M e m o r a n d u m

To: Richard Hodes, M.D., and staff, National Institute on Aging
From: Steven J. Breckler, Ph.D., American Psychological Association
Re: Comments on "Living Long and Well in the 21st Century – Strategic Directions for Research on Aging"

On behalf of the 148,000 members and affiliates of the American Psychological Association (APA), I appreciate the opportunity to preview and comment upon *Living Long and Well in the 21st Century – Strategic Directions for Research on Aging*. APA enjoys a close collaborative relationship with the NIA and many of our members conduct research on adult development and aging, funded by NIA. This response is informed by the comments of members of APA's Committee on Psychology and Aging, APA's Division of Adult Development and Aging, members of APA's Board of Scientific Affairs, and other members with expertise in health and aging research, most of whom have submitted comments directly to the NIA. In this letter, we summarize some of the reactions to the plan as drafted and echo others.

We appreciate the care and thought NIA staff have expended in preparing this visionary document. The APA experts who reviewed the NIA draft plan found it an exciting document that is broad in scope, and in many ways sets the right tone for a science of aging that is interdisciplinary, sensitive to the dynamic and highly contextualized nature of aging, and committed to a deep understanding of basic principles and mechanisms that stimulate translational research to make a difference in the lives of aging individuals and their families. Particular strengths include the call for translational interventions, the focus on eliminating health disparities, and the recognition that continued progress in aging research depends on establishing effective mechanisms of professional training.

At the same time, we had some ideas for strengthening the strategic plan that we hope you will consider. APA's Division of Adult Development and Aging organized its comments around several useful themes that APA echoes here:

1. Psychological science should claim a more central place in the plan's, and the institute's, conceptualization of a science of aging.
2. A goal of NIA should be to understand and promote 'vital' rather than 'normal' aging.
3. NIA should stress greater understanding of the role of environment through the lifespan in understanding aging.

Psychological Science Is Critical to Promoting Health and Preventing Disability in an Aging Population

APA's experts raised a deep concern about the plan's underestimation of the role for psychological sciences in understanding the nature of aging. Potential contributions from the

social and behavioral sciences are woven through the arguments in the document, but they are not well integrated into the conceptualization. We believe that this is critical to an effective science of aging. For example, on the first page in the Introduction, the claim is that "we need to explore 'aging' not as a single process but rather as an intricate web of interdependent genetic, biological, and physiological processes," and in the introduction to Research Goal A (to improve understanding of healthy aging, disease, and disability among older people), aging appears to be defined in terms of biologically driven senescence processes ("a set of dynamic biological and physiological processes and systems – interactive and interdependent – that result in wide variation among individuals," p. 3). Both of these statements neglect the centrality of psychological and social systems for an integrated study of aging. We believe that the document would be strengthened by revising these statements to: "We need to explore 'aging' not as a single process but rather as an intricate web of interdependent genetic, biological, physiological, and psychosocial processes" (p. 1) and "Aging comprises a set of dynamic biological, physiological, and psychosocial processes and systems – interactive and interdependent – that result in wide variation among individuals."

There are specific examples of how neglect of psychological science plays out in research goals in ways that could stimulate lines of research that may not be as fruitful as they would be if the problems were conceptualized so as to include psychosocial mechanisms. For example, under Research Goal A-2 (accelerate discovery of risk factors for disease, pp. 7-8), the role of psychological processes (e.g., stress) in inflammatory and immune response is not considered.

Under Research Goal B-1 (pp. 10-12), which focuses on the development of interventions to maintain health and prevent disease, the role of behavioral change is not considered in any depth. The first bulleted point under this goal calls for the development of "efficacious and cost effective strategies for promoting healthy and safe behaviors," but the text of that section does not acknowledge how complex the problem of behavioral change is. For example, the development of "cost effective dietary measures" is a good first step, but as we all know, "knowing what a healthy diet is" is not the same thing as "adhering to a healthy diet." Arguably, obesity and inactivity are among the leading causes of disease and disability in the US, and presumably, are rooted in behavior. The development of interventions to change unhealthy behavioral patterns will require understanding of cognitive factors (e.g., comprehension, decision-making), predispositional factors (e.g., personality), and their interaction, so that real people in real contexts can adhere to "behavioral prescriptions."

Psychological mechanisms have a critical role in determining how older adults adapt to aging-related changes. Health psychologists understand that management of illness is fundamentally influenced by how people construe the disease and its causes, and how ingrained patterns of behavior afford or clash with treatment regimens. Successful adherence to new medication or exercise regimens requires goal commitment and specific plans for how to implement that regimen and integrate it into one's style of life. Inertial health-detracting behavioral patterns (e.g., diet), dysfunctional attitudes, and conditioned emotional responses toward aging and one's own aging can play a major role in thwarting effective health interventions for middle-aged and older adults. Prevention of negative health outcomes in old age may require interventions to change attitudes and health-related behaviors early in adulthood.

One implication of these arguments is that funding for basic psychological research remains critical. No one would argue with the tenet that multidisciplinary research will be needed to promote life-long health, but at the same time, psychological science as a discipline must continue to make progress. It would be difficult, indeed, to create effective behavioral interventions without understanding the mechanisms that need to be affected.

We Must Understand "Vital" Aging, not just "Normal" Aging

Another area of concern noted by APA's experts is a lack of attention to enhancing vitality, in addition to preventing disease. There are many places in the document where the focus is understanding and promoting "normal" aging by preventing disease. For example, in the introduction to Research Goal A, the challenge is characterized as a need "to develop a clearer understanding of the normal changes that accompany aging and distinguish them from the diseases and disabilities that are prevalent among older adults" (p. 3). Later in the document, the claim is that the overall integrity of brain structure and many neural systems are largely preserved in normal aging, while disease processes disrupt neural integrity (p. 17). This distinction between normal and pathological aging has been with us for sometime, but may not reflect current views of aging that acknowledge the wide range of variability within the "normal" range. Research developments in animal research and cognitive neuroscience are suggesting that experience sculpts the brain throughout the life span. Epidemiological work suggests enduring effects of early educational experiences. In other words, it is probably not the case that neural systems are simply "preserved" with "normal" aging – but rather they are continually "rewiring" themselves with "vital" aging. This perspective is perhaps implied from (or may be read into) language embedded in Research Goal A-1 (second and third sub-points under the eighth bullet, p. 6), but needs to be more forcefully integrated into the strategic plan.

Given the surge of elders on the horizon, it is critical that aging research not simply address the elimination of disease, but develop principles of optimization within what was once considered the normal range. We need to understand the factors that promote wellness and vitality in late life to enhance quality of life and workforce effectiveness, for example – as well as to buffer against disease. This idea may be planted early in the document; the sentence, "As life expectancy increases…, diseases and conditions among older people remain a concern" (p. 1, second paragraph) could be strengthened by revising to, "… diseases and conditions that threaten vitality among older people remain a concern." More generally, the use of the term "normal aging" needs to be reconsidered. Under Research Goal A-1 we suggest a fourth bulleted sub-goal, p. 4): "• Understand the influence of environmental processes (e.g., educational experiences, enriched environments, stressors) through the life span on the pace of aging processes." This would follow nicely after the third point that focused on the effects of early life experiences and better set the stage for Research Goal D considering aging at the societal level, under which D-1 will "explore the effect of education and other social and demographic factors on health and well-being at older ages" (p. 21).

A pragmatic reason to focus on vital aging is that scientists and health care professionals are themselves aging (see the recent NSF report on the labor force in science and engineering, http://www.nsf.gov/statistics/seind06/c3/c3s3.htm; e.g., Figure 3-33). Maintaining the vitality of the workforce in science, math, engineering, and the health professions will depend on our ability to promote cognitive vitality. We need basic research on how aging affects memory, problem solving, and other cognition processes in order to develop effective training techniques that can support research scientists and health care practitioners to function at high levels, both to maintain and to continue to develop expertise over their increasingly lengthening careers (age 67 for full social security for those born after 1960). In short, basic research on cognition is essential to ensuring a high functioning professional workforce capable of continuing critically needed health research and of delivering superior care to our aging population.

We Cannot Lose Sight of the Important Role Played by Environmental Influences

With the mapping of the human genome, understanding the role of environment has only grown in importance. Heritable influences on complex diseases are often hard to verify. In a recent article in *Nature Reviews: Genetics*, Hemmink, and Forsti (2006) work with the example of cancer etiology to argue that it is often the environmental influences that are stronger. They suggest (p. 961) that, "Eradication of hereditary cancer syndromes would reduce the cancer burden by 1%, and up to 10% of the population would be saved if all familial cancers could be avoided." By contrast, "[i]f the western population was to live in the same conditions as the populations of developing countries, the risk of cancer would decrease by 90%, provided that viral infections and mycotoxin exposures could be avoided." Now that we have the ability to identify single singles and clusters of genes that may increase risk for disease, it is imperative that we assess the environment correctly. Unfortunately, this is arguably a more difficult task. For aging, we must understand how environments change (and interact with social, psychological, socioeconomic, physical, and behavioral factors) before we can understand gene expression in late life, and the role of genes in the context of this shifting environment.

APA's Committee on Aging offered several detailed recommendations about the draft plan that we reiterate here. The Committee recommends a reference to research on how to humanize long-term care environments such as nursing homes and assisted living facilities, and how to improve health of the frailest elderly. More attention to the increasing racial and cultural diversity of the aging population in the document's introduction would be welcomed.

On page 5, Goal B1, in addition to the bullet to "continue research on the impact of social relationships of health and well-being," there are additional areas that are critical to this issue:

> (1) Investigate the impact of ageism upon healthy aging, particularly how negative stereotyping about aging relates to self-assessments of aging, social relations with others and adherence to health regimens;
> (2) Investigate the circumstances under which the public presentation of the concepts of successful, productive or healthy aging contribute to rather than lessen the negative stereotyping of older adults (relates to D-1);
> (3) Examine how social relations are enhanced or impeded across a wide variety of living situations (re-location, CCRCs, aging in place).

Also on page 5: When noting approaches to understanding obesity, the efficacy of psychological (including behavioral, cognitive, and/or dynamic) approaches can be added to the list of valuable research projects.

On page 10, Goal B1, there are paragraphs for each of the following health promotion strategies: nutrition, obesity, exercise, hormonal changes, falls, home safety, older drivers and safe medications. There should be such a statement regarding effective mental and behavioral health strategies for promoting health and safe behaviors in older adults.

On page 12, Goal B2, under societal quality of life interventions section, other research areas to include are:

> (1) Investigating how knowledge about social needs and social relations are utilized to undermine older adults' healthy aging through financial and other exploitation; and
> (2) As death is increasingly being restricted to older adults, understanding the impact of an older adult's death on his/her children and grandchildren with regard to a number of

quality of life related matters (own planning, perception of own future health) will be explored.

Also on page 12, in the bullet on caregiver, family, and patient stress: In addition to social support, skills training and assistive services, add psychological services, psychotherapeutic interventions, and psycho-educational programs as they are often needed, and are effective in addressing caregiver and care recipient depression and anxiety.

Also on page 12, in the bullet, "Develop strategies to improve the interaction of older people with the health system," add the need to support the integration of medical/health care with psychological care and services. Medicine is an applied science as is psychology. Interdisciplinary collaboration is mentioned on pages 9 and 30, but should also be included on page 12.

On page 15, Goal B3, on health communication: Programming and activities must emphasize the heterogeneity of older adults, the current lack of focus on positive attributes due to stereotyping, and deliver messages that both older adults in good and poor health can appreciate.

On page 19, Goal C2, under the first bullet, "Improve neuropsychological assessment of cognitive function," add: Create specific opportunities to examine the efficacy of the UDS neuropsychological tool in a wide variety of settings (primary care, geriatric primary care, medical rehabilitation, at-risk populations).

On page 21, Goal D1, the following research areas should be included:

(1) Understand how experiences/exposures across the life course (infancy to older age) to a variety of environmental, intellectual and social factors influence aging and age-related well being (relates to D-3 but is broader than D-3);
(2) Examine how the presence of home and community-based services (waiver programs, assisted living) influence the experience of family care-giving from an economic, social and emotional perspective.

On page 28, Goal E2, to the bullet, "Develop training programs to prepare culturally proficient health care providers and biomedical researchers," add: Behavioral and social science researchers

On page 30: Goal F2, to the bullet, "Participate in efforts to recruit, train, and retain biomedical researchers, especially targeting under-represented groups," add: Behavioral and social science researchers.

Additional points suggested by APA's members with expertise on aging include:

- Funding or co-funding of research on remote health care delivery technology (telehealth/telemedicine/ehealth) would be especially beneficial for the underserved population of rural elderly;

- A mention of the developing field of cognitive training and potential benefits for older adults would be appropriate in Section C-1. This work is starting to show promising effects in terms of transfer beyond the training task (e.g., Jennings et al., 2005; Mahncke et al. 2006, Winocur et al., 2007), and may show interactive added-value effects when combined with pharmacological treatments (cholinesterase inhibitors) for dementia.

Thank you again for inviting input into this process. We hope that this is helpful to you as you continue to develop a framework for aging research and to set priorities at the National Institute on Aging. APA staff and its members with expertise on aging research and gerontology appreciate NIA's support of behavioral and social sciences research, and we are always available to work with you.

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