard University Health Services. Two Harvard physicians, Arlie Bock and Clark Heath, received the first-ever research award from philanthropist William T. Grant to initiate a "systematic inquiry into the kinds of people who are well and do well."

From 1939 to 1942 Bock, Heath and later investigators se-

lected 268 Harvard sophomores for study. In the original selection process, about 70 percent of the 1,000 students in each college class were arbitrarily excluded because of concerns about their academic achievement or their physical or psychological health. The names of the remaining 300 sophomores went to the college deans who every year selected about 70 boys whom they recognized to be "sound." Ever since then, those men have been sent biennial questionnaires. The choices were well made. By age 70 the mortality of the Harvard College sample has been only half that expected of white males of the same age. Half of the original study group have survived to become octogenarians. Four



*Life history studies begun more than 60 years ago have started to reveal the components of successful maturation and aging*

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have run for the U.S. Senate, and others have been leaders in industry, journalism and the judiciary.

To control for sample bias—the fact that Harvard sophomores are unrepresentative—the Grant study of Harvard College men was broadened in 1970 to become the Study of Adult Development. Besides the Harvard men, the Study of Adult Development began following 456 urban young men—referred to informally as the Inner-City men—who had been selected in 1940 as the nondelinquent control group for the landmark study of juvenile delinquency by Sheldon and Eleanor Glueck of Harvard Law School. The study also reviewed the lives of 40 women between the ages of 75 and 80 from Lewis Terman's work at Stanford University on gifted children. The Terman study participants had been followed continuously since 1920. Thus, the findings from the Study of Adult Development are founded on the scrutiny of three diverse groups from adolescence until old age.

A prospective study—tracking a group throughout a lifetime—avoids the limitations of cross-sectional research. We

how to be a success at my job; and since I have been 40, I have worried less about myself and more about the children.” He succinctly summarized the model that the study conceived of for adult development influenced by the work of psychoanalyst Erik H. Erikson. The study model focused on five linked life tasks of Intimacy, Career Consolidation, Generativity, Keeper of the Meaning and Integrity. Empirical confirmation of these tasks has come through the experiences of study participants.

### Developing a Sense of Self

Mastery of the task of Intimacy serves as the gateway to adult development. For this research, Intimacy was defined as living with another adult in an interdependent, mutually responsible, committed and intimate fashion for 10 years or more. Some individuals were well on their way to this process by 25; some not until age 60; and some, usually those with schizophrenia or severe maturational deficit, never.



COURTESY OF BEN BRADLEE



MARK GODFREY The Image Works

**BEN BRADLEE**, former editor of the Washington Post and a participant in the Grant Study of Adult Development, poses just before entering Harvard in 1939 (left). He confers with reporters Bernstein and Woodward during the Watergate scandal (above, at right) and relaxes in recent years (opposite page).

never can accurately assess what happened “yesteryear” by asking a person today; maturation makes liars of us all. As a sophomore, one Harvard College man said of his father, “I like him as well as any man I have known. He is interesting and fun to be with.” At middle life he rewrote history: “My and my father’s entire life together had been a tortured relationship. We cordially hated each other.” Both answers were probably half right.

Studying men’s lives over long periods can also overcome shame and reveal when earlier reports have been consciously falsified. At age 50, one man finally admitted his mother’s suicide when he was 14. Another man explained, “My replies have been frank, but with a period of delay. Whenever anything was badly wrong I tried to suppress it. If you want to find out what is really happening with me—read the next questionnaire or the one after that.”

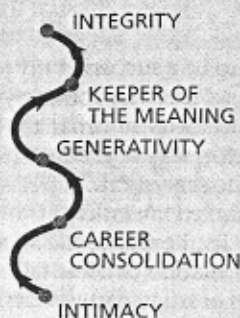
By far the most fascinating contribution of the Study of Adult Development has been the opportunity to observe adolescents become grandparents. Asked how he had changed between college and middle life, one unusually wise Harvard College-sample man wrote, “From age 20 to 30 I learned how to get along with my wife; from age 30 to 40 I learned

The task of Career Consolidation involves making a clear, specialized career identification that was characterized by contentment, commitment (attachment to one’s work), compensation (a job valued by others) and competence (pride in one’s work). These four Cs distinguish a career from a job or a hobby. Put differently, Career Consolidation involves the transformation of preoccupation with self and private (autistic) play and fantasy into a specialized role valued by both self and society.

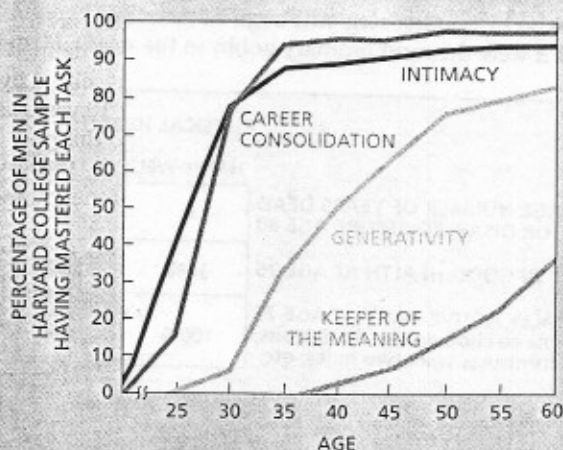
The task of Generativity means assuming sustained responsibility for the growth, well-being and leadership of others—in short, community building. Depending on the opportunities that the society makes available, Generativity can mean serving as a consultant, guide, mentor or coach to young adults in the larger society. Paradoxically, “selfless” Generativity cannot be achieved unless the adult has been able to master the “selfishness” of achieving a stable identity and the “selfishness” of Career Consolidation. In a developmental framework, to be selfish (to develop a sense of self) can be good, and to be selfless too early in life can lead to emptiness in old age.

The next task, Keeper of the Meaning, involves a more

DEVELOPMENTAL LIFE TASKS mark a winding path from Intimacy to Integrity. An increasingly smaller percentage of the Harvard College-sample men reached the later stages. The final stage, Integrity, was not measured.



## Mastery of Developmental Tasks



nonpartisan and removed approach to the world. This task was mastered by only a small fraction of our sample. To preserve one's culture involves developing concern for a social radius extending beyond one's immediate community. The Generative individual cares for young adults in a direct, future-oriented relationship—as, for example, coach or teacher. In contrast, the Keeper of the Meaning speaks for the less partisan preservation of past tradition. This is not a trivial distinction. The task of a Generative coach or parent of adolescent children is to take sides; the task of a judge, a referee or a conservationist is to be more impartial.

The final life stage in the model, *Integrity*, is well defined by Erikson as self-reconciliation: "The acceptance of one's one and only life cycle as something that had to be and of necessity permitted no substitutions." Put differently, when asked how he felt about growing old, Carl Jung, another psychoanalyst whose work dealt with life-stage development, allegedly replied, "I am old, so I be's old."

Some may offer the argument that such a model of adult development, particularly the stage of Career Consolidation, applies only to a modern technological society or only to educated, upper-middle-class professional men. But this is not the case. The medieval hierarchy that led from apprentice to journeyman to master craftsman was as clear 1,000 years ago as the developmental path that leads an Inner-City man from rookie cop to detective to precinct captain today. A like comparison across time or even culture holds for any of the other life stages, from Intimacy to Integrity. Despite their differences in gender, education and intelligence, the Harvard College sample, the Inner-City men and the Terman women all followed similar trajectories.

Empirical tests have supported this model of adult development. First, if a model of development is to be taken seri-

ously, like embryology, it must conform to a relatively fixed sequence rather than either to free choice and social mores or to chronological age. As with shaving and menstruation, not everybody will reach that developmental stage at a fixed chronological age, but such development occurs cross-culturally and is necessary if not sufficient for parenthood to occur. Unlike physical or cognitive development, however, the Eriksonian developmental model requires support from biology and society and psychology.

In the Harvard College sample, some men reached 60 still mastering developmental tasks left unfinished earlier in life [see graph at left]. Yet of the 77 men who eventually mastered Generativity, 57 (74 percent) first mastered Intimacy, then Career Consolidation and only then Generativity. A few men achieved Career Consolidation and Generativity before Intimacy was reached. But for the Terman women and the Harvard College-sample men, *selfish* Career Consolidation always preceded *selfless* Generativity.

Second, if a psychobiological developmental model is to be taken seriously, it should be generally the same for women as for men and be relatively independent of social class, educational opportunity and intellectual capacity. The Inner-City men and Terman women were as likely to achieve Generativity as the Harvard graduates.

The third test is *predictive validity*. Of the 17 surviving Terman women who were rated as Generative at 60 years old, 100 percent were seen as aging well at 77 by an independent observer blind to the women's past. Of the 23 women not meeting criteria for Generativity, 39 percent did not meet criteria for successful aging. Successful aging was defined as "enjoys life, is open to new ideas, helps others, is graceful about dependency and maintains a sense of humor and acceptance of what has been." At age 75 the surviving Harvard College-sample men rated as *not* Generative at age 47 were three times as likely as those rated Generative to be viewed as aging badly by an independent rater.

Another hallmark of aging well is the ability to be ill without feeling sick: thriving in life even after being struck by physical malady. A pediatrician among the Harvard College men serves to illustrate this paradox as well as to demonstrate the model for successful aging. His life, though short, encompassed all the five stages of adult development.

Dr. Martin Carey (a pseudonym) came from a close-knit family, and by age 13 he had made his own commitment to a life of service to others. At 23 Carey married, and he and his wife remained devoted to each other until death. At age 26, when asked what was stimulating about his still embryonic career, Carey mentioned "the opportunity to provide aid to children through increasing parental understanding." Even in medical school, Carey identified with what a Generative pediatrician twice his age might do to care for the community as well as for the child.

At age 33 Carey developed poliomyelitis. For months he was totally helpless but then resumed an active social and professional life. For the rest of his life, Carey, like Franklin D. Roosevelt, provided a precocious example of successful aging: both men were "ill" and confined to wheelchairs, but they were not "sick."

One of the tasks of a Keeper of the Meaning is to model the meaning and dignity of maturity or old age for the young. By age 35, crippled by polio, Carey shared with his patients the advantages of working as an active clinician from a wheelchair: "Others can get not only professional

LAURIE GRACE

help but some measure of comfort from my carrying on as if nothing had happened." Twenty years later the progressively crippled Carey illustrated Erikson's last stage of Integrity and acceptance of the indignities usually associated with old age. He experienced, in his own words, "the frustration of seeing what needs to be done and how to do it but being unable to carry it out because of physical limitations imposed by bedsores on top of paraplegia." But three years later, at age 55, he wrote without bitterness, "I have coped... by limiting my activities (occupational and social) to the essential ones and the ones that are within the scope of my abilities."

At 57, slowly dying from pulmonary failure, Carey told the study that the past five years had been the happiest of his life: "I came to a new sense of fruition and peace with self, wife and children." A dying Carey told his interviewer, "Every group gives percentages for people who will die: one out of three will get cancer, one out of five will get heart disease—but in reality one out of one will die." Although still only middle-aged, he fully accepted that there is a time to be born and a time to die. It takes a longitudinal study to differentiate between a person's real-life behavior and his or her facility with platitudes. That Carey's words over the years were intimations of immortality was confirmed by continued study. After Carey died, an endowment for a professorship in his name was raised to perpetuate his lifelong contribution to pediatrics.

### Healthy Defenses

The Study of Adult Development has played a pivotal role in elucidating the specific ways in which people cope with the inevitable stresses confronted during life. When we face unmanageable stress, three quite different methods can help us cope to avoid being overwhelmed. First, we can employ rehearsed coping strategies that permit conscious and voluntary mastery of our problems (the equivalent of applying a tourniquet to a bleeding arm). Second, we can turn to other people for help (going to the emergency room). Third, we can use involuntary (unconscious) mechanisms (like our blood's innate clotting ability).

The third class of coping strategies, often termed defense mechanisms, reflects the involuntary ways in which the central nervous system denies and distorts inner and outer reality to reduce stress. Although such involuntary defensive behavior may strike us, the observers, as downright peculiar, defenses are often creative, healthy and comforting. Certain defense mechanisms—projection, repression, displacement and sublimation—have entered popular language. Some defenses are generally maladaptive: the projection of the paranoid bigot; the hypochondriasis of the angry, help-rejecting complainer; the passive aggression of the adolescent; and the acting out of the sociopath. Other defenses that also distort inner and outer reality are adaptive: the sublimation of a depressed Beethoven writing his Ninth Symphony, the suppression and stoicism of an astronaut with the "right stuff" and the humor of successful comedienness (Marilyn Monroe) or comics (Charlie Chaplin) who had miserable childhoods.

By 1970, however, defense mechanisms, popularized by

psychoanalysis, appeared too metaphysical to empirical psychopathologists, and in 1977 all mention of defenses was dropped from psychiatric diagnostic manuals. Since 1970 the contribution of the Study of Adult Development to psychopathology has reduced the metaphysical aspects of defense mechanisms. We have achieved this through the prospective observation of behavior rather than through reports of free association in psychotherapy.

Let me offer an illustration of a defense. An internist who had participated in the study for 30 years told me, with vividness and enthusiasm, about his hobby—growing tissue cultures in his basement. With still more interest and enthusiasm, he told me that the cells from one culture came from a lesion on his mother's leg. Although he described his interest as if it were the most ordinary hobby in the world, I have

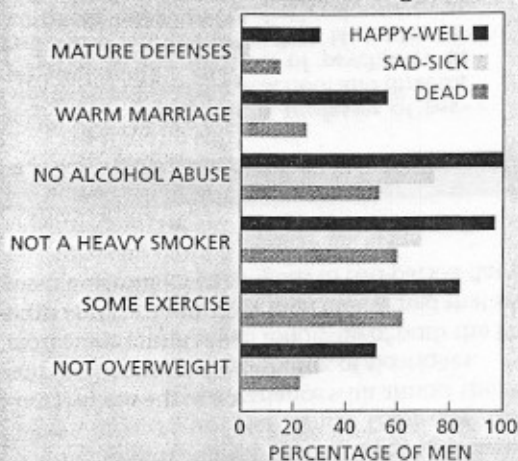
PHYSICAL HEALTH			
	HAPPY-WELL	SAD-SICK	DEAD
AVERAGE NUMBER OF YEARS DEAD OR DISABLED BEFORE AGE 80	0	9	18
IN GOOD HEALTH AT AGE 75	38%	15%	N/A
PHYSICALLY ACTIVE DAILY AT AGE 75 Still able to chop wood, climb stairs, move furniture, walk two miles, etc.	100%	0%	N/A
MENTAL HEALTH			
	HAPPY-WELL	SAD-SICK	DEAD
POOR MENTAL HEALTH: AGES 50 TO 65 Men in bottom quarter in ability to work, love, play and remain free of psychiatric care	0%	54%	37%
POOR SOCIAL SUPPORTS: AGES 60 TO 80 Men in bottom quarter in quality of relationship with wives, children, siblings and others	0%	51%	44%
LOW LIFE SATISFACTION: AGES 55 TO 75 Men in bottom third in self-assessment of marriage, job, hobbies and other activities	0%	68%	N/A

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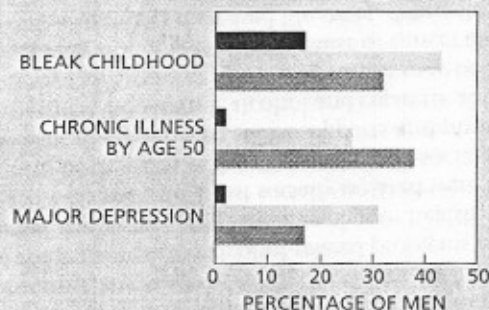
*SUCCESSFUL AGING was achieved by the "happy-well," 64 of the 268 Harvard College-sample men who thrived in six domains of physical and psychological health when surveyed between the ages of 50 and 80; meanwhile 35 men in poor health were categorized as "sad-sick." There were also 60 men who died before age 75, and another 109 who fell into an intermediate category (not shown).*

yet to describe his hobby to an audience without laughter sweeping the room. The physician viewed his hobby as unremarkable; outsiders saw growing one's mother in the basement as bizarre. At the end of the interview, he revealed—in the most matter-of-fact way—that his mother had died only three weeks earlier. Knowing from longitudinal study that he had been very attached to her, I asked how he had coped with his grief. His conscious explanation was that he had spent his time comforting his father, thus employing the defense of altruism. Behaviorally, however, he had been tending a tissue culture with the enthusiasm and warmth usually allotted to people and had just described the recent death of his mother with a blandness usually reserved for tissue cultures. In other words, a grown child's very real love was displaced from his deceased mother and reattached to a tissue culture—an example of the defense mechanism of displacement. Twenty-five years after his mother's death, he had moved on with his life and had forgotten all about his hobby.

### Protective Factors Before Age 50



### Risk Factors Before Age 50



**MATURE DEFENSES**, such as altruism and humor, were among the most important predictive variables of psychological health for the Harvard College-sample men. But absence of alcohol abuse and smoking before age 50 figured most strongly in predicting physical health in later years.

Behavioral vignettes, obtained through longitudinal observation, made it possible to obtain a reliable rating of defenses—a scientific safeguard not possible in psychoanalytic studies. By contrasting the defensive styles of the longitudinally studied Inner-City men, of the Terman women and of the Harvard College-sample men, the study reached several surprising conclusions. Like the immune system, the relative adaptiveness of defense choice—rated by comparing how often subjects used mature instead of immature defenses—was not the product of social class, IQ, gender or education. At present, the source of mature defenses, like the workings of some aspects of immune function, remains a mystery. But an individual can enhance the use of mature defenses by actively changing his behavior or through a process of self-discovery, as often happens in therapy. Nevertheless, adaptiveness of defenses from ages 20 to 50 provided the best measure that the Study of Adult Development had to predict the men's adaptation to life 20 or even 30 years later. Such findings contributed to the reincorporation of defense mechanisms in the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (1994).

The length of the study permits the contrast of men who have aged well with men who have aged less successfully.

Few people grow old without some illness, but a key to successful old age is to be ill without feeling sick. Between the ages of 75 and 80, there were 64 of the 268 Harvard College-sample men who still remained unambiguously healthy—objectively and subjectively, physically and psychosocially—and there were 35 men who were still alive but clearly “sick” as well as ill [see chart on preceding page]. To achieve this contrast, then, the Harvard College men who fell somewhere in the gray zone of being “healthy” or “sick” and, of course, the 60 who had died prematurely were excluded.

### Aging Well

To assess the different facets of successful adaptation, the study investigators divided the lives of the Harvard College men into six categories. Curtailment of an active physical life characterized the first domain evaluated. It was quantified by a measurement of the disability and mortality that the men experienced between the ages of 40 and 80 years old. None of the happy-well men and all the sad-sick men had spent some years disabled. Biological health, the second domain, was based on a complete physical examination at age 75 by an internist and uniformly assessed by an independent observer blind to the individual's psychosocial adjustment. Although twice as many of the happy-well as the sad-sick were still without any life-shortening irreversible illness—such as coronary thrombosis, diabetes or multiple sclerosis—some were nonetheless chronically ill. Yet none were disabled.

The third domain was reported activities of daily living. At 75, all the happy-well men could still climb two flights of stairs, walk two miles, carry suitcases through airports and pursue favorite strenuous activities such as heavy gardening, singles tennis, downhill skiing and chopping wood. All the sad-sick men saw their lives as severely curtailed. Sometimes, however, their disability reflected major depression, arthritis or other psychological or physical illnesses that were not life-threatening.

The fourth domain was mental health. This area, too, was assessed by an independent observer reviewing the men's lives from ages 50 to 65 and quantifying their ability to work, to love, to play and to remain free from psychiatric care. The fifth domain was objective social supports. This was assessed by another independent observer evaluating the men's relationships with their wives, their children, their siblings, their playmates (bridge and golf partners, for instance), their religion, their social networks (civic organizations) and their confidants.

The sixth, and final, domain was subjective life satisfaction. On two occasions between ages 70 and 80 the men were asked: “Over the past 20 years how satisfying was your marriage? Your job? Your children? Your friends? Your hobbies? Your community activities? Your religious participation? Your recreational activities?”

The happy-well were the men who scored high in all domains. The sad-sick were men who before age 80 experienced at least five years (the average was nine years) of disability and were classified as unhappy in at least one of the three domains of mental health, psychosocial efficacy or life satisfaction. Significantly, the 60 men who died too young for such categorizations to be made had been almost as psychosocially impaired as the surviving sad-sick men.

Six protective variables appeared in the pasts of men who

were among the happy-well. The use of mature defenses before age 50—by that I mean the capacity to make lemons into lemonade and not make mountains out of molehills—was among the most important predictors of successful aging later in life. A third of the happy-well, one sixth of the prematurely dead and only one of the sad-sick men had adopted mature, positive defenses such as humor and altruism before age 50. Yet adaptiveness of defenses did not predict the men's physical health, only their psychosocial health.

Absence of alcohol abuse and of heavy smoking before age 50 were the two most important protective factors for physical health. Two fifths of the dead, one fourth of the sad-sick but not a single one of the happy-well had abused alcohol, and only two had been heavy smokers. Warm marriages and exercise also predicted good health at 80. Bleak childhoods and depression were strongly associated with poor outcome [see graph on opposite page].

Unlike many earlier studies linking mental health with physical health outcome, the Study of Adult Development controlled for many confounding influences that could affect physical and mental health and included long-term observation of behavior at work and at home. But the most valuable aspect of the study was that it controlled for alcohol abuse among the lives it tracked.

### Perils of Alcoholism

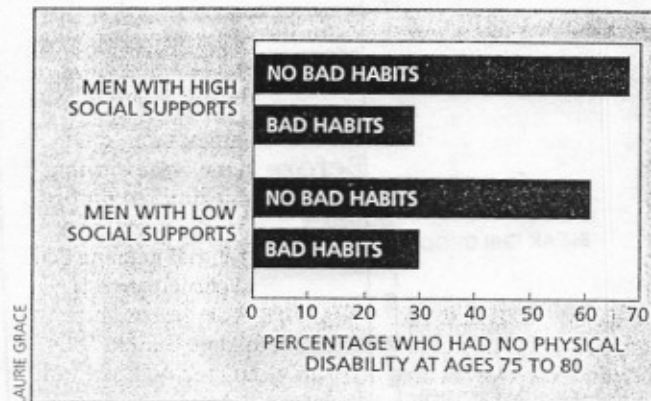
Until now, most major longitudinal studies of health have controlled only for reported alcohol consumption, which unfortunately predicts alcohol abuse almost as poorly as reported food consumption predicts obesity. Reported consumption of alcohol is not a strong predictor of poor aging. In contrast, the Study of Adult Development measured alcohol abuse by reported alcohol-related problems and found alcohol abuse strongly predictive of poor health.

Men who were the most socially isolated were twice as likely to be disabled as the men with good social supports. The association between social supports and physical health disappeared, however, if alcohol and cigarette abuse were controlled [see graph at right]. One reason may be because alcohol abuse not only is a direct cause of cancer and heart disease but also causes increased life stress, depression and decline in social supports. Another study of the data involving the Inner-City men found that alcoholism is more hereditary than the result of an unhappy childhood. It also found that alcoholism is a cause of life distress rather than a form of self-medication administered in reaction to an adverse life situation, such as a troubled family. These discoveries proved counterintuitive and at variance with almost the entire literature based on short-term studies of alcoholics.

Significantly, prolonged follow-up of both the Harvard College and the Inner-City men established that seemingly incurable alcoholics (analogous to two-pack-a-day cigarette

smokers who quit) often achieved lifelong recoveries of two decades or more. These recoveries (analogous to those of heavy cigarette smokers) were achieved almost always through lifelong abstinence, often facilitated by Alcoholics Anonymous, and not by a return to controlled drinking.

It is true that genes are very important in researching the longevity of fruit flies. Therefore, one of the first variables we looked at was the genetic predictors of aging. Ancestral longevity was estimated by computing the age at death of the subject's parents and four grandparents. To our surprise, although study participants with short-lived ancestors were more likely to encounter poor health at age 50, those with long-lived ancestors had only a slightly better chance of being in vigorous health at age 75 and had no better chance of rating highly on scales of psychological or social well-being.



**BAD HABITS**—defined as heavy smoking and drinking to excess—removed any benefit to physical health that the Harvard College-sample men received from social supports, such as a warm marriage.

Ancestral longevity also failed to predict vigorous late-life adaptation for the Terman women ages 75 to 79.

Thus, there is a hopeful message for the younger generation—destined by actuarial tables to live past age 80. Most of the protective factors that distinguished the happy-well from the sad-sick are under personal control. It is true that we cannot voluntarily change our childhoods or avoid major depression—but we can control our weight, our exercise and our abuse of cigarettes and alcohol. With hard work, and perhaps with therapy, our relationship with our most significant other and our coping styles can be modified. Two thirds of the men with five or six protective factors at age 50 were among the happy-well at 75; only one man was among the sad-sick or deceased. Of men who maintained two or fewer protective factors, not even one was among the happy-well and two thirds were among the sad-sick or prematurely dead. Put simply, whether we live to a vigorous or to a "sick" old age may not be so much in our stars or in our genes but in ourselves. ■

### The Author

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### Further Reading

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