



Institute for the Study of Healthcare Organizations & Transactions



Research Training in the Behavioral and Social Sciences

**"Personal Statement" Appended to
*Addressing the Nation's Changing Needs for
Biomedical and Behavioral Scientists***

**Report of the Committee on National Needs
for Biomedical and Behavioral Scientists**

**Education and Career Studies Unit
Office of Scientific and Engineering Personnel
National Research Council
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Preface

The "personal statement" below is taken verbatim from Appendix F of the report of the Committee on National Needs for Biomedical and Behavioral Scientists, a unit of the National Research Council. The report was released in the Summer of 2000. In this preface, I provide some background to the Report, as well as some additional remarks that were not appropriate to the formal dissent.

Under the terms of the National Research Service Award Act of 1974, Congress periodically asks the National Academy of Sciences to review the research training activities of the National Institutes of Health (NIH), particularly those activities which fall under the aegis of the National Research Service Award (NRSA). The report published in 2000 is the 11th in a series of such reports published since 1975. It was prepared by the Committee on National Needs for Biomedical and Behavioral Scientists, a unit of the National Research Council, the operating arm of the National Academy of Sciences.

In the last such report, published in 1994, the Committee recommended a substantial increase in research training in the behavioral and social sciences, in recognition of the contributions that

these fields can make to health and health care. However, the NIH did not implement this recommendation, and with a few exceptions (notably the National Institute of Mental Health), the behavioral and social sciences are not well represented in the training portfolios of the various NIH institutes. Nevertheless, the current Committee declined to repeat or reinforce its predecessor's recommendation. In fact, the Committee concluded that "At present, the overall size of the behavioral and social science workforce seems sufficient to fill existing national needs, and current levels of research training appear to be adequate to maintain that supply". The implication is that NIH does not need to take any further action to increase the size and scope of its training activities in the behavioral and social sciences.

In this respect, I believe that the Committee has made a serious mistake. Even if the overall size of the behavioral and social science workforce is adequate, the NIH should take steps to encourage more behavioral and social scientists to engage in research directly relevant to health and healthcare. In the following "Personal Statement", which is extracted from the Committee's published report, I provide another perspective on NIH training activities in the behavioral and social sciences, a rationale for increased involvement of the behavioral and social sciences in health and healthcare, and a set of alternative recommendations to be considered by policymakers and successors to this Committee.

Two other points may deserve brief mention.

First, the Committee's work was hampered to a considerable degree by a lack of information concerning behavioral and social scientists engaged in research directly relevant to health and healthcare. While the Committee was able to assume that virtually all biomedical and clinical scientists were engaged in health and healthcare research (almost by definition), the same could not be said for the behavioral and social sciences, including psychology. We simply do not know how many behavioral and social scientists are engaged in health and healthcare research; we only know how few behavioral and social scientists receive research training through NRSA mechanisms, compared to biomedical scientists. Furthermore, the available data specifically excludes clinical psychologists, even though many clinical psychologists, employed in both university psychology departments and medical schools, engage in research on health and healthcare (clinical psychology is a profession, but it is also, and originally, a scientific subdiscipline). For this reason, I strongly support the Committee's first recommendation, which is for improved data on the behavioral and social sciences workforce.

Second, the Committee's awareness of the actual and potential contributions of the behavioral and social sciences to health and healthcare was impaired by a general lack of involvement by the various professional societies. During its deliberations, the Committee solicited public comment on the NRSA program. While it received responses from more than 100 individuals in industry and academia (administrators, faculty and students), input from the various disciplinary organizations were generally lacking. The major exception was the American Psychological Society (not the far larger American Psychological Association), which made forceful arguments in behalf of its constituents. In the future, the professional organizations representing behavioral and social scientists should take a more active role in tracking, and contributing to, the work of this standing committee of the NRC.

It should be noted, in conclusion, that the Committee's task was to evaluate research training, not research activity. If the actual and potential contributions of the behavioral and social sciences to health and healthcare warrant increased funding for research training, as I believe they do, the arguments that follow should apply to research as well. There is no point in increasing funding for behavioral and social science research training unless funds will be increased as well for the behavioral and social science research, including basic research. Just as each of the NIH institutes and similar agencies should contribute substantially to basic and applied research training, each should contribute substantially to basic and applied research itself.

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Appendix F

Personal Statement Concerning Research Training in the Behavioral and Social Sciences

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I generally agree with the findings, conclusions, and recommendations of the Committee on National Needs for Biomedical and Behavioral Scientists. I believe, however, that the committee has not fully considered the actual and potential contributions that the behavioral and social sciences can make to health and health care, and the implications of these contributions for the National Research Service Award (NRSA) training program and related training activities sponsored by the National Institutes of Health, Agency for Healthcare Research and Quality, and the Health Resources and Services Administration. In this "personal statement", I wish to outline briefly some of these contributions and some of their implications for training.

Contributions of the Behavioral and Social Sciences to Health and Health Care

Behavioral and social factors play a central role in health and illness. A widely cited study found that more than half of premature deaths in the United States during 1990 could be attributed directly to behavioral and social factors, including tobacco use, diet and activity patterns,

alcohol, firearms, sexual practices, the operation of motor vehicles, and drug use.¹ Taken together, tobacco use, diet, and activity accounted for approximately five times as many premature deaths as did microbial and toxic agents. Similar findings are contained in periodic analyses of the leading causes of death published by the Centers for Disease Control and Prevention. In addition, the study cited evidence that problems of access to primary care, screening, and preventive care accounted for approximately 7 percent of premature deaths, and that poverty has a direct effect on mortality, independent of access to care. In fact, socioeconomic status is one of the most reliable predictors of both health and longevity.

The case of HIV/AIDS offers dramatic testimony to the role that the behavioral and social sciences can play in health and illness. Almost two decades after the identification of AIDS (in 1981) and the isolation of the HIV virus (in 1983) and extensive biomedical research, there is still no cure and no vaccine. Nevertheless, psychosocial interventions, taking account of both the determinants of individual behavior and the wider sociocultural context in which individual behavior takes place have effectively reduced the incidence of HIV-related sexual risk behaviors.² According to Thomas J. Coates and Chris Collins, "altering behavior" through targeted education, peer influence and community action, advertising, and marketing remains "the primary way to control the epidemic" of HIV-AIDS.³ An NIH Consensus Development Conference Statement, prepared by a nonadvocate, non-Federal panel of experts, concluded that "Behavioral interventions to reduce risk for HIV/AIDS are effective and should be disseminated widely."⁴

Although some drug treatments (such as AZT) have been developed that greatly slow the progression of HIV to AIDS, compliance with these treatments by HIV-infected individuals is often remarkably poor given what is at stake. In fact, across a wide variety of chronic and life-threatening diseases, from asthma and hypertension to epilepsy and renal disease, compliance with prescribed medical regimens is universally acknowledged to be a central problem for health care professionals. According to some analyses, as many as 50 percent or more of patients take prescribed medicines improperly—if they take them at all. The situation is just as bad, if not worse, for compliance with such disease prevention regimes as diet and exercise. The problem of compliance underscores the fact that developing a pill is only one step toward effective treatment or prevention. We must also get patients to take their pills: This is a behavioral problem that must be addressed at the individual and sociocultural levels of analysis.

It is now understood that stress (including job stress and burnout) and negative emotionality are important risk factors for disease, while social support and positive emotionality are significant factors in reducing both morbidity and mortality. While the bacterium *h. pylori* is found in the intestinal tracts of most if not all individuals suffering from ulcers, not everyone infected with *h. pylori* gets an ulcer: According to one theory, stress levels make the difference between health and disease. Although some of the neuroendocrine and neuroimmunological mechanisms underlying "psychosomatic" relationships are becoming known, the fact remains that both stress and social support are properly defined in psychosocial rather than physiological terms. Certain environments are more stressful than others, and in the final analysis it is the individual's mental representation of these environments that arouses stress. Although biological interventions may be able to alter the body's response to stress, the key(s) to alleviating stress itself will be found at the individual and social levels.

The psychosocial aspects of health encompass not just health and disease but a wide variety of health behaviors, broadly defined. The maintenance of health and the prevention of disease requires individuals to engage in healthy behaviors, consult health care professionals when they experience the symptoms of disease, and participate actively in both the treatment of acute illnesses and rehabilitation of chronic disease. Somatization disorder and the inappropriate and expensive use of health services that it entails, remains one of the most vexing mental health problems encountered in primary care and general hospital practice. The adverse health consequences of tobacco use are best prevented by convincing people not to smoke in the first place. The prognosis of breast cancer is best with early detection through a program of regular self-examination and appropriate mammograms. Proper treatment of hypertension requires that an individual take prescribed drugs even though he or she will not experience any relief of subjective symptoms. Successful management of renal disease is not accomplished by transplant or dialysis alone: In either case, the patient must also make significant lifestyle changes. Health behavior, illness behavior, the sick role, and rehabilitation are not matters of anatomy and physiology: They are matters of behavior, society, and culture. They require coordinated and integrated attack by behavioral and social scientists working across the disciplines—and especially by investigators whose approaches transcend the boundaries of the traditional disciplines.

We have seen radical changes in the organization of health care, including changes in the duties of established professions such as pharmacy; the proliferation of new professions (such as nurse practitioners and physician assistants) involved in primary care; the impact of third-party payments on the practice of medicine; the rise of evidence-based medicine and other aspects of "managed" care; the "carving up" of health care through disease management and other programs; the advertising of pharmaceuticals directly to patients; the increasing acceptance of dietary supplements, herbal remedies, and other alternatives to traditional medications; and the availability of vast amounts of medical information, of variable quality, over the Internet. The advent of managed care creates at least the appearance of conflict between the ethical responsibilities of doctors to their patients, and their financial responsibilities to their families and their employers. Physicians, once largely private practitioners, are increasingly cast in the role of employees: They have even begun to unionize. Health care, once a matter of a private relationship between doctor and patient, practiced in private offices and hospital wards, is now an extremely complex and often mysterious industry. All these trends have irrevocably changed the relationships between health care providers and consumers, among providers, and between providers and payers. Understanding and coping with these changes is a matter for the social sciences; and none of the traditional disciplines operating alone is adequate to the task.

The United States is an increasingly diverse and multicultural society. Once portrayed by John Dewey as a great melting-pot, American society is increasingly being recognized as a stew, in which each individual ingredient retains its identity. Nathan Glazer, whose *Beyond the Melting Pot* is a classic study of the immigrant experience,⁵ has concluded in his most recent book that *We Are All Multiculturalists Now*.⁶ The health and illness behavior of "new Americans" may be determined to a large extent by their cultural background and the conception(s) of health and illness that flow from it. Nowhere is this better illustrated than in Anne Fadiman's book, *The Spirit Catches You and You Fall Down*,⁷ which portrays the conflict between traditional Hmong culture and advanced Western medicine in the treatment of the infant Lia Lee, daughter of

Laotian immigrants living in Merced County, California. Lia's doctors diagnosed epilepsy and prescribed anticonvulsant drugs, while her parents ascribed her condition to a wandering soul (*gaug dab peg*) and wanted to perform animal sacrifices. Although most health care episodes may not entail such a dramatic conflict of cultures, the point remains that, in twenty-first-century American society, effective strategies for the prevention and treatment of disease require that health care providers be sensitive to cultural differences that may exist between their patients and themselves.

Behavioral and Social Science Training at the National Institutes of Health

Considerations such as these suggest that the behavioral and social sciences are just as much basic sciences for health as the traditional "biomedical" fields are. Nevertheless, it appears that the NIH investment in NRSA research training in the behavioral and social sciences is not commensurate with the contributions that they have to offer the health care enterprise.

As just one example, Tables G-7 and G-8 of the Committee's report indicate that, during 1997, NIH and other Department of Health and Human Services (DHHS) traineeships and fellowships were the primary source of financial support for 11.6 percent (3,941 out of 33,873) of graduate students in the basic biomedical sciences, but only 2.3 percent (563 out of 24,988) of graduate students in the behavioral and social sciences. In fact, these tables show that over the entire period 1975-1997, HHS traineeship and fellowship support for students in the behavioral and social sciences declined from 19.1% in 1975 to 2.3% in 1997; HHS fellowship support for students in the biomedical sciences declined as well, but less severely: from 24.7% in 1975 to 11.6% in 1997. Of course, as the committee's report notes, not all behavioral and social science graduate students are engaged in health-related research, while (almost by definition) virtually all biomedical science graduate students do so. Still, it seems unlikely that the drop in traineeship and fellowship support in the behavioral and social sciences was accompanied by a decrease in the numbers of careers in health research available for these students. In any case, the discrepancy suggests that NIH policies should more aggressively encourage graduate students in the behavioral and social sciences to focus their efforts on problems more closely related to health and health care. Certainly that was the recommendation of the previous incarnation of this committee, which in 1994 recommended that the number of NRSA awards for pre- and postdoctoral research training in the behavioral and social sciences increase 35 percent by 1996, while maintaining the basic biomedical sciences at their 1993 levels. The U.S. Congress seconded this recommendation, and beginning in 1995 it has continuously requested that the NIH develop and execute a plan to implement it. While the number of NIH and DHHS traineeships and fellowships in the basic biomedical sciences did indeed hold constant between 1993 and 1997 (4,001 and 3,941 recipients, respectively, according to Table G-7 of the committee's report), the number in the behavioral and social sciences increased only about 4 percent, from 539 to 563 (Table G-8).

As important as the sheer amount of support is, it is also important to understand where that support comes from and where it is going. Table F-1 summarizes an analysis of the sources of

NRSA funding for Ph.D. recipients in the biomedical and behavioral sciences in 1995 who received funding from the NRSA program during graduate school.⁸ According to this information, federal agencies and NIH institutes provided NRSA training support to 1,194 individuals who received Ph.D.s in the biomedical sciences (83.8 percent of the biomedical and behavioral Ph.D.s who received NRSA funding) and 231 individuals who received Ph.D.s in the behavioral and social sciences (16.2 percent of those with NRSA funding) that year. The table shows the agency or institute that provided the NRSA support and within the behavioral and social sciences, the particular discipline in which individuals received their Ph.D.s (individuals who received their Ph.D.s in health services research and other "clinical research disciplines" are not included in the analysis).

Table F-1
Sources of Predoctoral NRSA Research Training Support
for 1995 Ph.D. Recipients in the Biomedical and Behavioral Sciences.

Source	<i>All Biomedical</i>	<i>Anthropology</i>	<i>Demography</i>	<i>Economics</i>	<i>Psychology</i>	<i>Sociology</i>	<i>Speech Pathology</i>
AHCPR	0	0	0	1	0	0	0
NIAAA	6	0	0	0	4	0	0
NIA	11	0	1	0	12	9	1
NIAID	65	0	0	0	0	0	0
NIAMSD	3	0	0	0	0	0	0
NCI	132	1	0	0	0	0	0
NIDA	12	0	0	0	8	1	0
NIDOC	3	0	0	0	2	0	2
DIDR	4	0	0	0	3	0	0
NIDDK	16	0	0	0	0	0	0
NIEHS	57	0	0	0	0	0	0
NEI	24	0	0	0	1	0	0
NIGMS	675	0	0	0	2	2	0
NICHHD	47	1	4	0	27	14	0
NCHGR	3	0	0	0	0	0	0

NHLBI	57	0	0	0	9	0	0
NIMH	50	7	0	0	107	11	0
NCNR	2	0	0	0	1	0	0
NINDS	27	0	0	0	0	0	0

Within NIH, responsibility for training in the behavioral and social sciences has fallen mostly to the three institutes formerly under the umbrella of the Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA): the National Institute on Alcohol Abuse and Alcoholism (NIAAA), National Institute on Drug Abuse (NIDA), and National Institute of Mental Health (NIMH). Of the 231 Ph.D.s in the behavioral and social sciences who had received NRSA funding in graduate school, 125 (54.1 percent) were supported by NIMH, and an additional 4 (1.7 percent) and 9 (3.9 percent) by NIAAA and NIDA, respectively, accounting for 59.7 percent of the total with NRSA support. The National Institute of Child Health and Human Development (NICHD) accounted for 46 individuals (19.9 percent), and the National Institute on Aging (NIA) for 23 individuals (10 percent). Not surprisingly, the one individual supported by the Agency for Health Care Policy and Research (AHCPR; now the Agency for Healthcare Research and Quality) was in the behavioral and social sciences (in fact, the sole economist to receive predoctoral support through the NRSA program). The remaining 23 individuals (10 percent of the total) were distributed over the remaining 11 NIH institutes.

Closer inspection of Table F-1 reveals that the distribution of biomedical and behavioral science Ph.D.s varies greatly from institute to institute. Of the 206 Ph.D. recipients in 1995 who were supported by NRSA awards through the former ADAMHA institutes, 138 (67 percent) were in the behavioral and social sciences, compared to 68 (33 percent) in the biomedical sciences. For NIA and NICHD, the behavioral and social sciences accounted for 67.7 percent and 49.5 percent of their 34 and 93 recipients, respectively (as noted earlier, the one recipient from AHCPR was in a behavioral and social science discipline). For the remaining 11 NIH institutes, the percentages are dramatically reversed: only 2.2 percent of the 1,092 Ph.D. recipients in 1995 were in the behavioral and social sciences. For example, even though the behavioral and social sciences are basic sciences for health, the basic biomedical sciences accounted for 99.4 percent of recipients supported by the National Institute of General Medical Sciences (NIGMS). Despite considerable advances in behavior genetics, not a single Ph.D. in the behavioral and social sciences was supported by the National Human Genome Research Institute.

Almost all the predoctoral research training provided in the behavioral and social sciences goes to psychologists. As indicated in Table F-1, psychologists accounted for 176 (76.2 percent), and sociologists for an additional 37 (16 percent), with 18 individuals divided among anthropology, demography, economics, and speech pathology. Psychologists supported by NIMH accounted for 107 individuals, or 46.3 percent of the total recipients of NRSA funding in the behavioral and social sciences.

Given the central role that the behavioral and social sciences have played, historically, in understanding and treating mental illness and substance abuse, it is not surprising that the training activities of the former ADAMHA institutes are rather heavily weighted in their direction. However, in view of the contributions that the behavioral and social sciences can and do make to the health care enterprise, it is rather disconcerting to learn that the remaining institutes have devoted so few resources to training in these fields.

Alternative Recommendations

The committee majority has chosen not to repeat or reinforce its predecessor's call for increases in NRSA awards in the behavioral and social sciences and, indeed, has recommended that there should be no growth in the annual number of doctorates awarded in these fields. In view of the apparent underemployment of behavioral and social science Ph.D.s, and the possible overproduction of Ph.D.s in some specialties, it is hard to gainsay this latter recommendation. I believe, however, that the committee should have taken the opportunity to recommend policies that would redirect more current and future students in these fields into research training more directly related to health and health care. With the establishment of the Office of Behavioral and Social Science Research, NIH has taken an important step forward in recognizing the contributions of the behavioral and social sciences to health and health care, and in promoting these fields within the institutes. But our committee is particularly concerned with research training, and in this respect it seems clear that NIH and DHHS can and should do more.

1. The NIH and DHHS should expand their training activities in the behavioral and social sciences, especially as they pertain to health and health behavior, without reducing the amount of behavioral and social science training supported by the former ADAMHA institutes and other institutes that are already doing a great deal in this direction. That is to say, the current level of behavioral and social science training supported by NRSA should not merely be spread more broadly over the NIH institutes. Rather, new funds should be provided so that all institutes can support their fair share of behavioral and social sciences research training, without compromising the training activities already on the books at such institutes as NIMH and NICHD.

2. What is the meaning of "fair share"? Although the behavioral and social sciences are relevant to the mission of each of the NIH institutes, the institutes vary widely in terms of the amount of funding devoted to research training in these disciplines. According to figures developed by the Center for the Advancement of Health, some NIH institutes devoted almost a third of their 1998 training budgets to the behavioral and social sciences, while other institutes devoted less than 1%; the median value was approximately 7%.⁹ As a first step, new funds earmarked for training in the behavioral and social sciences should be provided to those institutes whose current support in this area is minimal. As a second step, additional new funds should be allocated to those institutes which already make substantial contributions to training in the behavioral and social sciences, in order to permit them to expand their efforts in this area. The intent of this recommendation is to enable NIH institutes to expand their training efforts in the behavioral and social sciences, without requiring a reallocation of existing funds, which would compromise

efforts already underway. It would be a mistake for those institutes which now provide the bulk of behavioral and social science support to reduce their efforts in these areas. But the NIMH, NIA, and NICHD should not be expected to carry the weight of behavioral and social science research training for the entire NIH. In particular, the National Institute of General Medical Sciences should increase its training efforts in the behavioral and social sciences, in recognition of the fact that these fields are as much "basic sciences" for health as are anatomy and physiology.

3. Each of the NIH institutes should insure that its training portfolio includes diverse representation from the disciplines constituting the behavioral and social sciences. As things currently stand, the vast bulk of training funds in the behavioral and social sciences goes to psychology. Training funds should not be diverted away from psychology to cover other behavioral and social sciences. All the disciplines have important contributions to make. Instead, the expansion of research training in the behavioral and social sciences should be supported by the new funds recommended above.

4. The preceding analysis and recommendations have been couched in terms of the traditional behavioral and social science disciplines, such as anthropology, psychology and sociology, because that is the way data analyses have been presented to the committee. In the future, however, it seems likely that the most important contributions of the behavioral and social sciences to health and health care will be made by interdisciplinary fields such as health services research, which approach problems from several different angles. Such interdisciplinary efforts are likely to contribute more to health and health care than any single discipline, such as psychology, can do. The committee is right to call for special attention to interdisciplinary research. The text of the recommendation, however, implies that these interdisciplinary activities will likely involve the brain sciences and medicine. It should be understood that the behavioral and social sciences are full sciences in their own right, and interdisciplinary efforts by scientists in these fields can proceed independently of neuroscience, behavior genetics, and other fields of biology.

5. Although the committee's report and this addendum have focused on NRSA support for research training support specifically related to health, it should be understood that basic research in the behavioral and social sciences, no less than basic research in the physical and biological sciences, lays the foundation for health-related research. It goes without saying that the development of brain-imaging techniques relies on basic research in physics and the development of new pharmaceuticals relies on basic research in biochemistry. In exactly the same way, understanding the problem of medication compliance relies on basic research on the nature of beliefs and attitudes; understanding the health-care recommendations and choices of providers, patients, and payees relies on basic research on human judgment and decision-making processes; understanding the changing relations among stakeholders in the health care system relies on basic research on organizational structures and behavior; and understanding ethnic differences in health and illness behavior relies on basic research on the nature of culture. While it is understandable that the various NIH institutes would prefer to support behavioral and social science training that is specifically targeted toward their unique missions, each individual institute should be asked to support a mix of basic and applied research training. Just as effective

research on health and health care will require that we transcend the boundaries of the various disciplines, so it will require that we tear down the wall that divides the basic from the applied.

6. Allocation of additional funds for research training in the behavioral and social sciences will not have its intended effect unless academic institutions apply for them, and academic institutions will not apply for training support unless there is a reasonable chance of success. Accordingly, each of the NIH institutes and DHHS agencies should issue Requests for Applications for behavioral and social science training relevant to their missions. Moreover, the Center for Scientific Review (formerly the Division of Research Grants) should insure that its system of review panels contains sufficient numbers of behavioral and social scientists to insure that these applications will receive expert and sympathetic review.

Notes

¹ McGinnis, J. Michael and William H. Foege. "Actual causes of death in the United States." *JAMA*, 270(1993): 2207-12.

² National Institute of Mental Health (NIMH) Multisite HIV Prevention Trial Group. "The NIMH Multisite HIV Prevention Trial: Reducing HIV Sexual Risk Behavior." *Science* 280(1998):1889-94.

³ Coates, Thomas J. and Chris Collins. "Preventing HIV infection." *Scientific American* (July 1998): 96-97.

⁴ "Interventions to Prevent HIV Risk Behaviors". NIH Consensus Development Program, Vol. 15, No. 2, February 11-13, 1997. Document available at <http://odp.od.nih.gov/consensus/cons/104/104.htm>.

⁵ Glazer, Nathan, and Daniel P. Moynihan. *Beyond the Melting Pot*. Cambridge, Ma.: MIT Press.

⁶ Glazer, Nathan. *We Are All Multiculturalists Now*. Cambridge, Ma.: Harvard University Press, 1997.

⁷ Fadiman, Anne. *The Spirit Catches You and You Fall Down: A Hmong Child, Her American Doctors, and the Collision of Two Cultures..* New York: Farrar, Straus, & Giroux, 1998.

⁸ Based on Tables 4 and 5 attached to a fax distributed to the Committee on 7/10/98.

⁹ Center for the Advancement of Health. *Cultivating Capacity: Advancing NIH Research Training in the Health-Related Behavior and Social Sciences*. Washington, D.C.: Center for the Advancement of Health, 1999.