1 BEHAVIORAL HEALTH'S CHALLENGE TO ACADEMIC, SCIENTIFIC, AND PROFESSIONAL PSYCHOLOGY

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In 1964 President Lyndon Johnson, first threatening and next fully using the power of the federal purse, informed this country's scientific and university professional manpower training communities that federal health-related funds should be used to support fewer basic and theoretical and more applied and practical research and training activities. The 1964 Congress and its successors, and Presidents Nixon, Ford, and Carter, all endorsed this demand that our scientific and teaching institutions refocus their priorities and begin to pay more attention to the human (and the ever-increasing financial) costs associated with the health of our citizens. Before proceeding to discuss these annually escalating financial and human costs and what might be done by psychologists and others to help reduce them, fairness requires that the many legitimate financial costs be excluded from the criticism that follows. Health care in the United States is expensive in part because our citizens, speaking, themselves or through third-party payers, have opted to pay for intensive care and renal dialysis units in hospitals, neonatal heart surgery, computerized axial tomography (CAT) scanners, and many other very costly diagnostic and critical-care life-support services. My criticism is not directed at such defensible costs but instead at the inordinate costs that are associated with preventable health conditions: those associated with smoking and other health risks associated with one's lifestyle. These latter unnecessary costs must be addressed by psychologists and representatives of the other disciplines interested in individual behavior.

It became obvious in the 1960s that health expenditures in the United States were growing at a faster rate than the gross national product. This imbalance became increasingly alarming, and it seemed that it might soon become insupportable. Table 1.1 – adapted from Gibson (1979) and Vischi, Jones, Shank, and Lima (1980) – presents some pertinent statistics. For example, in 1950 the $12.7 billion expenditure for health was only 4.5% of that year's gross national product of $284.8 billion, but by 1965 this percentage had increased to 6.2%, and by 1978 it had increased even further to 9.1%.

TABLE 1.1 **Total and Per Capita National Health Expenditures, by Source of Funds and Percentage Gross National Product (GNP)**

		Health expenditures						
		Total			Private		Public	
Year	GNP (billions)	Amount (billions)	Per capita	%GNP	Amount (billions)	%total	Amount (billions)	%total
1950	284.8	12.7	82	4.5	9.2	73	3.4	27
1955	398.0	17.7	105	4.4	13.2	74	4.6	26
1960	503.7	26.9	146	5.3	20.3	75	6.6	25
1965	688.1	43.0	217	6.2	32.3	75	10.7	25
1970	982.4	74.7	359	7.6	47.5	64	27.3	36
1975	1,528.8	131.5	605	8.6	75.8	58	55.7	42
1976	1,700.1	148.9	679	8.8	86.6	58	62.3	42
1977	1,887.2	170.0	769	9.0	100.7	59	69.3	41
1978[a]	2,107.6	192.4	863	9.1	114.3	59	78.1	41
1979[b]		212.9	968					

[a]Preliminary estimates. Adapted from Gibson, 1979, p. 22, and Vischi et al., 1980, p. 131.

[b]The *total* health expenditure costs for 1979 data are from the article, "United States Passes," 1980/1981.

As further revealed in Figure 1.1, a recent projection through the next decade by Rogers (1980), the president of the Robert Wood Johnson Foundation, indicates that by the year 1990 this figure will fall somewhere between 9.1% and 14% of the gross national product. Supporting his view, the most recent data (shown in the last row of Table 1.1) reveal that total health expenditures in the United States during 1979 reached $212.9 billion ("United States Passes," 1980/1981).

Table 1.1 shows that the per capita health expenditure was $863 in 1978 and $968 in 1979. We must ask whether our nation can afford to spend such a large sum on the health of its people every year. Few individuals in government or in the various segments of our health industry believe we are able to afford the present per capita expenditure, let alone sustain it or allow it to increase. The reduction of this financial burden is a national responsibility shared collectively by scores of constituencies, including consumers, providers of health services, legislators, the health industry generally, private philanthropy, the university and scientific communities, business and labor, and many others. Epidemiologists, physicians, health educators, medical sociologists, and individuals representing a number of these other constituencies are, in fact, actively attempting to cut down these health costs. This chapter highlights several specific areas of health expenditures that could be reduced by the efforts of another one of these constituencies – the science and profession of psychology. In particular, representatives of all areas of psychology who today increasingly identify themselves with *health psychology* can contribute to this. First, however, I must present an overview of several recent changes in the types of illnesses and dysfunctions that incapacitate 20th-century Americans. The reader wishing a more detailed review

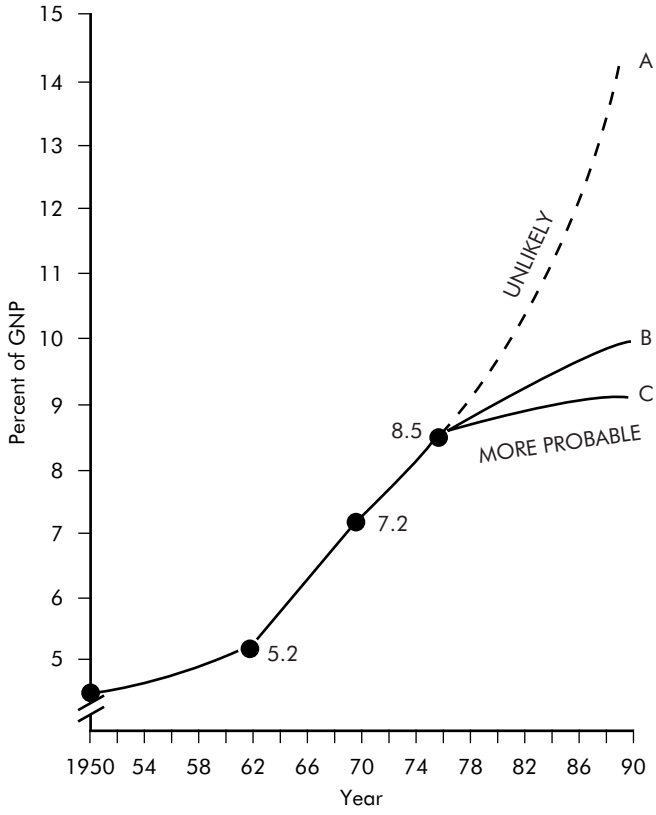

FIGURE 1.1 **Annual National Health Expenditures in the United States Expressed as a Percentage of Gross National Product (Adapted from Rogers, 1980: p. 5)**

of the literature on risk factors will find this in the recent reports of the U.S. Surgeons General and related official government publications (Califano, 1979a, 1979b, 1979c; Gibson, 1979; Harris, 1980, 1981; Vischi et al., 1980), as well as in any of the dozen or so handbooks of health psychology and behavioral medicine that have been published in the past three years.

Changing Patterns for Death and Disability

During the past 80 years developments in the basic and applied sciences and related disciplines associated with infectious disease, immunology, and epidemiology have markedly changed the illness patterns of Americans by reducing or eliminating such previously highly prevalent conditions as tuberculosis, influenza, measles, and poliomyelitis. Figures 1.2 and 1.3 from the 1979 *Surgeon General's Report on Health Promotion and Disease Prevention* by the then U.S. Secretary of Health, Education and Welfare

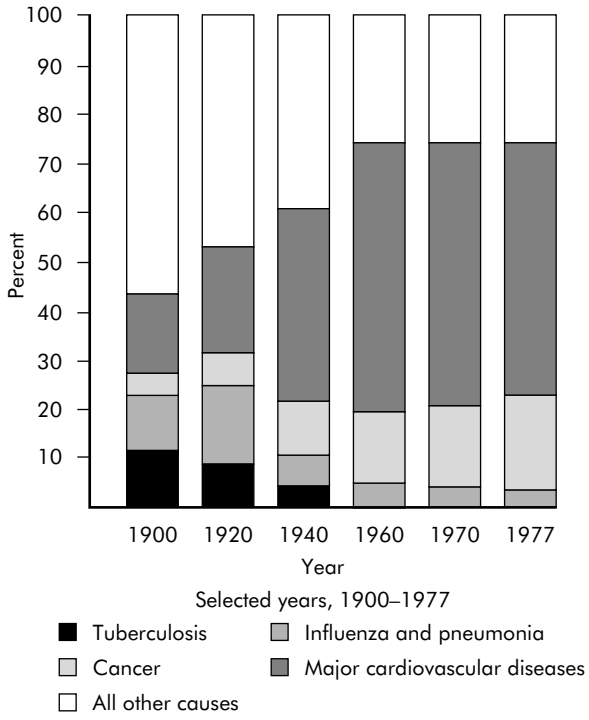

FIGURE 1.2 **United States Deaths from Selected Causes Expressed as a Percentage of all Deaths (Adapted from Califano, 1979b, p. 4, in the Public Domain)**

(Califano, 1979b, pp. 4; 94) present the evidence indicating that the human and financial toll from these four scourges has been reduced materially in our lifetimes.

Unfortunately, the reduction in these conditions has occurred along with an *increase* during the same years in such conditions as lung cancer, major cardiovascular disease, drug and alcohol abuse, and motorcycle and alcohol-related automobile accidents. The remaining data in Figure 1.2 and the additional data reported to the U.S. Congress by Califano (1979a, 1979b) shown in Figures 1.4, 1.5, and 1.6, reveal several of these increasing trends. There are, of course, many other conditions, illnesses, and disabilities that have not been mentioned. Those just named, however, represent the ones which in aggregate take an inordinate and unjustifiable human and financial toll.

Behavioral Health

In a previous article (Matarazzo, 1980), I traced the recent developments in federal funding of research and training as well as developments within

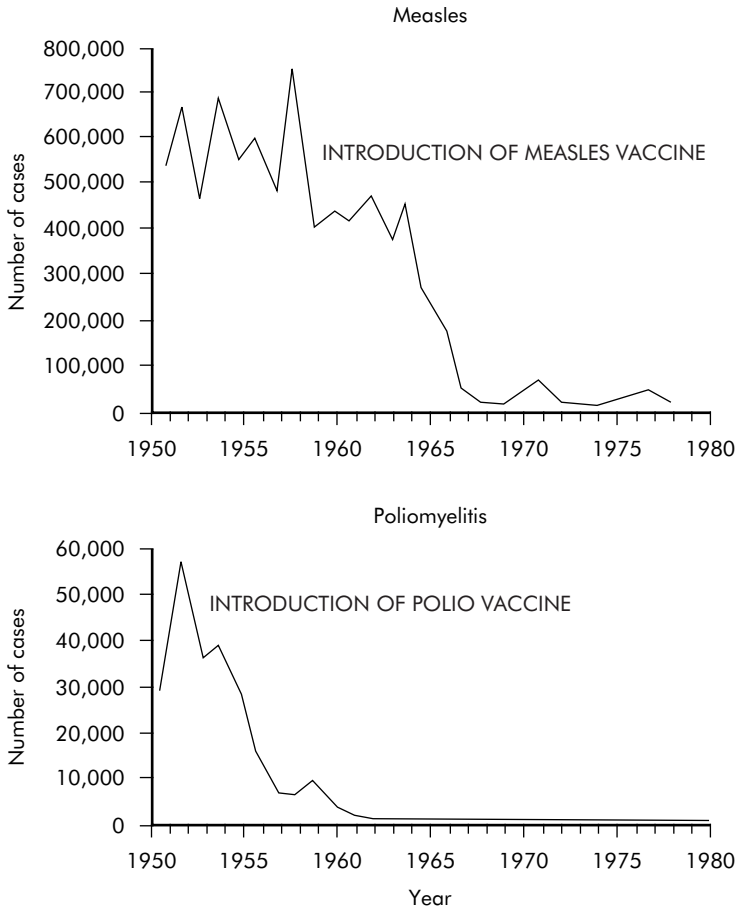

FIGURE 1.3 **Number of Cases of Measles and Poliomyelitis Reported in the United States (Adapted from Califano, 1979b, p. 94, in the Public Domain)**

some of the health disciplines themselves which were associated with a revival of interest in behavioral medicine and a new interest in behavioral health. I gave this latter field the following interim definition:

> *Behavioral health* is an interdisciplinary field dedicated to promoting a philosophy of health that stresses *individual responsibility* in the application of behavioral and biomedical science knowledge and techniques to the *maintenance* of health and the *prevention* of illness and dysfunction by a variety of self-initiated individual or shared activities. (Matarazzo, 1980, p. 813)

The decision to assign a formal name to this new interdisciplinary field was based on a number of factors. For example, the data in Figures 1.1 through 1.6 presented above support the charge by physician and social philosopher Knowles (1977) that:

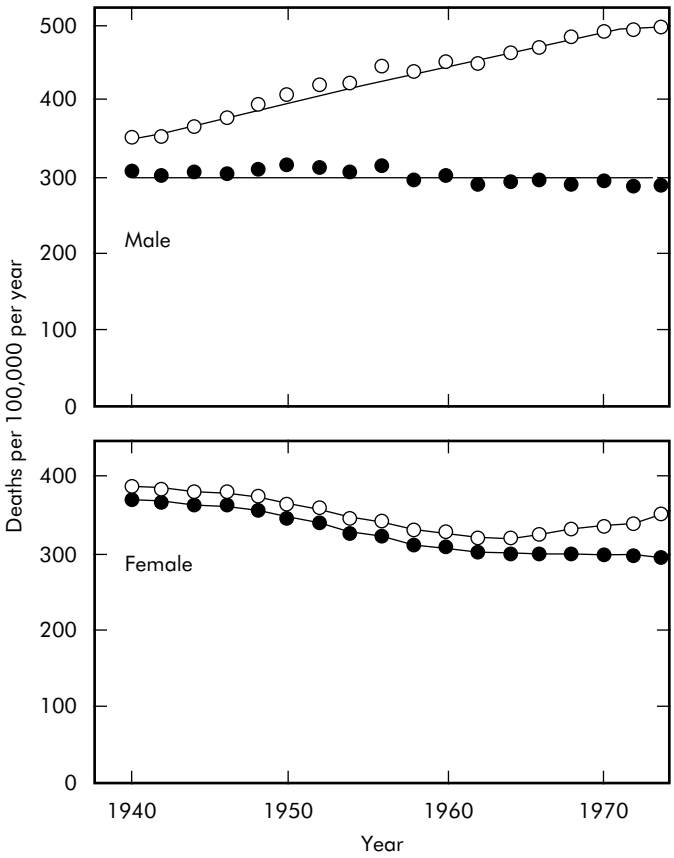

FIGURE 1.4 **Annual Mortality from Cancers in the United States for White Adult Males and Females: Dark Circles Denote all Cancers, Light Circles Denote Lung Cancers (Adapted from Califano, 1979a, p. 162, in the Public Domain)**

> Over 99 per cent of us are born healthy and made sick as a result of personal misbehavior and environmental conditions. The solution to the problems of ill health in modern American society involves individual responsibility, in the first instance, and social responsibility through public legislature and private volunteer efforts in the second instance. (p. 58)

There is evidence that leaders in many health professions have taken Knowles' challenge seriously.

Health Psychology

Medicine (including its related disciplines of preventive medicine, cardiology, etc.) and the disciplines of medical sociology, health education, epidemiology, stress physiology, and others clearly are actively involved in

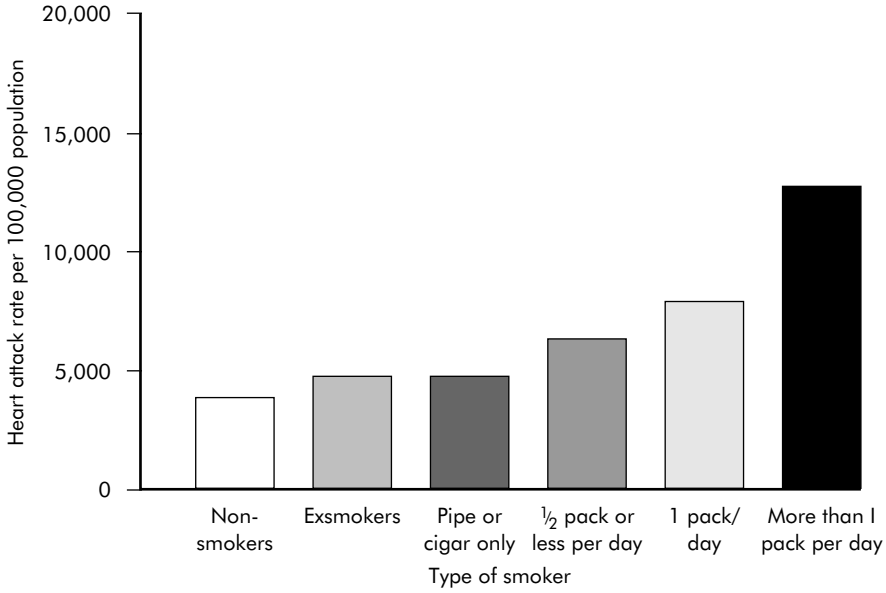

FIGURE 1.5 **Age-adjusted Rates of First Heart Attack for United States White Males Ages 30–59 Categorized by Smoking Status (Adapted from Califano, 1979b, p. 58, in the Public Domain)**

preventing illness and promoting good health. Articles documenting these contributions will be found in the journals of each of these disciplines. During the to 1980's past two decades psychology also has had its interest stimulated in this interdisciplinary field, and in 1978 the American Psychological Association established a division of health psychology in response to many concurrent developments in the field of health and illness. To add impetus to these developments within psychology, I recently offered the following as an initial description, subject to continuing modification by others, of this emerging field within psychology.

> *Health psychology* is the aggregate of the specific educational, scientific, and professional contributions of the discipline of psychology to the promotion and maintenance of health, the prevention and treatment of illness, and the identification of etiologic and diagnostic correlates of health, illness, and related dysfunction. (Matarazzo, 1980, p. 815)

The members of the Division of Health Psychology were recently polled by their officers, and by a small majority those voting preferred the following slightly modified interim definition for this emerging field.

> *Health psychology* is the aggregate of the specific educational, scientific, and professional contributions of the discipline of psychology to the promotion and maintenance of health, the prevention and treatment of illness, the identification of

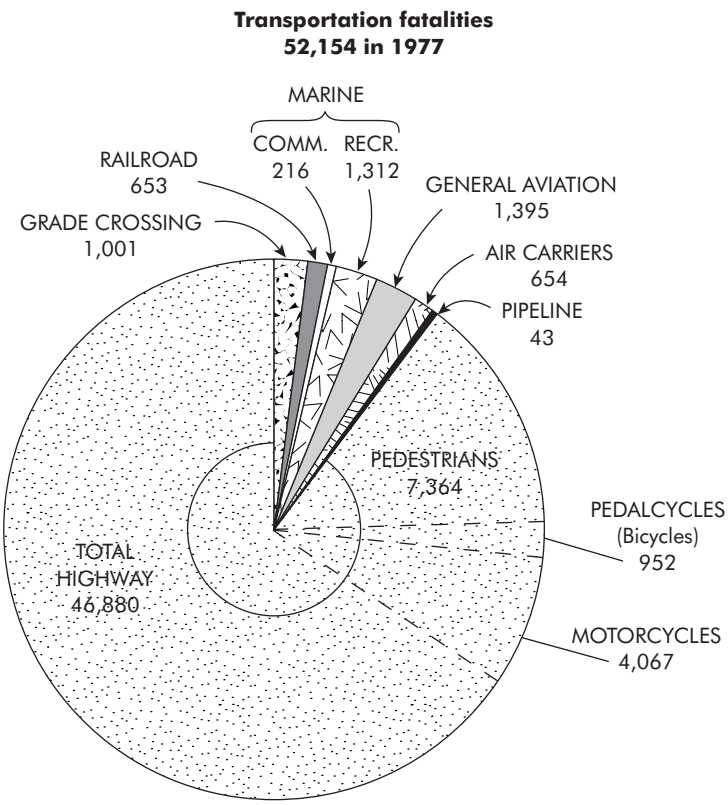

FIGURE 1.6 **Sources of the 52,154 Transportation Fatalities in the United States During 1977 (Adapted from Califano, 1979a, p. 60, in the Public Domain)**

> etiologic and diagnostic correlates of health, illness, and related dysfunction, *and to the analysis and improvement of the health care system and health policy formation.* (added material italicized)

The casual reader of these interim definitions might misinterpret health psychology as pertaining *only* to the concerns of individual psychologists with an applied interest or focus (e.g. clinical psychologists), but nothing could be further from the truth. During the first century of the American Psychological Association three subject areas within psychology appear to me to have engaged the *common* interest of individual psychologists from such widely disparate subspecialties as experimental, clinical, physiological, social, industrial, child, educational, and related branches of psychology. These three subject areas with very wide appeal for all types of psychologists were: (a) individual differences, (b) a combination of learning theory and personality theory, and (c) individual psychopathology. Recent developments in medicine and psychology have given rise to the interdisciplinary field labeled *behavioral health*, and these developments

have convinced me that health psychology (with its strong emphasis on the enhancement and promotion of health and the prevention of dysfunction in currently healthy children and adults) is a fourth area that can attract creative individual psychologists from seemingly disparate subfields of psychology.

Some Behavioral Health Challenges Awaiting Psychology

Study of Figures 1.1 through 1.6 shows that focusing some of this country's investigative, educational, and professional talent and resources on *changing the behavior of individual Americans* will reduce the human and financial costs associated with a number of preventable conditions. Today's indefensibly high health expenditures will therefore drop as well. National leaders of various persuasions agree that the costly toll from heart disease, cancer, and so on can be materially reduced. We can accomplish this if we can find ways to help our *currently healthy* citizens (1) refrain from smoking tobacco or abusing alcohol, drugs, and related deleterious substances; (2) reduce their salt and dietary cholesterol intake; (3) use dental floss; (4) fasten their seat belts; (5) exercise regularly; (6) establish proper sleep and rest habits; and (7) employ a few basic home, highway, and occupational health safety standards – to cite only a few examples. Therefore, in an effort to encourage psychologists from each of the subspecialties of our discipline to consider health psychology as a legitimate field in which to exercise their individual interests and employ their talents. I will discuss four of these seven areas that appear to me to be ones in which our science and profession can make a contribution with the knowledge currently extant in our discipline. Other psychologists could add to this list, which is meant merely to be illustrative.

Smoking

The data in Tables 1.2, 1.3, and 1.4 relate to smoking and highlight one of the more inviting challenges to psychology. Table 1.2 presents both a positive and a negative trend. Due to a massive national education program following the first Surgeon General's report to the nation on smoking (United States Public Health Service, 1964), and with considerable input from individual psychologists as well as representatives of a number of other disciplines (as revealed in the report forwarded to the U.S. Congress by Califano, 1979c), the percentage of male adult smokers of all ages in this country decreased from 52.6% to 39.3% from 1955 to 1975. This 1975 figure for men dropped to 36.1% in 1979 (Harris, 1981, p. 212). However, Table 1.2 also reveals that during the same period from 1955 to 1979 there was an *increase* in adult *female* smokers from 24.5% to 29.4%. Thus, although the massive national educational program that followed the first Surgeon General's report to the nation on smoking in 1964 helped reduce smoking

TABLE 1.2 **Percentage of Current and Former Male Female Adult Smokers in the United States in Different Age Groups**

	1955		1964		1966		1970		1975		1979[a]
Age	Current smoker	Former smoker	Current smoker	Former smoker	Current smoker	Former smoker	Current smoker	Former smoker	Current smoker	Former smoker	Current smoker
					Males						
21–24	51.4	3.6	67.0	9.5	61.9	7.2	49.8	20.0	41.3	16.0	
25–34	63.4	9.0	59.9	18.0	59.9	19.7	46.7	27.9	43.9	22.5	
35–44	62.1	11.1	59.9	22.9	59.0	21.9	48.6	31.4	47.1	25.8	
45–54	56.9	12.6	53.1	25.3	53.8	26.0	43.1	34.4	41.1	36.0	
55–64	43.6	15.7	50.9	24.5	47.7	31.0	37.4	41.4	33.7	38.8	
65+	22.3	13.6	29.9	27.0	27.8	29.5	22.8	43.8	24.2	36.2	
All ages	52.6	10.9	52.9	22.2	51.9	23.6	42.3	32.6	39.3	29.2	36.1
					Females						
21–24	29.7	3.5	41.9	7.6	49.2	7.9	32.3	13.2	34.0	19.9	
25–34	35.8	5.8	40.6	9.3	45.1	12.0	40.3	18.9	35.4	16.5	
35–44	32.4	4.9	39.2	9.4	40.6	10.5	38.8	15.8	36.4	17.7	
45–54	22.8	3.9	36.4	6.8	42.0	9.6	36.1	15.5	32.8	15.5	
55–64	10.8	2.6	20.5	7.0	20.6	10.5	24.2	16.0	25.9	15.0	
65+	3.5	1.6	7.8	3.3	7.6	5.2	10.2	8.2	10.2	10.7	
All ages	24.5	3.9	31.5	7.4	33.7	9.4	30.5	14.8	28.9	14.5	29.4

[a]1979 data are from 1981 Report of the U.S. Surgeon General (Harris, 1981, pp. 212–213; see also Carrigan, Armstrong and Moehring, 1980).

TABLE 1.3 **Percentages of Regular Teenage Cigarette Smokers in the United States by Age Group**

	Ages 12–14		Ages 15–16		Ages 17–18		Ages 12–18	
Year	Male	Female	Male	Female	Male	Female	Male	Female
1968	2.9	.6	17.0	9.6	30.2	18.6	14.7	8.4
1970	5.7	3.0	19.5	14.4	37.3	22.8	18.5	11.9
1972	4.6	2.8	17.8	16.3	30.2	25.3	15.7	13.8
1974	4.2	4.9	18.1	20.2	31.0	25.9	15.8	15.3
1979[a]	3.2	4.4	13.5	11.8	19.3	26.3	10.7	12.7

[a]1979 data (ages 12–18) are from the American Cancer Society's five-year study entitled "Target Five" ("Fewer Smoking," 1981), and the 12–14- and 15–16-year-old data are from Harris (1980, p. 36).

among males by an impressive 16.5%, the same era witnessed a 4.9% increase in the percentage of female smokers. Many experts agree with the American Cancer Society that this increase for females is eloquent testimony to the power of the advertisements that were carefully crafted with the help of psychologists who are specialists in the field of subliminal motivational psychology. Examples of these skillfully crafted slogans are "You've come a long way, baby," with its strong but still subtle appeal to the women's liberation movement. The "Virginia Slims" brand name artfully takes advantage of the increasingly well-documented research finding that, for many female (and male) smokers, quitting the habit is associated with gaining weight (Blitzer, Rimm and Giefer, 1977).

The shift from males to females as the targets of these "educational" campaigns by the cigarette companies was not confined to adult females. As shown in the last column of Table 1.3, the percentage of smokers among teenage girls began to increase rapidly (from 8.4% to 15.3% among 12–18-year-old girls during 1968 to 1974). Table 1.3 also shows that by the year 1974 the percentage (20.2%) of smokers among 15–16-year-old girls had even exceeded the rate (18.1%) for similarly aged boys, whose increase during the same six-year period was only 1.1% above the 17.0% rate reached in 1968. The most recent figures show, however, a *decline* in smoking for *both* girls and boys. The current smoker figures for 1979 released by the American Cancer Society are 10.7% for teenage boys and 12.7% for teenage girls ("Fewer Smoking," 1981). Each of these facts constitutes robust evidence that smoking behavior is amenable to influence.

As an interesting datum for psychologists, the additional percentages shown in Table 1.4 make clear that, for both girls and boys, the time of greatest *susceptibility* to becoming a regular smoker is around age 12. The United States taxpayer has generously supported the post-World War II development of academic and professional psychology. Should not a greater portion of psychology's currently vast talents and resources be applied to stemming the health and financial costs associated with smoking by children and adults as just cited in the tables and figures? As the field which has the

TABLE 1.4 **Distribution of U.S. 17-Year-Olds Who Had Ever Tried Smoking by Age at Which They First Tried Smoking, According to 1974 Current Smoker Status and Sex**

	Age at which 17-year-olds first tried smoking (percent distribution)												
Current smoker status	All ages	7 years and under	8 years	9 years	10 years	11 years	12 years	13 years	14 years	15 years	16 years	17 years	Median age in years
Regular smoker													
Boys	100.0	8.2	4.9	6.6	8.7	4.7	15.8	11.5	14.8	14.3	7.6	2.9	12.6
Girls	100.0	3.2	3 6	—	6.8	3.5	12.1	10.6	23.0	15.0	18.5	3.7	13.9
Both	100.0	6.4	4.5	4.3	8.0	4.3	14.5	11.2	17.7	14.6	11.5	3.2	13.2
Tried smoking but not regular smoker													
Boys	100.0	6.8	6.0	8.0	10.7	6.0	15.6	10.1	11.7	11.8	10.3	3.7	13.3
Girls	100.0	5.9	1.1	4.3	5.8	2.7	10.4	11.9	10.7	19.3	22.1	5.8	15.2
Both	100.0	6.3	3.4	6.0	7.7	4.2	12.8	11.1	11.2	15.9	16.7	4.8	14.3
Total													
Boys	100.0	6.9	4.7	7.5	8.6	4.5	14.4	11.6	13.5	14.6	9.6	4.1	13.8
Girls	100.0	4.6	1.9	2.8	5.3	2.6	10.7	12.5	14.5	17.8	22.1	5.3	15.2
Both	100.0	5.9	3.4	5.4	7.1	3.6	12.8	12.0	13.9	16.0	15.2	4.6	14.5

longest history in the study of human behavior, and especially individual behavior, psychology has the scientific knowledge base, the practical applied experience, and the institutional supports for individuals within it to begin to make important contributions immediately in preventing smoking among our country's youth and in helping adults who wish to quit to do so successfully.

Fortunately some beginning initiatives have been taken. Experimental, social, clinical, and educational psychologists have applied aspects of the knowledge accumulated by each of these subspecialties to smoking behavior. Schachter and his colleagues have wed elements of general psychology with counterparts drawn from renal physiology and pharmacology in a novel set of interrelated experiments designed to demonstrate the relationship between physiological and psychological variables in making the smoking habit resistant 'to extinction (Schachter, 1977; Schachter, Kozlowski and Silverstein, 1977; Schachter, Silverstein, Kozlowski, Herman, and Liebling, 1977; Schachter, Silverstein, and Perlick, 1977). Hunt has written a series of papers (see Hunt and Matarazzo, 1982 in which he has drawn heavily on the literature of a number of older and current theories from experimental psychology in an attempt to provide a heuristically useful perspective of how the smoking habit is initiated, how it is maintained over time, and (for those individuals wishing to quit) how it is very resistant to cessation. He has drawn from the theoretical writings of psychology in such important areas as habit, motivation, reinforcement, associative learning, resistance to extinction, personality, and addiction. Hunt also has applied these theories in an effort to understand the special problem of relapse. In a similar vein, Leventhal has discussed similar problems associated with initiation, maintenance, and termination, but he has done so primarily by utilizing the data base and theoretical writings of social psychology (Leventhal and Cleary, 1980).

The special problem of preventing smoking in children also has attracted the interest of academic psychologists from a number of subspecialties, as well as colleagues from medicine and related professions. For example, Jessor and Jessor (1977) and Ajzen and Fishbein (1970, 1972) have proposed some heuristically highly useful theoretical models of why children begin to smoke, and social and other theoretically oriented psychologists should find this area a highly fruitful one within which to follow their own interests. Furthermore, Evans and his colleagues in Houston (Evans et al., 1978), Luepker and his colleagues in Minneapolis (Hurd et al., 1980), and Wynder and his colleagues in New York City (Botvin, Eng, and Williams, 1980; Williams, Carter, Arnold, and Wynder, 1979) each have shown that the numbers of new smokers among pre-teen sixth- and seventh-graders can be reduced by as much as 50% through the use of educational programs skillfully crafted from knowledge now available to social, educational, and clinical psychologists.

Additionally, one need not wait until the middle or end of the life cycle (as in the age groups for the health risks shown in Figures 1.2, 1.4, and 1.5)

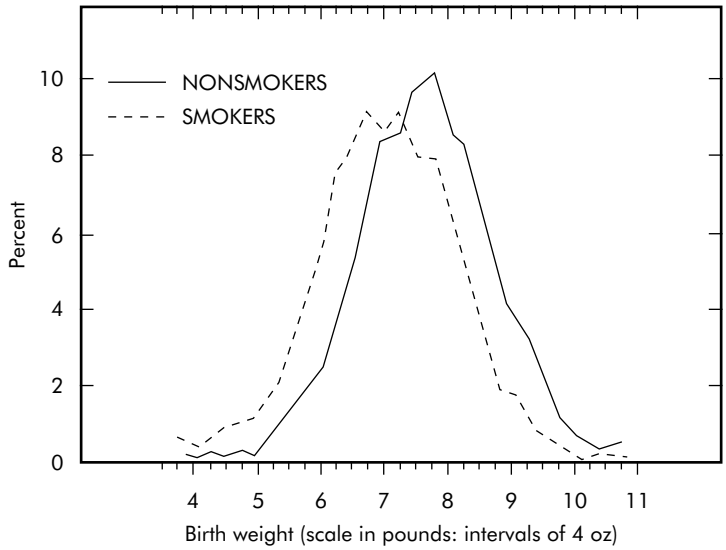

FIGURE 1.7 **Percentage Frequency Distribution by Birth Weight of Infants of Mothers Who Did Not Smoke During Pregnancy and of Those Who Smoked One Pack or more of Cigarettes per Day (Adapted from Califano, 1979c, ch. 8, p. 17, and Macmahon, Alpert and Salber, 1966)**

to see the later costs of beginning to smoke in one's teenage years. Smoking takes its toll long before that, and even on the fetus in its mother's womb. Figure 1.7 from Califano (1979c) shows a finding by Macmahon, Alpert, and Salber (1966) revealing that the birthweight of babies born to mothers who smoke is significantly lower than is that of newborns whose mothers do not smoke. Inasmuch as below-average birthweight is associated with impairment in intellectual abilities and a wide range of physical disabilities, each of which costs society billions of dollars per year, the contribution of psychology to finding ways to deter healthy mothers from smoking during pregnancy will go a long way toward cutting down the human and dollar costs now paid by our society in the lifetime health expenditure associated with the at-risk offspring of smoking mothers.

National polls have repeatedly shown that the majority of this country's regular smokers (27 million men, 25 million women, and 3 million teenagers in 1979) would like to quit smoking but have not been able to do so successfully. Nevertheless, since 1964 *some 30 million adult Americans have successfully stopped smoking*. The percentage of adult men (although not women) and teenage boys and girls who are current smokers is *decreasing* (Tables 1.2 and 1.3). Both of these statistics are robust evidence that the effort of psychologists and other workers in this health promotion field (preventing or ceasing smoking) has a good chance of meeting with success. Graduate education and research monies are available from several institutes to support such efforts.

Alcohol Use

Alcohol has been used by humans since time immemorial. Until the present generation, however, little was known of the probable costs to society of alcohol abuse. Some recent estimates of the costs associated with the marked abuse resulting in chronic alcoholism place these annually at $42 billion for the total economic cost and at $864 million for the costs related to the treatment of alcoholism (Vischi et al., 1980, p. 95). A recent literature review by Streissguth, Landesman-Dwyer, Martin, and Smith (1980) goes beyond the costs associated with *chronic* alcoholism and reveals an additional finding that the effect on the fetus of alcohol ingested by soon-to-be mothers who are merely *social drinkers* (2–3 drinks per day) may be even more devastating than the effect of tobacco on the fetus of such normal-appearing mothers. In the human fetus exposed to alcohol during gestation, the effect may be fetal alcohol syndrome (FAS), a condition characterized by mental retardation and a variety of related physiological abnormalities in some offspring. Based on their estimated prevalence for FAS of one such afflicted child per 750 births in the general population, Streissguth et al. (1980) conclude that these rates "make FAS one of the most common forms of mental retardation with a known etiology" (p. 356). However, the effects of alcohol on human health are far from clear cut. Specifically, the challenge for workers in the various health disciplines from these results by Streissguth et al., on social drinking is made even more compelling by recent reports that 2–3 drinks per day may, in fact, *prevent* the occurrence of other health risks, namely those associated with cardiovascular dysfunction, while also increasing some others (Kozararevic et al., 1980).

Furthermore, on the side of health impairment, additional recent reports by Galanter (1980) and by Parker, Birnbaum, Boyd, and Noble (1980) reveal that social drinking in young adults may produce marked loss of cognitive and neuropsychological capacities previously believed to be affected only by long-term chronic alcoholism. As cited in Califano (1979a) from a study by Donovan and Jessor (1978) and reproduced in Figure 1.8, problem drinking is present even among teenage youth, so the long-term human costs of both social and problem drinking present another challenge to psychologists interested in health psychology. Abuse of alcohol has been implicated as a major etiologic factor in a large number of the chronic medical conditions associated with today's high cost of hospital care in general hospitals as well as with mortality and disability associated with tragedies on our highways and streets. As the writings of the National Institute on Alcohol Abuse and Alcoholism during the past decade have made clear, alcohol abuse is a problem for both sexes, all ages, and all socioeducational groups. Psychologists can contribute a great deal toward helping currently healthy, nonalcoholic Americans who wish to drink socially learn to do so with less cost to themselves, to their families, their employers, and to society.

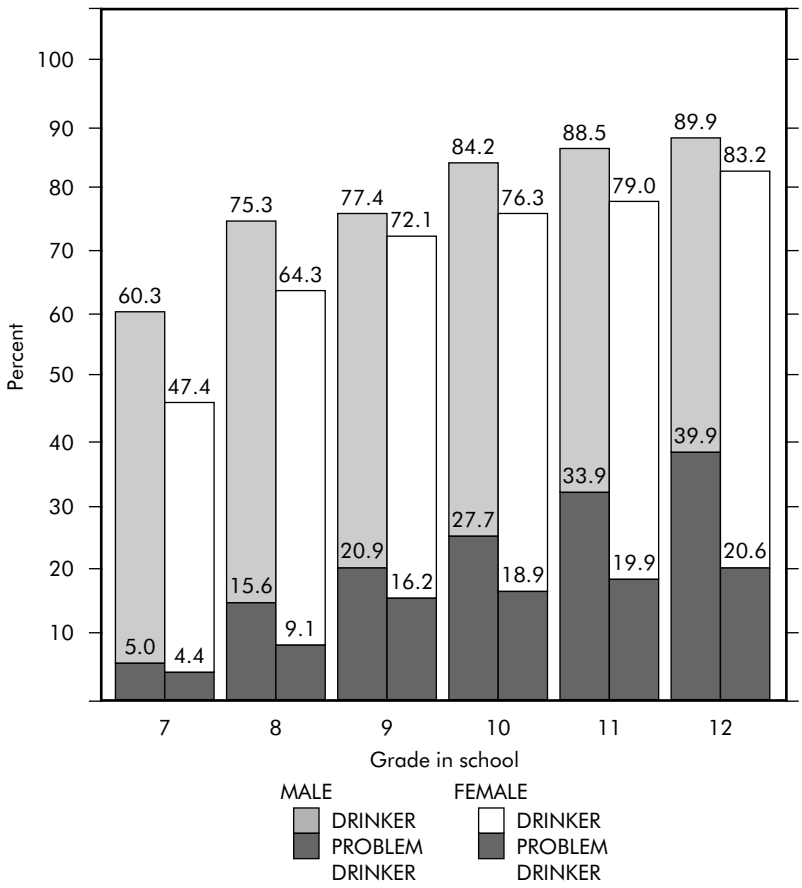

FIGURE 1.8 **Percentages of Youngsters in Grades 7 Through 12 who Admitted Being Drinkers or Problem Drinkers – Defined as Drunkenness Six Times During the Past Year or Trouble Related to Alcohol (Adapted from Califano, 1979a, p. 353, and Donovan and Jessor, 1978)**

Evidence for the deleterious effect of tobacco and alcohol on the health of our youth and older citizens continues to accumulate with each passing year. It is my hope that interested psychologists from each of our specialty areas, as members of a discipline with a long history of ethically based experience in the study of persuasion and behavior change, will join with scientists, educators, and applied workers in other disciplines to help those citizens who wish to do so take individual action to reduce this national cost in human mortality and morbidity and billions of dollars annually.

Healthier Diets and Related Risk Reduction

There is a consensus among leaders in cardiology that the use of too much salt in daily meals (as well as smoking and abuse of alcohol) is related to the

increasing numbers of Americans suffering from high blood pressure and from related cardiovascular dysfunctions. Furthermore, although not unanimous in this opinion, many cardiologists believe that too much saturated fat and plasma cholesterol characterize the average American diet and that these dietary factors, along with lack of exercise, result in increased morbidity and mortality due to cardiovascular dysfunction. A number of groups (made up of psychologists, physicians, and other colleagues) recently have provided examples of approaches behavioral scientists now are developing to help reduce the human and financial costs associated with these dietary and multiple risk factors. A review of the behavioral approaches being used to reduce the cardiovascular risks associated with eating foods high in plasma cholesterol and saturated fat has been provided by Carmody, Fey, Pierce, Connor, and Matarazzo (1982). Rather than duplicate that review here, I will cite as examples the research of only three research teams of psychologists, physicians, and other colleagues who are applying behavioral techniques to reduce the health risks associated with life-style (including diet) and cardiovascular functioning.

Foreyt, Scott, Mitchell, and Gotto (1979) and Mever, Nash, McAlister, Maccoby, and Farquhar (1980) recently reported from Houston and from Stanford, respectively, a striking reduction in their respective communities in the number of individuals at risk for heart disease due to risks associated with poor diet, smoking, and not enough exercise. Through the use of an educational intervention package that included either a diet booklet, or education in nutrition, or behavioral intervention utilizing group discussion, or a combination of these procedures, Foreyt et al., showed that the levels of cholesterol in their target population could be reduced significantly. However, as is shown in Figure 1.9, the maintenance of these initial losses beyond six months did *not* occur.

Meyer et al. (1980) used (with seemingly more maintenance of this success at follow up) a mass media campaign utilizing television, radio, newspapers, billboards, bus posters, direct mail leaflets, and face-to-face techniques as components of their community intervention and also produced significant *decreases* in some of the risk factors associated with cardiovascular disease among their target samples. Problems with this research program have been identified by Kasl (1980) and by Leventhal, Safer, Cleary, and Gutmann (1980), and rebutted in turn by Meyer, Maccoby, and Farquhar (1980). Comparable criticisms no doubt could be raised about the community research program in Houston by Foreyt et al., and about the even larger-scale community program being carried out by Puska (McAlister, Puska, Koskela, Pallonen, and Maccoby, 1980) and his colleagues in Finland with the help of some of these Stanford University psychologist-colleagues from the United States. In this Finnish study, called the North Karelia Project, a mass television educational campaign has resulted in dietary and other risk-factor changes that already appear to have reduced mortality and morbidity associated with cardiovascular dysfunction. The impacts of the dietary changes are confounded in this multiple-risk intervention study with the

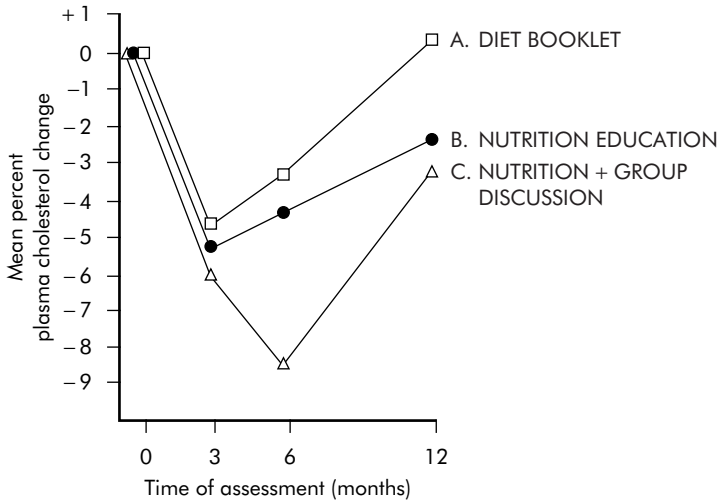

FIGURE 1.9 **Mean Percentage Change in Plasma Cholesterol in Three Groups Receiving Different Interventions (Adapted from Foreyt, Scott, Mitchell and Gotto, 1979, p. 449)**

smoking intervention and thus are not easily partialled out. However, as to reduction in smoking per se, in the most recent publication (McAlister et al., 1980) this cross-cultural group of psychologists and physicians reported that 10,000 of 40,000 adult Finnish smokers had quit the habit as a result of the educational intervention and were still not smoking at the six-month follow-up.

Although the literature on multiple risk-factor intervention briefly cited in this section represents but a small fraction of the voluminous literature on the behavioral treatment of dietary risks associated with cardiovascular dysfunction, it may suffice as preliminary evidence that psychologists and colleagues from other disciplines are making headway in applying psychological knowledge in the reduction or prevention of a number of *behavioral* risks associated with an increased probability of cardiovascular disease. Reducing the costs associated with cardiovascular diseases has been given a high priority both by the Congress of the United States and the National Heart, Lung, and Blood Institute, and therefore a relatively large source of monies for research and research training also awaits psychology departments and individual psychologists with an interest in this challenging field (Matarazzo, 1980).

Automobile and Motorcycle Accidents

Both the levels of mortality (shown earlier in Figure 1.6) and the morbidity resulting from automobile and motorcycle accidents extract human and health expenditure costs that could be reduced substantially (Califano, 1979b, pp. 59–63). Califano reports that approximately 1 death in 40 in the

United States is related to a motor vehicle and that deaths involving motor vehicle occupants constitute the largest group of fatal injuries for all ages between birth and old age. Psychology quite likely can do little about some of the causes of these vehicular deaths (e.g. maintenance and other road characteristics, amount of highway travel versus travel by air, and the cost–benefit ratios employed by manufacturers to make their automobiles more crashworthy). There are, however, above and beyond the role of alcohol, two major areas associated with motor vehicle crashes to which the knowledge base of general psychology seems to me readily applicable. These are *speed* at which we drive and our use and nonuse of *seat belts* as a form of safety restraint.

It is obvious to anyone who watches television and reads our newspapers that our vast auto industry (in common with cigarette, deodorant and soap makers, and other product manufacturers) makes extensive use of general principles of psychology to market its product. Yet this same auto industry appears to have spent precious little money in utilizing comparable psychological principles to help our citizens (especially our youthful new drivers) learn to drive at and maintain speeds that will better insure the safety of life and limb. Our nation's governors, and our President Reagan, did in fact recently utilize this country's gas and oil crisis to persuade Americans to reduce their highway driving speed to 55mph. The immediate result was an estimated saving of 5,000 lives annually (Califano, 1979a, p. 61).

I hope that this recent experience will encourage interested individual psychologists to approach federal funding agencies as well as their elected municipal, state, and federal officials and offer their talents in a search for innovative approaches that will help our citizens voluntarily elect to continue to drive at these safer speeds. Norway and other countries have cut down the increasing numbers of deaths of their citizens by legally forbidding the driving of any motor vehicle following the use of alcohol in any amount. Americans as a nation have opted for the moment not to resort to similar stiff prison sentences (or execution, as in one Middle Eastern country) as a means of reducing the mortality and morbidity associated with automobile accidents.

Yet, Americans are conscious of the risk of vehicular collisions, as evidenced by the popularity early in the 1970s of automobiles equipped with seat belts. In Australia, vehicle occupant deaths decreased by some 25% after seat belts were required by law. Furthermore, reasoned opinion suggests that if Americans wore a combined lap and shoulder belt the likelihood of death and serious injury would be reduced by about 60% of that shown in Figure 1.6 (Califano, 1979b, p. 61). Sadly, research to date has revealed that the mass education campaigns designed to motivate drivers to *voluntarily* use seat belts have been singularly unsuccessful (Kelley, 1979; Robertson, 1976, 1978). Clearly, the reasons for this lack of success are numerous and quite likely complex. However, in common with pediatric psychologist Christophersen (1977), I believe this seat belt problem constitutes a salient and challenging real-life laboratory for research by interested psychologists and their graduate students.

The bases for my faith lie in the history of our field's contributions in human factors research during the period from the beginning of the Second World War in 1939 to the spectacular triumph of our nation's aerospace industry in 1969, when this country successfully wed man and machine and placed two men on the moon. I thus find it inconceivable that the talent of psychology cannot design a motivationally salient system involving a seat belt or similar restraining safety system that Americans will use voluntarily and as comfortably as today they use the brakes on their automobiles. Both during the Second World War and in more recent space programs, psychology added its talent to that of specialists from other disciplines and helped design and engineer highly sophisticated and relatively safe man–machine systems in which the person's human factor capacities and motivations were first studied and then fully utilized in the design of a safe man–machine system. My reading of the zeitgeist is that the U.S. Department of Transportation as well as a number of NIH institutes would welcome research applications in this area from psychologists. Psychologists with ideas for curricular and related educational programs in safe driving for our youth also quite likely will be accorded considerable interest.

Behavioral Health's Challenge to Psychology

I sense strongly that a consensus has emerged from many quarters: To successfully grapple with one of the more important challenges of the last two decades of the 20th century, we must aggressively investigate and deal effectively with the role of the individual's behavior and life-style in health and dysfunction. Furthermore, representatives from many segments of our society are increasingly looking to the science and profession of psychology for help with this problem. Although it has been a leader in the field of *mental* health since the Second World War, in my opinion psychology as a discipline has been curiously slow to recognize the opportunities offered it by these national developments as they relate to the *physical* health of our nation. Yet, during the past several years, the National Institutes of Health, the National Science Foundation, and other federal funding agencies, responding to pressures from our citizens and their elected officials, almost monthly have asked graduate departments of psychology to submit proposals for basic and applied research in areas relating to physical health and behavior (Matarazzo, 1980). Some of these requests for proposals invite applications in the field of *behavioral medicine* and focus on needs of actual patients – those who are ill and disabled and who are being treated by physicians in hospitals and in private offices. This population of patients continues to provide excellent opportunities for *licensed* medical and clinical psychologists whose interests in health psychology are directed toward actual clinical application and research, as well as for physiological and other qualified psychologists whose interests are in basic research. However, the field of *behavioral health* offers academic, research, and applied

psychologists from every specialty comparable opportunities for research, teaching, and practice (as health educators), but with currently healthy people. There is much more that could be done at the interfaces of *normal* physical health and behavior. Four such areas where medicine and psychology interact include basic and applied research in physiological, experimental, biological, and social psychology with normal individuals. Each of these has a long history of research and teaching in our universities.

Furthermore, as many of us in teaching are aware, undergraduate and graduate students of psychology have, for over a decade, pleaded with their teachers that academic and research psychology deploy some of its resources into human areas that are "more relevant." Many psychologists are coming to agree with their students and with our elected officials that the challenge of enhancing and promoting the health of our currently healthy American children and adults offers every specialty of psychology a wide range of laboratories for "pure" as well as "applied" research. This challenge also offers a perspective within which to teach the subject matter that will help produce as well-founded an academic education in psychology as is currently afforded by our animal laboratories or by the content of our present courses and textbooks.

I therefore have concluded that the ball is now in psychology's court. It is up to those among us who are interested in behavioral health to take the initiatives that will allow us to participate in a new research and teaching enterprise which is professionally stimulating and to also contribute a needed public service while we are doing so. I am aware that there are many additional areas for research and education in behavioral health which I did not deal with here but which also require (and will challenge) the talent and imagination of psychologists and their colleagues in the biomedical and the behavioral sciences. Psychologists wishing a fuller introduction to the large number of areas which need help from our discipline should peruse the US government's explicit invitation in this area, *Healthy People: The Surgeon General's Report on Health Promotion and Disease Prevention*, which the then-Secretary of HEW (Califano, 1979a, 1979b) recently forwarded to the United States Congress.

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