

*The Menopausal Transition and Aging Processes*

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How healthy are we? A national study of well-being at midlife. (2004) Brim, OG, Ryff, CD, & Kessler, RC (eds). Chicago, IL The University of Chicago Press 153-204

For the past decade or so there has been increasing attention paid to menopause in both research and the media. In 1992, Jane Brody, science writer for the *New York Times*, reported that “menopause, long mired in myth and controversy and shrouded by a cloak of embarrassed silence, is fast becoming the leading women’s health issue of the decade” (Brody 1992). Gail Sheehy (1992) considered menopause to be the “last taboo,” surrounded by a conspiracy of silence so great that women did not discuss their fear that they might be menopausal even with their close women friends. Sheehy, like many other authors, was dedicated to ridding society of that taboo. Today, along with menopause, we find open discussion in print and social circles of many other previously taboo subjects. The same widespread public attention given to menopause has also been focused on breast cancer, vaginal infections, hysterectomy, abortion, and male sexual impotence, to name a few. Not long ago, ads for sanitary napkins or tampons were so discrete that a child would never know what they were used for, whereas today tampon ads on television stress comfort and absorbability in frank terms. Ads for Viagra display men and women of all ages engaged in caresses and wearing postcoitally satisfied smiles. A friend reports both shock and amusement to find a cluster of brightly colored, blown-up condoms hanging as a mobile in her gynecologist’s waiting room.

Clearly, menopause is out of the closet. Yet there is no evidence that in the past women did not discuss such matters among their female kin and close friends, nor has there been any evidence that the majority of women undergoing the menopausal transition today typically experience enormous discomfort or functional impairment specifically linked to the physiological changes that attend this normal transition in women’s lives. The image of a woman embarrassed at a dinner party (or a board meeting) by perspiration running down her face in rivulets as a result of an intense hot flash is hardly a widespread phenomenon, although to read earlier medical journal articles about menopause, one might be led to

assume it was very prevalent among women in their forties and fifties. Menopausal symptoms in the gynecological literature cover a wide range, from physical symptoms such as hot flashes, insomnia, night sweats, vaginal dryness, and faulty or impaired memory, to psychological symptoms such as irritability, moodiness, and depression. How prevalent these sorts of symptoms were among middle-aged women could not be gauged by such medical reports, however, because they were based on clinical samples. Women who did not experience menopausal problems simply did not approach their physicians for help, and hence they were not among the cases described in gynecological journal articles and medical textbooks.

A very different portrait emerges from recent research based on samples of normal, healthy midlife women. An important five-year longitudinal study in the Pittsburgh area that tracked healthy middle-aged women from the time they were menstruating regularly (premenopausal stage) to the time their menstruation had ceased entirely (postmenopausal stage) concluded that “taken together, these results suggest that natural menopause is a *benign event* for the majority of middle-aged healthy women” (Matthews et al. 1990, emphasis added). Similar findings were reported from a comparable study in the Boston area (Avis and McKinlay 1991). This conclusion from small regional metropolitan samples is consistent with our findings from the national MIDUS survey.

What does concern women today, and has become an increasing focus in medicine and the pharmaceutical industry, is the use of hormone replacement therapy (HRT). Estrogen replacement has long been prescribed by gynecologists for women undergoing the menopausal transition, primarily to reduce the incidence of hot flashes and the night sweats that often impair a good night’s sleep. The use of HRT more than doubled between 1982 and 1992, and continued to increase until the past few years (Wysowski, Golden, and Burke 1995). What is new is the shift from short-term reliance on hormone replacement for a few years in midlife to reliance on hormone replacement for all the decades of life remaining for postmenopausal women. The rationale for recommending this prolonged reliance was the presumed negative effect of estrogen depletion on bone and vascular health after the cessation of menses.

One prominent gynecologist and founder of the North American Menopause Society, Wulf Utian, predicted an “impending epidemic” of heart attacks and bone fractures as a result of the growing numbers of baby boomers who are entering late middle and old age. These medical problems, he contended, could overwhelm the health care system unless something was done to reduce these “menopause-linked problems”

(*Wall Street Journal*, September 12, 1991). Utrian's major recommendation has been long-term replacement therapy during all of a woman's postmenopausal years. Even the lead article in the first issue of a new journal, *Journal of Women's Health*, in 1992 provided a review of estrogen therapy by a woman epidemiologist that concluded with the recommendation that hormone supplements should be used by almost all postmenopausal women from ages 50 to 85, because they "may be needed to maintain an active and full life" (Bush 1992). On the first page of this same first issue was a full-page ad from Wyeth-Ayerst Laboratories, manufacturer of Premarin, the dominant synthetic estrogen on the market and one of the most frequently prescribed medications in the United States. The ad urged women to "start early and continue long-term for maximum osteoporosis benefits" and claimed that Premarin use by postmenopausal women reduces the risk of hip and wrist fractures by 62 percent. In the past, estrogen use tended to be of short duration, taken during the few years some women were discomforted by hot flashes brought on by hormonal changes. In more recent years, the pharmaceutical industry and many physicians have been urging that hormonal replacement continue to be used among postmenopausal women for upward of thirty years, a decided boon assuring great financial benefits to the drug firms producing such pills and gels. In the absence of adequate scientific evidence, however, there seems meager justification for such a regimen.

Whether long-term hormone therapy prevents bone fractures and cardiovascular disease to an extent that overrides the risk of breast or endometrial cancer has been under investigation in several clinical trials, testing whether estrogen alone or in combination with one of the three major progestin regimens is helpful or harmful. Early on, the expectation was that estrogen would be a magical preventive of heart attacks, strokes, and bone fractures and, in some quarters, that the drug would also assure prolonged youthful looks and moist vaginas. That optimistic view has been qualified as results from these trials are reported, results that have led to great concern and confusion for many women. Women with an intact uterus who take estrogen alone (typically Premarin, a synthetic estrogen derived from horse urine) for prolonged periods of time run the risk of endometrial cancer. Estrogen taken with a progestin carries the risk of breast cancer and breakthrough bleeding. Cell biologist Dominique Toran-Allerand (2002) cautions that Provera, the most commonly prescribed synthetic progestin, tends to block the beneficial actions of estrogen and may even have harmful effects of its own by binding to receptors of other steroid hormones.

Warnings about the risks of hormone replacement were increasing by the year 2000, with the publication of results from the three-year Postmenopausal Estrogen/Progestin Intervention (PEPI) study conducted between 1989 and 1994, a randomized, double-blind, placebo-controlled clinical trial designed to compare the effects of estrogen alone or in combination with a progestin (Meyer 2000). The PEPI study did not demonstrate any significant health benefits; in fact, it suggested that postmenopausal women with any established heart disease or risk factors for the disease should *not* take estrogen for any prolonged period of time.

For the past decade, high hopes were held for resolving many questions about HRT for postmenopausal women through a very large scale study, the Women's Health Initiative (WHI) program of research. A major arm of this program was a randomized, controlled prevention trial in which 16,608 postmenopausal women aged 50–79, with an intact uterus at baseline, were recruited by forty U.S. clinical centers during the years 1993–98. A total of 8506 women in the trial received the most commonly used combined hormone preparation in the United States, Prempro, a pill composed of 0.625 mg/day of conjugated equine estrogen and 2.5 mg/day of medroxyprogesterone acetate, while 8201 women received a placebo tablet. This was the first randomized trial to directly address whether estrogen plus progestin has a favorable or unfavorable effect on coronary heart disease. Before this trial, observational studies had suggested a 40 percent to 50 percent reduction in risk of coronary heart disease among users of either estrogen or, less frequently, the combination of estrogen and progestin. Reduced hip fracture was an additional expected health benefit, because observational studies had suggested hormone therapy slowed down the loss of bone mineral density. Invasive breast cancer was the primary potentially adverse outcome of hormone usage.

The WHI trial was originally designed to last 8.5 years, but it was abruptly terminated after a mean of 5.2 years of follow-up, in late spring 2002, as a result of the finding from follow-up testing that risks exceeded the health benefits of hormone therapy. Clinical outcomes showed negative effects for coronary heart disease, breast cancer, stroke, and pulmonary embolism. Some slight positive health effects were found for colorectal cancer, endometrial cancer, and hip fracture (Writing Group for the WHI Investigators 2002). The analysis of data from the trials prompted the data and safety monitoring board of the study to conclude that the combined estrogen-progestin therapy does not have a risk–benefit profile consistent with the requirements for a viable intervention for the prevention of chronic disease, and therefore it should

not be initiated or continued for the prevention of coronary heart disease in postmenopausal women.<sup>1</sup>

Termination of the WHI trial caused a widespread flurry of news coverage, thousands of frantic phone calls by women to their physicians, and gleeful reactions by some women's health advocacy groups that have been critical of the overmedicalized approaches to women's health issues for the past several decades. Still other researchers and physicians have pointed out that because of the WHI trial's design limitations, its termination must be kept in perspective. Prempro was the only hormone combination administered, with no variation in dosage level, and on a constant daily basis. It cannot be concluded that the same risk–benefit ratio would be found if a natural estrogen, such as  $17\beta$ -estradiol, or a natural micronized progesterone were being tested, or if dosage level was varied in keeping with individual patients' health profiles (e.g., by tests of a woman's own hormonal secretion levels or bone density or aspects of her health history). As Toran-Allerand (2002) pointed out, "giving [synthetic] hormones in a pattern different from the normal physiological situation is likely to result in abnormal responses." Nor should women with severe menopausal symptoms that impair their ability to function well or to maintain a high quality of life conclude that personally tailored hormonal therapy on a short-term basis is too risky a step to take (Duenwald 2002).

With so many mixed messages and dire warnings, it is little wonder that many women are seeking alternatives to the usual synthetic hormone therapies. Many postmenopausal women concerned about poor bone density hope to prevent or treat osteoporosis with biophosphates, selective estrogen receptor modulators, exercise, and changes in their diets. Others turn to alternative drugs available off the shelf in health food stores, despite risk of the poor quality of such medications, most of which do not have FDA approval. In consultation with their physicians, other women try various types of progestins now available: the most common, medroxyprogesterone acetate, is derived from plants; another is derived from synthetic androgen; an even more recent product is a natural progesterone—micronized progesterone—available in either tablet or vaginal gel. The hope for the gel is that such topical treatment would bypass circulation of the progesterone through the bloodstream, a drawback to taking tablets by mouth.

But all such alternatives are accompanied by many unanswered questions (Harvard Women's Health Watch 2000). And just as the pharmaceutical industry advertised widely in support of the view that

Premarin should be taken from menopause until death, so too the herbal supplement industry has heeded the call and marketed heavily to urge the purchase of all manner of women-only products, from women-only nutrition bars, to cereals fortified with vitamins for women, even to topical creams such as Femgest, which promises to deliver progesterone to the body for women of childbearing years as well as for women experiencing pre- through postmenopause. As science writer Alex Kuczynski (2002) put it, the products are for “anyone with two X chromosomes over age 15.”

As this discussion implies, the understanding and treatment of menopause and its aftermath have occurred mainly within a medical model: something wrong in the body calls for medication. Feeling depressed? Take Prozac. Migraine headaches? Take Midrin. Cholesterol too high? Take Pravacol or Welchol. A variety of pills are available for almost every departure from a hoped-for healthy, strong, and active body. Increasingly larger numbers of adults have been persuaded that buying a pill, cream, or gel provides a solution more easily adopted than increasing exercise regimens, or reducing or giving up alcohol, tobacco, and carbohydrate consumption.

In the past there have been other models for understanding and interpreting menopause. We briefly consider two of them. The first is a psychoanalytic model, well represented by the work of Helene Deutsch in the 1930s and 1940s. Her perspective on menopause is hardly shared by anyone today: menopause as the end of women’s fertility. Deutsch considered menopause an invariant psychosexual stressor that stirred up previous developmental issues that triggered regression and led to menopausal symptoms of depression and irritability. Her view is best exemplified by her claim that menopause is a time of disappointment and mortification because a woman’s life as a bearer of future life has ended and she therefore experiences menopause as a “partial death—as servant of the species” (Deutsch 1945).

By the 1960s, with the waning of such psychoanalytic views, quite another model came to the fore: a sociocultural model of menopause that emphasized not the biological cessation of the menses but the “empty nest” stage in women’s lives, which coincided with menopause—that time in midlife when the last child leaves the parental nest and a woman’s central role in life, as mother, effectively ends some fifteen years before her husband faces a comparable central role loss with retirement. Pauline Bart used her research on depression among middle-aged women to argue against the cultural pressure on women to channel their energies

narrowly into childrearing. Her argument was based on two major factors that had changed the scenario of women's lives: an increased longevity, which meant a long life still ahead after menopause and child-leaving; and effective contraceptive usage, which permitted a smaller number of desired births with no risk of menopausal babies. Bart (1971) urged greater continuity of employment for married women as the solution for the midlife depression induced by role loss.

From a broad historical perspective, both the psychoanalytic and the sociocultural models were theories rooted in special historical circumstances of the first half of the twentieth century, an era demographer Kingsley Davis has described as the "breadwinner era," when, for the first time in human history, cultural pressure was on women, especially in the urban middle class, to restrict their lives to home and children, and on men to be the sole breadwinner of the family (Davis and van den Oever 1982). Before 1870 and since 1950, women have played a significant role in economic and domestic production in addition to their critical role in childbearing and childrearing. Only as productive work shifted away from home and farm to factory and office in the last quarter of the nineteenth century did the cult of domesticity take hold, keeping urban middle-class women "in their place" at home. At the same time, unions pressed for wages for men sufficient to allow them to be the sole earners in working-class families. Since the 1950s, however, each decade has seen an increasing proportion of women entering and remaining in the work force. Women's "two-shift day" (Hochschild 1989) is nothing new in the long stretch of human history. Psychoanalytic theories of the variety represented by Helene Deutsch's analysis of menopause flourished during the era that was the cult of domesticity's heyday. The feminist renaissance of the 1960s rejected that domesticity cult and argued that equality of the sexes could not be reached unless women attained economic power as co-breadwinners with their husbands.

It is easier to identify key features of past historical eras than to identify the key features of one's own time and place. But it is important, in setting the stage for an analysis of menopause and what it means in women's lives, to note several major new features of American life today compared with that of a half-century ago. First in importance are the implications of the greatly extended life span that we now enjoy, with good health possible for many years in old age. Menopause at age 50 is no longer associated with impending death; there are several decades of healthy active life ahead. That we now consider menopause a "midlife" passage rather than a prelude to death indicates as much.

Second, marriage and childrearing are no longer the only roles available to women in adulthood. Increasingly, more women opt to remain single, childless after marriage, or single after divorce, without the social stigma that had been associated with such choices in the past. And if women do have children, their number and spacing are increasingly under women's control. For most women today, a last child is born a decade before menopause, thereby changing the subjective meaning of menopause. The end of menstruation becomes a release from hormonal cycling and period messiness rather than a cause for grief because of the loss of fertility. If there are any lingering feelings of regret about the ending of one's fertile years, they are more apt to be felt in connection with terminating the nursing of a last desired child or opting for a tubal ligation, rather than in connection with menopause *per se*.

A related point concerns a misleading notion of what middle-aged women feel about menopause in high-fertility societies, such as the Middle Eastern Muslim and African societies. Western researchers were surprised to find not negative but positive reactions to menopause among their Arab informants (Datan, Antonovsky, and Maoz 1981). Why, if their society valued fertility so highly, would women have such positive feelings about its ending? Pronatalism, I suspect, is far more valued by men in such societies than by women themselves. With no effective contraceptive control over the timing and number of pregnancies, such women carry enormous burdens at high risk to their own health and stamina. Far from being surprised, I found their comments completely understandable: as two Arab women who had had six or more pregnancies explained, "Thank God, that's all behind me," and "menopause is God's reward for a life of service."

Third, there is now greater continuity to the multiple roles women occupy across the life course. Involvement in the community and the workplace is increasingly a constant across life for women today. Short-term maternity leave for one or two births amounts to a total of less than a year of temporary withdrawal from the labor force. Hence retirement for women in our time is not from mothering but from employment, much as it is for men. Retirement itself has taken on new meaning, less threatening than it was to our grandparents and great grandparents, thanks to Social Security and private pension plans, medical benefits under Medicare, and returns from personal investments. Indeed, it is a special mark of the elderly today that they are more independent and financially secure than any previous cohort of elderly adults has been in our history. In fact, increasing numbers of the elderly are currently in the happy circumstance



of being able to help their children and grandchildren financially rather than being in need of such help themselves. By the same token, this means less pressure on middle-aged children: they may need to provide psychological and social help to elderly parents, but most are spared the burden of financially supporting them.

Fourth, the “empty nest” when a last child leaves the parental home carries a different meaning than in the past: for many parents, seeing their child off to college is more traumatic and involves more change in household management than does attending an adult child’s marriage or move to his or her own apartment. An unexpected change in my household when my oldest child left for college was the realization that we needed to resort to baby-sitters for the younger children for the first time in several years, which we experienced as a step backward in domestic management. If there was any moment of sadness in my experience of child-leaving, it was the summer day I emerged from a luggage store carrying a new monogrammed suitcase as a gift for my son, who was leaving for college that fall: I suddenly collapsed in tears on a bench in the mall, sobbing over his impending departure.

One last important feature of our times is the vastly increased ease of communication between the generations in a family, which is now possible thanks to cell phones, e-mail, air travel, and the rescheduling of many holidays to permit three-day weekends, all of which reduces the sense of lost contact with one’s grown children once they live some distance from the parental home. There is hardly a day that either I or my husband do not find an e-mail message from one or the other of our three children, now midlife adults in their forties. One of the unexpected aspects of this frequent contact with our middle-aged children is an awareness of the aging changes that now preoccupy them. Coping as my husband and I are with much more frail bodies and chronic health problems, we forget all those early signs of aging we coped with in our forties: root canal, tooth extractions, and crowns; back and joint pains from exertion in house or garden or a game of golf; bifocal or trifocal glasses; undesired weight gain or enlarged waistlines; the realization that overindulgence in food and drink was becoming more difficult to snap back from; and so forth. The insight we have gained from these e-mail exchanges with our children is this: the older one becomes, the better we *think* we were at younger ages!

It is an assumption underlying our perspective on the menopausal transition in women’s lives that the social and psychological significance of this midlife passage lies more in the experience of aging than in the loss

of fertility assumed by psychoanalytic theories such as Deutsch's, or the role loss attending the empty nest stage of family life assumed by earlier sociologists, or the discomfort associated with menopausal symptoms that a medical model focuses on.

A focus on aging also argues for attention to men as well as women in research on midlife. This alerts us to one of the major sources of stress and worry in the lives of middle-aged adults: the expectation that they perform at work when they are 50 just as they were able to do at 30, which they know in their bones is possible only with much greater effort and stress. This may be of particular significance in American lives today because the pace of work is much faster than in any other Western society. Americans work longer hours under greater pressure for increasing productivity and with fewer days of vacation than citizens of any European nation. As one telling example, the average annual number of paid vacation days for employed adults in the United States is 12, compared with 28 days in Britain, 35 in Germany, and 42 in Italy (Shapiro 1999). Also, the number of hours Americans work each week has climbed sharply, while working hours in most other Western countries are falling: Americans work 350 more hours a year than do adults in European countries (Greenhouse 1999).

It is precisely by placing menopause in the larger framework of aging processes and their relationship to role performance that the MIDUS national survey provides a unique advantage over numerous other studies of menopause that have been undertaken in the past decade and more. As reported later in this chapter, these new studies are premised largely on a medical model and trace changes in body function relevant to the hormonal changes during menopause as well as related psychological symptoms and beliefs about what menopause will be like for women. By contrast, the MIDUS data set is not limited to women but includes men as well, nor is it limited to any narrow age range of midlife adults but includes the full span of years from 25 to 74. Such sex and age variables permit an analysis of whether and how midlife is experienced differently by women than by men, and how unique the middle years are compared with those of early adulthood and old age. Most important of all, our data cover all the major aspects of life: physical and mental health, personality, psychological well-being, social roles in family, work, and community. Our data also include ratings of the level of satisfaction in seven major domains of life: health, finances, sex life, current job, relations to spouse or intimate partner, relations with children, and overall contribution to the welfare of others.

These diverse measures of life domains are of particular relevance today because the boundaries between our roles have become increasingly blurred (Wuthnow 1998): stress at home resulting from an ill child or a serious argument with a partner can spill over into job performance; aggravation at work often spills over into tension at home; a health problem brought to the attention of a doctor may have its roots not in a malfunctioning body part but in stress at work or at home. Cell phones used while commuting between home and workplace, and laptop computers used while traveling add further to this blurring of boundaries between family, work, and leisure-time activities, crowding out time for meditation and decompression from the pressures of work or family responsibilities. Social and technological changes such as these mean that it is important as never before to define social science topics in a multidisciplinary framework appropriate to the complex lives of contemporary adults. This is precisely what the biopsychosocial theoretical framework underlying the design of the MIDUS survey encourages us to do.

#### PREVIEW

In keeping with this biopsychosocial framework, in this chapter I place the menopausal transition onto the larger life-course trajectory from early adulthood to early old age. In doing this, I hope better to pinpoint what is unique to midlife and to chart the age range during which the menopausal transition unfolds, the level of symptoms women report, the way they feel about the cessation of menstrual cycling, and the extent to which they worry about several aspects of aging. I ask whether it is menopausal stage, chronological age, general physical or emotional health, or role stress that matters most, and where the data permit, I compare the reports of women with those of men. Multivariate analysis traces the sources of the menopausal stress indicators reported by women, in which we draw upon a rich array of predictor variables: social-demographic characteristics (e.g., education, marital and parental status, income); ratings of physical and emotional/mental health; perceived changes in body shape and functional capacity in recent years; and measures of the level of stress in work and family roles. The analysis demonstrates the importance of defining problems in a multidimensional way, because I show that at least one of the variables in each of the domains—demographic, health, social roles—independently affects the level of reported symptoms.

After this concentrated attention to menopause, I shift to the broader array of changes that men and women report have occurred in their

bodies over the past five years—physical fitness, energy level, figure/physique, and weight—as well as objective measures of hip, waist, height, and weight. Again, the data permit us to compare men and women, and trends across a wide range of ages.

I then shift the focus of the analysis from past change to anticipated concerns about aging, with particular attention to the worry about becoming less attractive as one gets older, an issue that Gail Sheehy's qualitative interviews with middle-aged women identified as a highly significant concern of many women in midlife: their fear of losing their sex appeal, of fading "into the woodwork" or "becoming invisible" to use some of Sheehy's colorful prose (Sheehy 1992). Unfortunately, we missed an opportunity in the design of MIDUS to address this issue of anticipated loss of attractiveness because we only asked women, and not men, about this fear, thus revealing by this omission that we may have shared the probably erroneous assumption in our culture that "looks" matter only to women. With the rapid rise in the sales of men's cosmetics, more color and variety in men's fashions, and men's use of cosmetic surgery in recent years, this assumption does not hold, if it ever did. In the analysis of attractiveness concerns, I give special attention to women's reports about their sex lives—frequency of sex with a partner and degree of satisfaction with their sex lives—a domain where presumably feelings of attractiveness and perceived recent changes in their bodies may affect them.

#### STAGES OF THE MENOPAUSAL TRANSITION

The labels we use in referring to the beginning and ending of a woman's menstrual history—menarche and menopause—can be easily misunderstood, and they are in fact used in a number of distinct ways. In social discourse, menarche can be viewed as an *event*, referring to a young girl's first menstrual period—an event often experienced and remembered with a mixture of pride and dismay, but sure to be announced however discretely to close girlfriends and mothers. Despite the shift from private to public discussion of many previously taboo topics, as noted earlier in the chapter, our society has no special private or public rituals to mark the occasion of a girl's first menstrual period. It was highly unusual and very surprising to me when a close friend reported a very special family occasion when her daughter had her first period, celebrated by a special ride around the house on her father's shoulders and serving her a first-ever small glass of wine. My own first experience was special in another way: that same spring day my aunt brought her newborn son to our house for a week's stay, and I carried the tiny infant around the house proudly

but awkwardly due to the bulky pad between my legs for the first time, thinking to myself that I too would soon be capable of bearing a child. Both of these examples are exceptions. More typical than either of them was the point made by social historian Joan Brumberg to the effect that menarche is defined in our society with reference not to fertility but to personal hygiene or “sanitary protection,” as early ads put it when sanitary napkins came on the market after the development of cellucotton during World War I (Brumberg 1997). The beginning of menstruation has become a hygienic, not a maturational, event.

But at least it is an event definable at its first occurrence, and it is preceded and followed during some six or more years by other developmental changes: breast buds and body hair develop prior to menarche, and regular ovulation may not develop for up to two years after a first menses (a phenomenon known as postmenarcheal adolescent sterility). The age at menarche has dropped significantly over time: for most of our history as a species, the age at menarche is estimated to have been around 16, a first birth at 19. Over the past century, with improved nutrition and accumulation of body fat, the age at menarche has gradually dropped to an average of 12.6 years of age in developed societies. By 14 or 15 years of age, most girls today are ovulating regularly, with the result that unprotected sex has a much higher probability of resulting in pregnancy than it did for girls this age in the past.

By contrast, menopause is not an event but a *process* that unfolds over time, its final stage known only in retrospect; in customary medical usage, a woman is defined as postmenopausal when she has not had a menstrual period for a full year. The years preceding this final stage—the perimenopausal stage—are marked by three types of changes in the menstrual cycle: changes in the time interval between periods (becoming shorter or longer than usual, with occasional skipped months), changes in the duration of the menstrual flow, and changes in the amount of blood loss. The duration of the change from premenopausal to postmenopausal stages may take an average of seven to eight years.<sup>2</sup>

The term *menopause* is often used in two different senses: *menopausal woman* sometimes describes a woman currently undergoing changes in the nature of her menstrual periods—what we classify as a perimenopausal woman; other times the term refers to a woman who no longer menstruates at all—a postmenopausal woman. This varied usage probably reflects the fact that the termination of menstruation cannot be known in advance, only retrospectively. When I use the term *menopause* in an unqualified way, I am referring to the whole seven or eight years

of the passage from pre- to postmenopausal stages. Otherwise I rely on more stage-specific usage.

#### PHYSIOLOGY AND TIMING OF MENOPAUSE

The full story cannot yet be told of what specific factors trigger the timing of the onset and termination of menstruation in women's lives. The considerable variation over historic time in the age of menarche, as noted earlier, has been largely attributed to nutritional enrichment of our diets, dramatically illustrated by the extremely rapid rate at which menarcheal age dropped in Japan after World War II. Menopausal age is a function of the number of oocytes in the ovaries. There are upward of half a million follicles in the fetal ovary, the majority of which are lost through atresia before birth (Byrd 1993). Unlike a male, who produces millions of sperm throughout his life, the human female has no capacity for oogenesis that parallels male spermatogenesis. Only 400 to 500 oocytes will ripen during the female's entire reproductive span. In each menstrual cycle, a number of follicles are stimulated to mature, with only one (or occasionally two or three in the case of fraternal twins or triplets) reaching full maturation under the influence of follicle-stimulating and follicle-luteinizing hormones. But the quality of the oocytes vary by the age of the mother: in the years before women become even perimenopausal, the older the age of the mother, the greater is the probability of spontaneous abortion of usually defective embryos, premature birth of low-birth-weight babies, more difficult deliveries, higher perinatal mortality (death of an infant soon after birth), and genetic/chromosomal defects in the fetus that survives full-term gestation. Maximum fertility, with good outcomes in terms of infant and maternal health and fitness, occurs in a woman's mid to late twenties (Richardson and Nelson 1990).

Independent of the quality of the oocytes remaining, women run an increasing risk of failure to conceive when they postpone childbearing into their late thirties and forties. Research by Richardson, Senikas, and Nelson (1987) suggests that it is not age but menopausal stage that affects the number of follicles remaining in the ovaries: in an age-matched sample of women at three stages of the menopausal transition, they found dramatic changes as a function of menopausal stage, not age per se: a ten-fold greater number of follicles remained among premenopausal women than perimenopausal women *of the same age*, and virtually no follicles remained in the ovaries of postmenopausal women of any age. In the few instances of postmenopausal women who still had ovarian follicles, the follicles typically showed signs of degeneration.

Menopause is a unique human female characteristic. Over the course of the life span, most physiologic functions, such as vital capacity, cardiac or breathing capacity, or bone density, show a very slow and gradual departure from maximum function among adults in their thirties to their midsixties. On these physiologic functions it is only in the late sixties that radical depletion of capacity tends to occur. Whereas few women are fertile beyond their fifties, human males remain fertile until their midsixties, although the quality of sperm goes down as men get older. Male fertility drops to about 20 percent of maximum function by age 80.

Why human females are so unique in the timing of reproductive senescence has been subject to theoretical controversy. Similar timing does not occur in species genetically close to our own such as the common chimpanzee: a chimp female is still capable of reproduction when she dies. Only a few other female mammals live beyond their fertile years, including the African elephant, the opossum, the ringed seal, and the short-finned pilot whale (Finch 1990, 166). The pilot whale, for example, has a life expectancy at complete cessation of reproduction of about fourteen years (Kasuya and Marsh 1984). It does not seem likely that menopause is any recent historical development of the human female. Kim Hill and Magdalena Hurtado, in a detailed demographic and genealogical study of the Ache foragers in South America (Hill and Hurtado 1991; Hurtado et al. 1992), found that among the Ache women, the mean age at last birth is 42 years, but the mean life expectancy at this age is for an additional 23 years. If our hunting and foraging ancestors survived to early adulthood, their chances for survival to an old age were very good, just as they are in our time. We have often been misled on this point because of the tendency to calculate expected longevity *from birth*. This is misleading because in the past, infant mortality and infectious diseases among children took so high a toll.

If menopause is not to be explained on the grounds of changes in the length of the human life course, what is the more likely explanation? Many anthropologists (e.g., Hrdy 1999; Konner 2002; Lancaster and King 1985) have based their explanations on sociobiological assumptions of inclusive fitness theory (Hamilton 1966; Trivers 1972). The key idea in this view stems from the very special characteristic of human childrearing: the very long period of total dependency on care by others. Other mammals obtain food by their own efforts once they are weaned. Humans are unique in that they require others to provide sustenance for them during infancy and childhood, a very slow and prolonged period of growth and

development (Lancaster and Lancaster 1983). This was as true thousands of years ago as it is today; hence natural selection processes favored the survival of those born to women young enough to provide for them until the offspring in turn could reproduce. Over long stretches of time, children of older mothers would not survive to produce children of their own. Across hundreds of generations, the genes that would be transmitted would be those from women who terminated childbearing at younger ages. This theory is often referred to as a *grandmother thesis*, on the argument that at some point in life, “the increases in fitness that can be attained through investment in grandchildren is greater than that expected by continuous direct reproduction” (Hill and Hurtado 1991, 318). This thesis puts too much emphasis on the role of grandmothers as direct caretakers of grandchildren; other data on foraging societies suggest that older women played a more significant role in providing food to daughters and grandchildren than in direct caregiving of the grandchildren (Hurtado et al. 1992). The underlying natural selection explanation in terms of differential survival of children born to young mothers compared with those born to older mothers also helps to explain why male fertility persisted to much older ages. In almost all known societies, mothers carry the major burden of childrearing, sometimes assisted by female members of their social group or kindred. There was no comparable natural selection pressure on males for an early age of reproductive senescence, so male fertility declines in a gradual manner along with other physiological attributes.

#### TIMING AND REACTION TO MENOPAUSE

We turn now to MIDUS data on women’s experience of menopause. Figure 1 shows the distribution of the three stages of the menopausal transition across the life course of women from 30 to 74 years of age. To say the “average” age at becoming postmenopausal is 50 or 51 years can be misleading unless one notes the very broad span of years during which women move from being premenopausal to postmenopausal. This means that in any one five-year age group there are women who are premenopausal, others who are perimenopausal, and still others postmenopausal. Note, for example, that one in four women in their thirties is already perimenopausal, or that one in four women in their early forties is already postmenopausal. The sharpest change between five-year age groups is between women in their early versus late fifties: the percentage who are postmenopausal jumps from 69 percent to 92 percent during these few years.



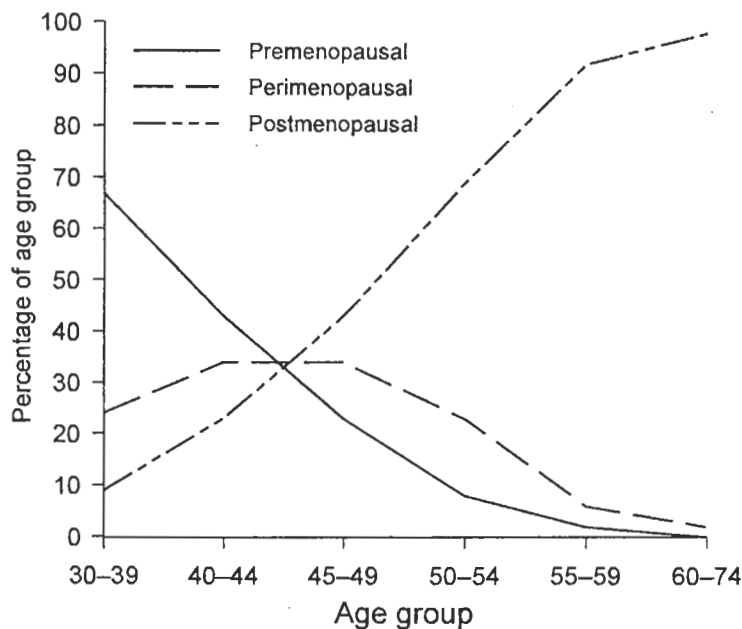


FIGURE 1. Menopausal stage of women 30-74 years of age.

TABLE 1 Surgical Menopause and Tubal Ligation, by Age

	Age					
	25-29	30-39	40-49	50-59	60-69	70-74
Percentage who have had surgical menopause <sup>a</sup> among postmenopausal women	—	40.6	39.1	33.3	30.3	30.4
N	(0)	(32)	(110)	(237)	(198)	(79)
Percentage who have had tubal ligation <sup>b</sup>	8.7	20.5	36.8	23.4	13.0	8.3
N	(173)	(336)	(367)	(333)	(238)	(97)

<sup>a</sup>Defined as the removal of uterus and/or both ovaries.

<sup>b</sup>Some 19 percent of premenopausal women report having had tubal ligation, 30 percent of perimenopausal women, and 20 percent of postmenopausal women.

Menopause as a result of surgery has been on the rise in recent years because of the increased incidence of hysterectomies, which explains most of the cases of postmenopausal women among the younger age groups. One-third of postmenopausal women in the MIDUS sample have had their uterus removed (hysterectomy) and/or both ovaries removed (oophorectomy). The distribution of the cases of surgical menopause by age group is shown in table 1. Note that surgical menopause is somewhat more typical of women under 50 than over 50 years of age. Of special interest is the addition in this table of another form of sterilization, tubal ligation, which prevents pregnancy but not menstruation (Chandra 1998). Women in

their forties report the highest incidence of tubal ligation—37 percent. Many women now in their forties used estrogen/progestin contraceptive pills in their earlier years. Gynecologists typically advise women over 40 to shift from pills to other contraceptive methods. Rather than resorting to the barrier contraceptive methods of condoms or diaphragms, many women in their forties, convinced that they have no desire for further births, prefer tubal ligation, leaving their sex lives as unencumbered and spontaneous as the pill had assured. Table 1 also indicates that even 1 in 10 women under 30 and 1 in 5 in their thirties have had tubal sterilization. These figures suggest that many women have taken control of their fertility in a very direct manner, while avoiding any interference in normal endocrine functioning that hysterectomies and oophorectomies entail—further evidence of the dissociation of menopause with fertility issues. Tubal ligation is even more common in other countries than in the United States: estimates in 1994 were that some 138 million women of reproductive age throughout the world relied on tubal sterilization, more women than used any other contraceptive method. Follow-up studies of such women find fewer than 3 percent regret having had the procedure or wish they could reverse it (Chi and Jones 1994).

#### Subjective Feelings about Menopause

Women respondents were asked what their subjective feelings were about the time when “menstrual periods stop altogether,” a question put not only to postmenopausal women but to all the women in the study, so some respondents were looking back in time, others ahead in time. Table 2 shows that the overwhelming majority of postmenopausal women

TABLE 2 Subjective Feelings about Menopause by Menopausal Stage and Type of Menopause among Postmenopausal Women (percentage)

Subjective Feeling <sup>a</sup>	Menopausal Stage		Type of Menopause	
	Postmenopausal <sup>b</sup>	Peri/Premenopausal	Natural	Surgical
Only relief	61.6	45.7	58.5	68.3
No particular feeling	23.0	25.4	25.5	16.5
Mixed feelings	13.6	25.6	14.1	13.8
Only regret	1.8	3.3	1.8	1.4
	100.0	100.0	100.0	100.0
<i>N</i>	(704)	(708)	(434)	(218)

<sup>a</sup>The question read: “Women have different feelings about the time when their menstrual periods stop altogether. Which of the following statements best describes your feelings about this? Please answer whether or not your periods have already stopped.”

<sup>b</sup>Essentially the same distribution of responses is found if cases are restricted to women who became postmenopausal “off-time,” i.e., under the age of 40.

TABLE 3 Degree of Worry Women Express about Getting Older, on Three Issues (percentage)

Issue	Not at All	A Little	Some or a Lot	N
"Being too old to have children"	82.0	7.8	10.2	(1507)
"Being less attractive as a woman"	36.3	34.6	29.1	(1527)
"Having more illness as you get older"	21.6	38.0	40.4	(1525)

*Note:* Participants were asked the following question: "Women sometimes worry about the future and getting older. How much do you worry about each of the following?"

reported feeling "only relief" and a mere 2 percent "only regret." If anything it was the peri- and premenopausal women who were more inclined to report an anticipation of "mixed feelings, some regret and some relief." Table 2 also shows that women who experienced a surgical menopause were even more likely to express "only relief" than were women who experienced a natural menopause, an interesting finding in light of the fact that the former category includes more women who became infertile at quite young ages. One surmises an important factor in their "relief" is being able to put behind them whatever reproductive pathology was involved in surgical termination of fertility.

It is possible that our question format stimulated more positive responses of "relief" because it asked about cessation of menstruation ("when your periods have stopped altogether"), not menopause, and made no direct reference to being unable to have children. Although menstruation is a constant reminder of the potential for pregnancy, it is also the source for many women of physical discomfort, mood changes, and some restriction of activities. If this is what they had in mind when responding, then it is not surprising that they felt relief rather than regret. A more direct test of subjective feelings about the loss of fertility can be gauged by three questions we asked about getting older, one of which was worry about being too old to have children. (The question read, "Women sometimes worry about the future and getting older. How much do you worry about each of the following?") Table 3 shows the distribution of responses among the three areas of concern—being too old to have children, being less attractive, and having more illness as you get older.

Very few women express any concern about being too old to have children: 4 in 5 report "not at all"; only 1 in 10 expresses a moderate to high level of concern. The greatest worry for these women was the prospect of having more illness as they got older, with 4 in 10 reporting high concern, and only 1 in 5 no concern at all. Potential loss of attractiveness runs a close second to future illnesses in the level of worry women

TABLE 4 Worry about Being Too Old to Have a Child, by Age and Parental Status (percentage)

Parental Status	25-29	30-39	40-49	50-59	60-69	70-74
No children	71.8	75.6	16.3	5.9	0.0	0.0
<i>N</i>	(78)	(74)	(49)	(36)	(21)	(13)
One or more children	33.7	29.1	9.3	3.5	0.0	0.0
<i>N</i>	(95)	(254)	(312)	(286)	(206)	(79)

*Note:* The respondents had expressed at least "some worry."

reported. (We reserve, to a later section, further analysis of the concern for attractiveness.)

The real significance of these concerns about aging is best seen when we consider a woman's age and her parental status. Table 4 shows that both characteristics are strong determinants of concern for being too old to conceive and bear a child. As this table shows, it is childless women under 40 years of age who report high concern about being too old to have children. With the contemporary trend toward older ages at marriage and childbearing, particularly among educated women who seek to establish themselves in careers before taking on family responsibilities, this is an understandable concern, aware as they are of the decreased odds of becoming pregnant and the increased risk of fetal defects. The increase in reliance on artificial fertilization in recent years is a telling indicator of the reality behind such concerns among childless women in their late thirties and early forties. Note too that even among women under 40 who have at least one child, approximately 30 percent feel some concern about aging effects on fertility. These are most likely women who have kept open the option of having an additional child. All told, however, passing one's fortieth birthday is clearly a threshold beyond which very few women wish to have children, a subjective report consistent with the high incidence of tubal ligation, as well as with the finding that menopause is both anticipated and experienced more with relief than regret.

### Menopausal Symptoms

Despite the relief women express about menopause, it does not follow that there are no physical or psychological symptoms associated with this midlife transition. The MIDUS survey embedded a variety of acute symptoms in its modules on physical health, including five that are typically found in menopausal inventories: hot flashes (or flushes; both terms are used interchangeably), sweating a lot, insomnia, irritability, and discomfort during intercourse. The inventory of symptoms was

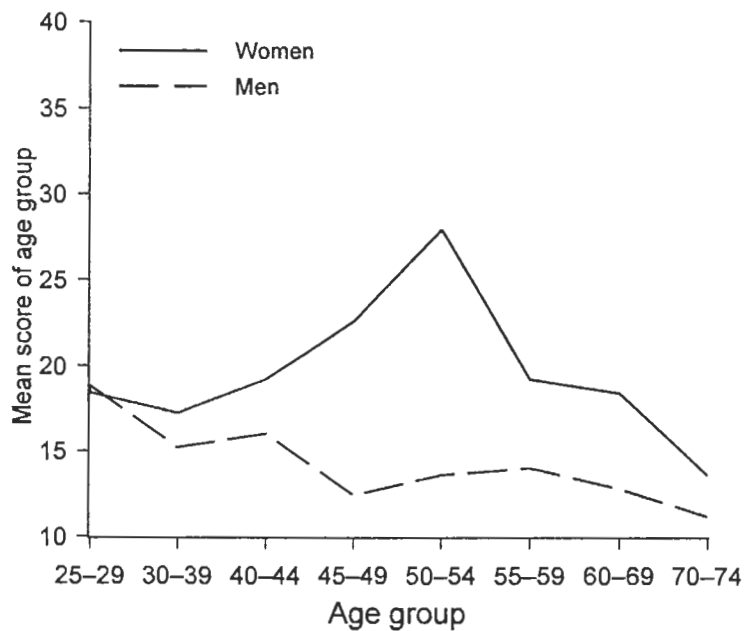


FIGURE 2. Mean score on symptoms by age and sex (means are converted to a 0–100 scale). Sex differences are significant only in the 45–54 age range.

responded to by both men and women, so we can observe sex differences across the life course. Figure 2 shows the means on the five-symptom score by sex and age, and indicates a significant increase in symptoms among women between the ages of 45 and 54, the primary years of the menopausal transition. By contrast, men show little change, only a slight nonsignificant decline in symptom score between early adulthood and old age.

Interpretation of the summary score is facilitated by examining the percentage of specific symptoms, four of which are shown in figure 3. The graphs showing the percentage of hot flashes, insomnia, and sweating a lot indicate the same profile for women as does the summary score in figure 2, with the percentage peaking in the 45–54 age range, hardly surprising because a flash episode typically involves perspiring and often causes sleep disturbance. Physiologically such symptoms indicate vascular reactions to erratic changes in endocrine secretion. The more psychological variable—irritability—shows a similar profile of decline with age for both men and women, reflecting, one surmises, both the waning of intense physical activity of more youthful years and the equanimity that comes with greater life experiences by one's elderly years.

The sharpest difference between men and women is the profile shown for sweating a lot. Frequent sweating is at its peak among men under 40,

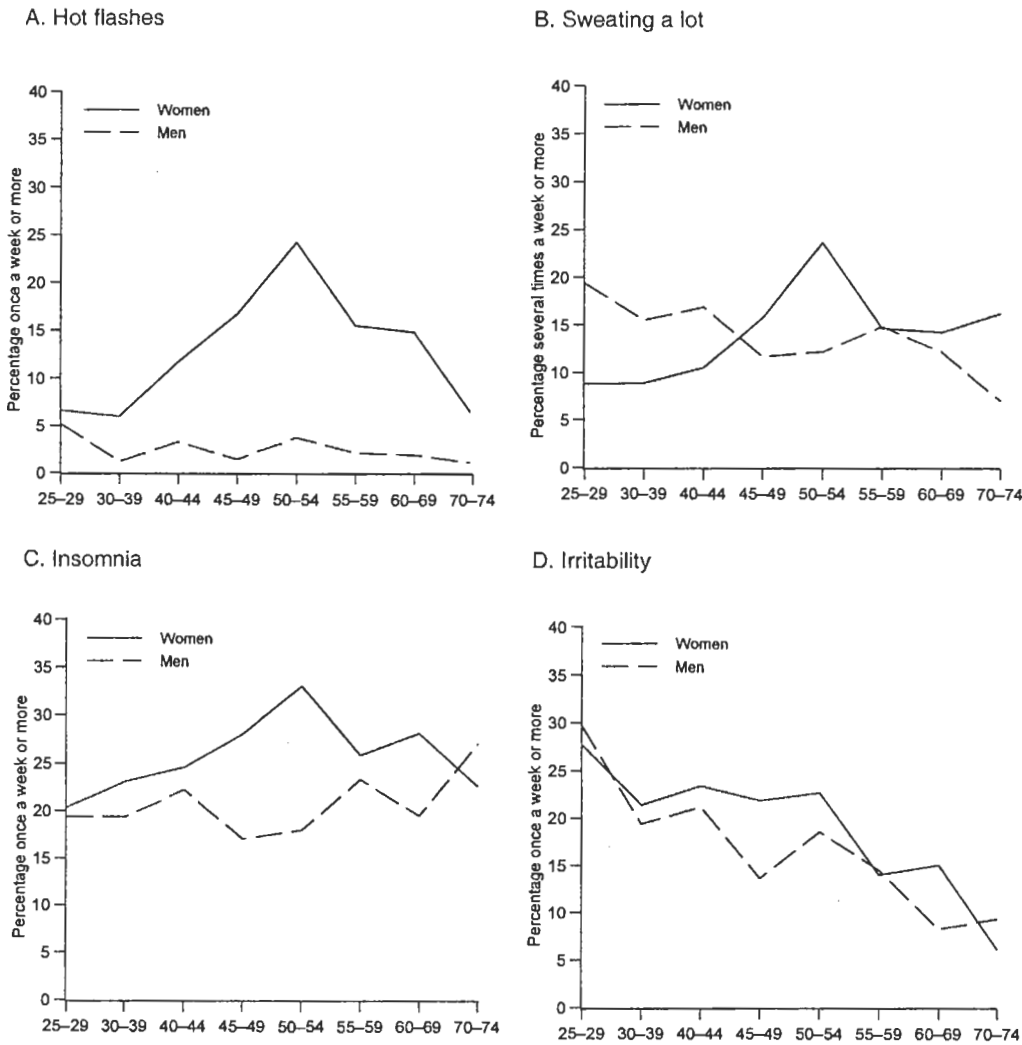


FIGURE 3. Percentage of the high frequency of four symptoms during the past thirty days, by age and sex.

declining in their middle years just at the age it increases sharply among women. The difference in this age-related profile of sweating between men and women brought a smile of recognition to me when first noted, reminiscent as it was of personal experience: in our thirties my husband was the “hotter” partner, wanting the thermostat of an electric blanket and of a room turned down, while I wanted a higher temperature. In our early fifties, I was the “hotter” partner, wanting open windows and lower room and blanket temperatures. Fortunately, American manufacturers came to the rescue, with dual controls on electric blankets that permitted us to weather the difference in temperature preferences and remain in the same bed. There would surely be a financial bonanza for any manufacturer who could produce blankets that not only warm one up but also cool one down,

TABLE 5 Frequency of Hot Flashes by Menopausal Stage among Middle-Aged Women Aged 40–55 (percentage)

Frequency of Hot Flashes	Stage of Menopausal Transition		
	Premenopausal	Perimenopausal	Postmenopausal
Not at all	81.0	54.1	51.0
One or more times a month	13.8	32.2	23.5
One or more times a week	4.2	8.9	13.3
Almost every day	1.0	4.8	12.2
	100.0	100.0	100.0
<i>N</i>	(116)	(146)	(239)
Once a week or more	5.2	13.7	25.5

for those baby-boomer women in midlife who are now experiencing hot flushes and night sweats.

But what of the general population of young men and women in earlier adulthood? Perhaps men report more sweating because they engage in more vigorous physical activity either at work or, by participating in strenuous sports, at play. Further analysis, however, discounts this possibility, because in multivariate analysis regressing the sweating variable on age, education, and a scale on vigorous and moderate physical activity “enough to work up a sweat” (either job or leisure related), the physical exercise scale is not statistically significant. Rather, it is youth and low education that are significant predictors of sweating for men, and middle age and low education for women (data not shown).

On the prototypical menopausal symptom of hot flashes, there is great variation among women in any age group or stage of the menopausal transition. Table 5 shows the prevalence of hot flashes by menopausal stage among women between 40 and 55 years of age. Note that fully half of the middle-aged peri- and postmenopausal women report no hot flashes. Only 12 percent of the postmenopausal women between 40 and 55 years of age report having flashes “almost every day,” a far cry from the media image of the woman at a dinner party with perspiration running down her face and slipping off her chin. Our results are much closer to those found in an early Minnesota longitudinal study of women in which only 1 in 10 middle-aged women reported “severe” hot flashes (Voda 1982).

Our MIDUS survey found that only a third of postmenopausal women report any current use of hormone replacement, and such hormone usage is only weakly associated with a lower incidence of frequent hot flashes: 11 percent of hormone users and 15 percent of nonusers report hot flashes

twice a week or more. So too we find that hormone use shows no effect on frequency of insomnia or sweating a lot. I suggest several possible interpretations for these results. For one, hormone use may provide only minimal help in the alleviation of hot flashes. For another, women may resort to hormone replacement for reasons other than symptom alleviation. Some may do so in response to media and medical suggestions that HRT can help in avoiding heart attacks or bone fractures. It is also possible that there are long-standing characteristics of women that predispose them to hormone use but for which HRT provides little or no relief. I return to this issue later in the chapter.

### Multiple Predictors of the Five-Symptom Scale

I draw on the substantive diversity of variables in the MIDUS survey for an analysis of what predicts high scores on the five-symptoms score. Correlational and factor analyses of the five symptoms did not show any one underlying latent construct to the measure, which is hardly surprising in light of the age and sex differences we have already noted, but this also suggests that a number of individual attributes and life experiences, quite apart from age and sex, may trigger an elevation of these symptoms. In table 6, I draw on a variety of measures, including sociodemographic variables; several measures that tap health; perceived changes in the body over the past five years and somatic amplification (more on this scale below); plus two scales that measure the extent to which men and women experience stress in their daily lives at work and at home. This regression analysis is restricted to employed adults so that we can compare the effect of work versus home stress on symptom elevation.

The somatic amplification scale has its origins in medical and psychiatric research. The scale is a modified version of the private body consciousness scale developed by Miller, Murphy, and Buss (1981), with items tapping individual differences in subjective sensitivity to internal body states—for example, heartbeat and hunger—or low tolerance for stimuli from the external environment, such as loud noises or temperature extremes of hot or cold. My expectation was that women might be more alert than men to internal body processes as a consequence of their monthly experience of menstrual cycle fluctuation and greater sensory acuity (Pennebaker 1982). The somatic amplification scale does in fact show a significant sex difference: women are more attuned to internal body messages than men are. But there is no reason to think that somatic amplification does not also play a role in men's symptoms scores.



TABLE 6 Regression of Five-Symptom Score on Health, Body Decline and Sensitivity, and Role Stress, among Employed Adults, by Sex (standardized beta coefficients)

Predictor Variables	Women	Men
Sociodemographic variables		
Age <sup>a</sup>	.098***	-.102**
Education	-.106***	-.034
Married/cohabiting (1=yes, 0=no)	-.015	-.019
Number of biological children	-.024	-.064*
Health, body decline, sensitivity		
Physical health rating <sup>b</sup>	-.110***	-.100**
Emotional/mental health rating <sup>b</sup>	-.168***	-.094**
Somatic amplification scale <sup>c</sup>	.170***	.182***
Body decline score <sup>d</sup>	.121***	.145***
Social-role stress		
Work-role stress <sup>e</sup>	.049	.100***
Home-role stress <sup>e</sup>	.117***	.082**
R <sup>2</sup>	.209***	.166***
N	(984)	(1080)

<sup>a</sup>Because several symptoms among women peak in midlife, a dummy variable is used for age in the equations for women (1 = 40–59 yrs, 0 = <40 or >59) and a continuous age variable for men.

<sup>b</sup>Single-item ratings of physical health and emotional mental health are 0=very poor to 5=excellent.

<sup>c</sup>The somatic amplification scale consists of five self-ratings on awareness of things happening in the body: hating to be too hot or too cold, bothered by loud noises, low tolerance for pain, and quick to sense hunger contractions. High scores indicate high sensitivity to body sensations.

<sup>d</sup>The body decline score has a 0–4 range, one point for each of four items rated as “worse now” than five years ago: energy level, physical fitness, physique/figure, and weight (0=none of four worse now; 4=all four judged worse now).

<sup>e</sup>The work stress scale consists of three items indicating the frequency that respondents report having too many demands on them, not enough time to get everything done, and a lot of interruptions on the job. The home stress scale consists of four items, comparable to the work stress items but referring to “at home,” plus one item on not being able to control the amount of time spent on tasks. “At home” was used rather than “in your family” so that the items applied to adults living alone as well as to married or cohabiting adults.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

Judging by the size of the standardized beta coefficients shown in table 6, somatic amplification is the most significant predictor of symptoms among men, on a par with mental health rating among women. Independent of the age pattern that differentiates men from women (linear decline for men, midlife peak for women, age effects that remain significant), poor physical and mental health, low education, and high somatic amplification each contribute significantly to elevated symptoms. Both men and women who rate aspects of their body as worse now than five years ago are also significantly more likely to report elevated symptoms.

One of the most interesting findings shown in table 6 is a sex-differentiated effect of role stress: for men, stress in their work role has more effect than stress at home on symptoms levels, whereas for women, home-role stress has the greater effect, and work-role stress, though positive, is not statistically significant. Even in our day, most men invest more heavily in work roles than do women, and women invest more in home and family than men do. Even in dual-earning couples, economic responsibility is heavier on husbands than on wives, because the men typically earn significantly more than their wives. Role investment involves both time and energy expenditure, which may aggravate role stress response, in this instance by elevating such symptoms as insomnia and irritability. Many women who experience menopause-related hot flashes report that anxiety or nervousness often triggers the onset of a hot flash. A former gynecologist of mine in Baltimore, a woman then in her sixties, reported that she experienced hot flashes only while driving at high speed on expressways, something she was as nervous about at the age of 64 as she had been at 34.

In both the Massachusetts and Pittsburgh longitudinal studies, the researchers report that women who at baseline indicated negative views of menopause were significantly more likely at follow-up to report that they were depressed, irritable, or troubled with hot flashes or night sweats with insomnia than were women who rejected negative views of menopause in the baseline survey (Avis and McKinlay 1991; Matthews et al. 1990). This finding was interpreted as confirming the theory that social expectations produce the discomforting symptoms, that expectations become a self-fulfilling prophecy.

An alternate explanation is that women who experience more than average discomfort in connection with their menstrual periods may be the women whose expectations about menopause are not self-fulfilling prophecies at all but realistic extrapolations from personal experience with menstruation to anticipated experience during the menopausal years. Table 7 confirms this counter-interpretation. Among postmenopausal women, the menstrual pain levels they reported experiencing in earlier stages of their lives is a significant predictor of the five-symptoms score, net of most of the predictor variables familiar from table 6.

Our findings are consistent with Ann Voda's (1982) earlier study of the menopausal hot flash, in which women kept a two-week daily record of the frequency and intensity of their hot flashes. Voda found that many women with high frequency and severity of hot flash episodes in midlife

TABLE 7 Regression of Five-Symptom Score, including Menstrual Pain Rating, among Postmenopausal Women (standardized beta coefficients)

Predictor Variables	Postmenopausal Women
Menstrual pain scale <sup>a</sup>	.115***
Physical health rating	-.060
Emotional/mental health rating	-.187***
Somatic amplification scale	.130***
Body decline score	.135***
Home-role stress	.180***
Education	-.062*
R <sup>2</sup>	.234***
N	(695)

<sup>a</sup>A two-item scale based on assessments of the amount of discomfort experienced before and during menstrual periods, from “none at all” to “a lot.” Ratings are current for menstruating women, retrospective for postmenopausal women. Scale range: 0=low to 8=high.

\* $p < .05$ . \*\*\* $p < .001$ .

voluntarily reported a history of premenstrual headaches, and those with high heat intolerance attending hot flashes also reported cold intolerance during their younger years.<sup>3</sup> This finding suggests some continuity across phases of individual reproductive histories, perhaps reflecting a long-standing predisposition to either thermoregulatory problems or vascular instability or both.

In a regression analysis performed using data from postmenopausal women, I found that negative affect (e.g., feeling sad, fidgety, hopeless), neuroticism (worrying a lot, moody, nervous, not calm), and high levels of somatic amplification were independent contributors to hot flash frequency. The negative affect scale refers to “the last 30 days,” but it is highly correlated with the more long-standing personality predisposition to neuroticism ( $r = .60$ ) and somatic amplification ( $r = .28$ ). With these more long-standing characteristics in the equation, current hormone use showed no effect on hot flash frequency (data not shown).

#### RECENT CHANGES IN THE BODY

##### Self-Ratings of Body Changes over the Past Five Years

I turn now to what respondents told us about changes in their bodies over the course of the previous five years, guided by the question of whether men and women show the same or a different profile in these perceptions of change, how these changes differ by stage of life from early adulthood to old age, and what, if any, other factors besides age and sex predict whether adults feel their bodies have gotten better or worse. At

TABLE 8 Assessment of Conditions of Body Now Compared with Five Years Ago, by Sex (percentage)

Aspect of Body		Women	Men
Physique/figure	Better now	17.3	16.0
	No change	36.0	43.5
	Worse now	46.7	40.5
		100.0	100.0
Physical fitness	Better now	19.2	16.7
	No change	37.0	39.6
	Worse now	43.8	43.7
		100.0	100.0
Weight	Better now	18.4	18.4
	No change	35.4	46.2
	Worse now	46.2	35.3
		100.0	100.0
Energy level	Better now	17.5	13.7
	No change	40.3	45.8
	Worse now	42.3	40.4
		100.0	100.0
	Base N	(1530)	(1449)

appropriate points, I report some actual measures of changes by age and sex in terms of waist and hip measurements, and weight as indexed by body mass index, which measures weight relative to height (technically calculated by weight in kilograms divided by the square of height in meters).

Respondents rated four aspects of their bodies: physique/figure, energy level, weight, and physical fitness. Table 8 reports the full marginal distributions on these four aspects of body change by sex. Note that fewer than 1 in 5 men and women think *any* of these four aspects of their bodies are “better now” than five years ago. On all four factors, more men than women say their bodies have shown no change. The sharpest difference by sex is on weight and physique/figure: the modal response for men is no change, for women, worse now, particularly in relation to weight; 46 percent of men say “no change,” to 35 percent of women. These percentages are precisely the reverse of the percentages for those responding “worse now”—which is the response of more women than men (46 percent versus 35 percent, respectively).

An obvious reason for these high reports of “worse now” is the simple fact that most of our respondents are in their middle years, with much smaller proportions of the sample in early adulthood or old age. Figure 4 shows the profiles of men and women for the same four body aspects across the life course, in terms of the percentage reporting that they

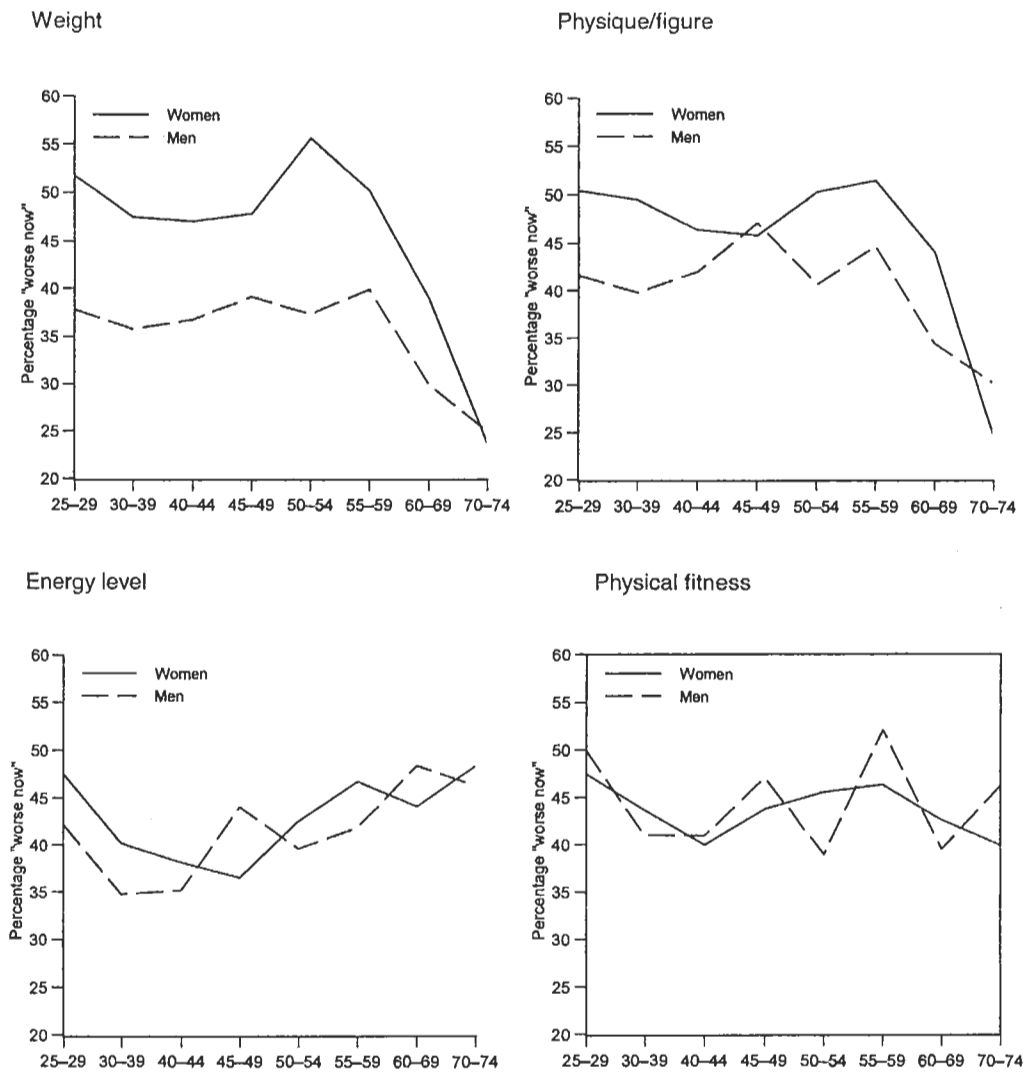


FIGURE 4. Body change for the worse over the past five years, in weight, physique/figure, energy level, and physical fitness, by age and sex.

are “worse now” than five years ago. The most dramatic age and sex differences concern weight and physique/figure. Women clearly either are more critical of their weight or have in fact shown greater weight gain than men in early adulthood and their middle years. Among women in their early fifties, a full 56 percent report that their weight is “worse now” than five years ago, a profile mirrored in women’s assessments of their figure as well. Interestingly, these poor self-assessments plunge downward among older adults on both weight and figure; in the case of women, from the high of 56 percent in their early fifties to less than half that (24 percent) among older women in their early seventies.

Energy-level judgments show little sex difference, just a linear increase in “worse now” judgments from the early thirties through the early

seventies for both sexes. That men and women in their late twenties give themselves poorer ratings than do those in their thirties may be the result of the realization of those in their late twenties that they don't have quite the bounce they remember from their late adolescence and early twenties.

It is at first puzzling that negative assessments of weight and figure go down so dramatically in the older years. To some degree, older adults may simply move beyond cultural pressures to retain youthful appearances. On the other hand, it is likely that there is a selection factor at work among older adults: very heavy or obese older adults run greater risks of cardiovascular diseases, stroke, and late-onset diabetes, and more of them die, leaving fewer overweight and obese survivors among the oldest respondents in a survey.

### Objective Measures of Body Change

Further interpretive cues may be found in sex and age differences on more objective measures of body characteristics. Respondents' packets contained a tape measure and a sketch of a body that showed exactly where respondents were to measure their hips and waists. These self-report measures are clearly not as valid as objective measurements of height and weight by a health professional. It is known that overweight subjects in self-report studies tend to underestimate their weight and that all subjects tend to overestimate their height (Bray 1992; Palta et al. 1982). This suggests that analysis using self-report measures to estimate the prevalence of overweight or obesity is likely to be conservative. Two studies illustrate this tendency: the NHANES III (1984–94) study, in which weight and height were measured by health professionals, showed a prevalence of obesity of 22.5 percent in adults, one-third higher than the prevalence rates using self-reports in a telephone survey (Mokdad et al. 1999).

Figure 5 shows the differences between men and women across the life course in average hip and waist measurements. (These figures are shown in the familiar terms of inches to permit readers to easily gauge their own measurements against the average for their age and sex.) The most striking contrast seen in figure 5 is the very large difference between hip and waist measurements of women compared with those of men, projecting the image of the rounded hourglass contours of the female body and the more squarish contours of the male body.

It is often claimed that slim waists relative to hip measurements are an index of female fertility potential (along with clear skin and shining hair)

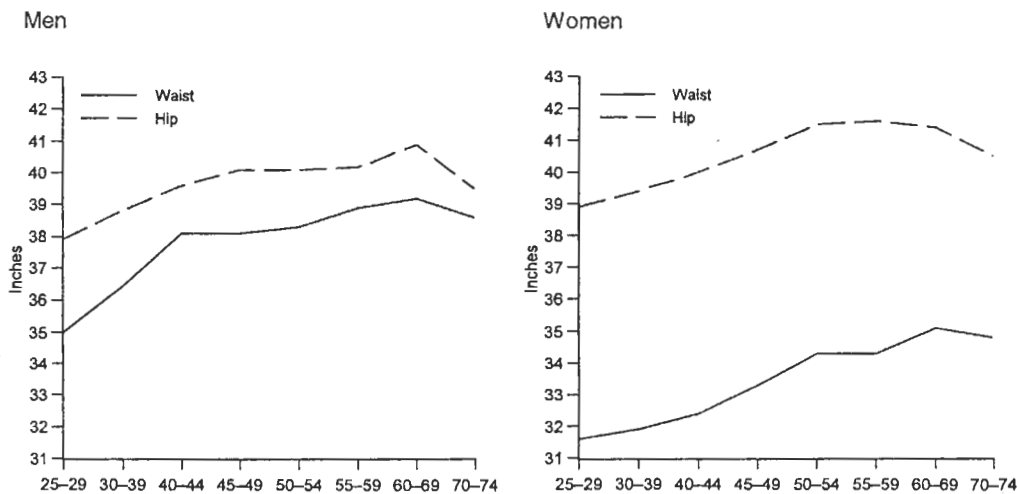


FIGURE 5. Average waist and hip measurements by age and sex (in inches).

and that childbearing has the effect of enlarging a woman's waistline compared with her hips. I found no evidence of this in the MIDUS data. We compared women who had no children with those who did in each of the eight age groups shown in figure 5 and found, if anything, a reverse pattern. For example, childless women in their late fifties had larger waistlines than did women the same age who had given birth to two children (35.1 inches versus 33.5 inches). The major characteristic of women who had large families (four or more children) was not merely larger waistlines; they were heavier at all ages than were women who had had only one child or no children (data not shown).

The second major feature of figure 5 is the steady increase in both waist and hip measurements from the late twenties through the sixties for both men and women, followed by a sharp downturn in these measurements among the oldest respondents, a finding consistent with the second interpretation offered earlier of some selection factor at work, although at later ages than shown in the perceived changes in the body reported in figure 4. One last point to note is that there is much greater variance in hip and waist measurements of women than of men, a consistent pattern across all eight age groups, as illustrated by the standard deviation on waist measurements of those in their late forties: for women, a standard deviation of 7 inches, for men, 4.8 inches.

A more direct view of objective age and sex differences in body shape and heft is provided by the body mass index (BMI). Figure 6 provides such data. Figure 6A shows the mean BMI by age and sex, with an interesting sex difference in the ages at which weight gain is increasing most sharply.

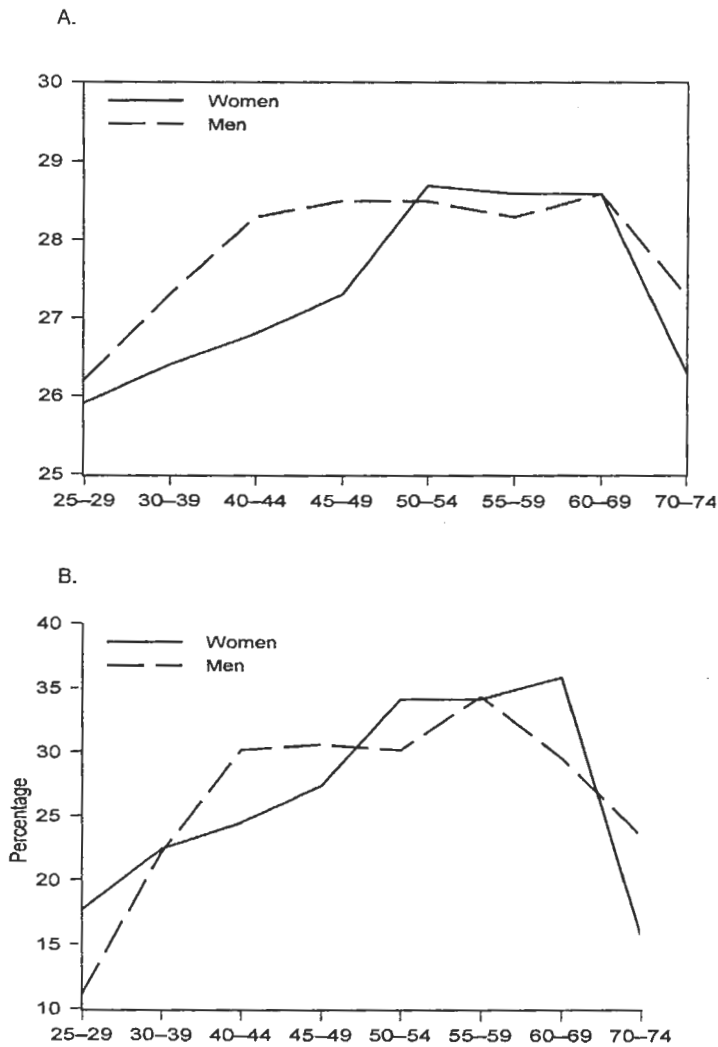


FIGURE 6. (A) Average BMI by age and sex. (B) Percentage defined as obese by the National Academy standards (BMI of 30 or more), by age and sex.

For men, the weight gain occurs between their late twenties and early forties; for women, the sharpest increase is between their late forties and midfifties, precisely the years spanning the menopausal transition. Figure 6A also shows the consistent drop in the oldest men and women, similar to the pattern shown previously.

Average BMIs hide as much as they reveal. Whether an individual's BMI is 26 or 28 represents a rather small increment tipped toward being slightly overweight. Analysts of the National Health and Nutrition Examination Studies use a BMI of 27.8 for men and 27.3 for women as the cutoff criterion for defining overweight, and a BMI of 30 or more for defining obesity (Kuczmarski et al. 1994). The average weights shown in figure 6A fall largely between a BMI of 26 and 28.5, but there is



considerable variance around such averages, with significantly large proportions of adults who are not just overweight but obese. The age and sex profiles on obesity are shown in figure 6B: the percentage of obese persons increases with age for both men and women, but the sharpest upturn occurs during early midlife for men, late midlife for women. Slightly more than a third of women in their fifties and sixties are obese. The strong relationship of obesity with age alerts us to the importance of adjusting for age in any discussion of secular trends toward more obesity in the U.S. population. The data in figure 6 suggest that although the baby-boomer generation has given far more attention to physical fitness than did their parents (with dieting, jogging, aerobic exercise, swimming, squash, and such), they nevertheless show marked increases in weight by midlife.

Ali Mokdad and his research associates (1999) report similar results on obesity prevalence in the United States. Using data from telephone surveys conducted annually between 1991 and 1998, they report a rise in obesity with age from 12 percent among 18- to 29-year-olds, to a peak among adults in their fifties of 24 percent, then dropping to 15 percent among adults over 70, a profile very like that shown in the MIDUS data. These prevalence figures are from the 1998 survey. The trend from 1991 to 1998 shows increasing obesity in just these seven years in all segments of the population, but with particularly sharp increases among young adults, college graduates, Hispanics, and those residing in the southeastern Atlantic states.

A question that is important to confront is whether the weight gain shown by age in the last several figures is properly interpreted in a largely maturational sense. Clearly the Mokdad series shows both maturational and cohort trends. Internal to the MIDUS data set, we can take a step further in an assessment of this issue, because respondents reported not only their current weight but their weight when they were 21 years of age. Figure 7 shows both current weight and recalled weight at 21 years of age by both sex and current age of the respondents.

In figure 7, weight at 21 years of age shows a downward slope across the age groups. Consistent with the trend across surveys shown in the Mokdad study, younger adults in the MIDUS sample weigh significantly more than younger adults did fifty years ago, as reflected by the recalled youthful weight of our oldest respondents. An average woman in 1995 in her late twenties reports she weighed 136 when she was 21, whereas our oldest respondents report having weighed 123 pounds when they were 21, a difference of 13 pounds between these birth cohorts. The contrast among men is roughly similar, 169 versus 157 pounds, for a

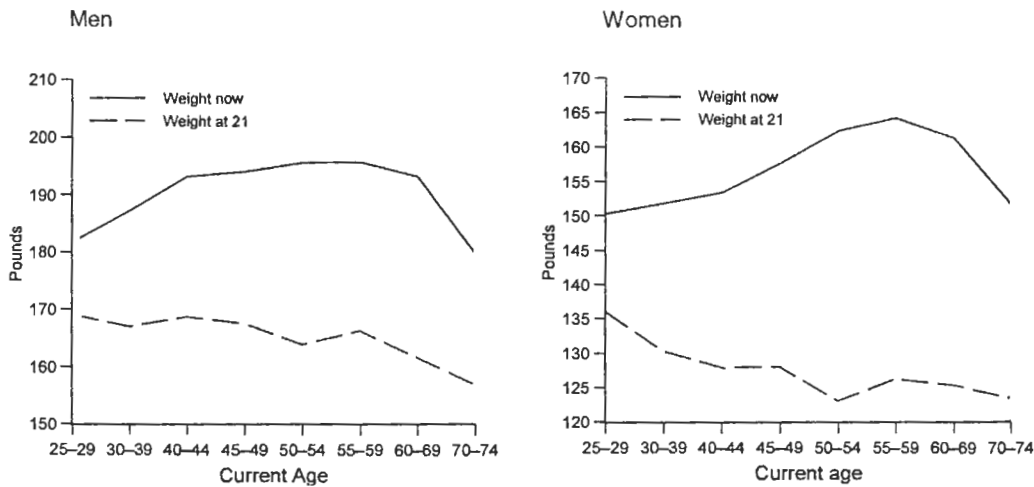


FIGURE 7. Current weight versus weight at age 21, by current age and sex (in pounds).

weight difference between these cohorts at age 21 of 12 pounds. Note, too, the enormous bulge in the graph between current weight of today's midlifers compared with what they reported for their weight at 21: a 30-pound gain for women, 32 for men. Clearly dieting, jogging, tennis, and swimming do not compensate for the sedentary occupations, rich diets, and hours of TV watching and web surfing of recent years.

In the future, adults may experience even greater weight problems, as suggested by the fact that the youngest respondents are heavier than members of preceding cohorts of young adults. Several factors contribute to this trend toward fatter youth: the dropping of physical education in so many of the nation's schools; the sedentary lifestyle implicit in the fact that children between the ages of 6 and 11 watch television an average of twenty-five hours a week; the popularity of computer and video games, which add even further to this more sedentary lifestyle; and the warnings to children by dual-earning parents that they remain indoors after school, or the children's supervision by after-school centers or babysitters, who may hesitate to take them outdoors (Brody 2000a, 2000b). Diet change in recent decades holds particular relevance for the health of future cohorts. Jane Brody reports from several studies that Americans have shown a 28 percent increase in sugar consumption in just fifteen years (Brody 2000a). This is a particular problem for children and teenagers undergoing their most significant period of healthy bone formation. With each five-year period from ages 1 through 19, children's milk consumption has dropped and carbonated soda consumption has risen. Between 15 and 19 years of age, when bone formation is at a critical

stage, a teenager's soda consumption is nearly double that of milk, the best source of calcium and vitamin D. This nutritional profile of today's children and adolescents holds ominous warnings of vulnerability to osteoporosis in their later years. Trends like these imply not only that we will see a less healthy middle-aged population in the future but that today youngsters have less mental alertness and poorer health. For example, studies have shown that physically active youngsters do better in school and have fewer coronary risk factors like high blood pressure and high cholesterol.<sup>4</sup>

Public health journals and government reports have described this trend toward ever-increasing weight in the U.S. population as a serious "epidemic." What to do about it is far from certain. Clearly Americans have themselves tried to lose weight by dieting. At any given point in time, about 50 percent of American women and 25 percent of American men are dieting, but many if not most of such diets are unsuccessful, because weight gain typically occurs after going off the diet. Many adults resort to periodic bouts of serious dieting, resulting in a history of considerable weight fluctuation. Recent research on weight fluctuation, from the Framingham Heart Study, has shown weight fluctuation to be strongly associated with adverse health outcomes, especially among 30- to 44-year-old adults, the age group in which dieting is most common (Lissner et al. 1991).

Another cautionary tale about weight loss is found in challenges to the frequent claim that weight loss in obese persons paves the way to increased longevity. Reviews of the evidence from existing studies on this issue do not support the claim (Williamson and Pamuk 1993): obese adults who lost a great deal of weight did not live longer than obese adults who had not lost any weight. Research findings like these suggest that a wiser course to follow than frequent short-term bouts of dieting is to adopt a lifestyle, at as young an age as possible, that emphasizes physical exercise on a regular basis and a cuisine that concentrates on milk, fowl and fish, an array of fresh vegetables and fruits, and minimizes the consumption of sodas, fatty meat, high-sugar-content cereals, or frozen dinners. It is no easy task to persuade parents, teachers, and youngsters themselves to make such changes, against the massive pressures and temptations that numerous food processors and restaurants parade across the television screens by the dozens every day in most American homes.

Returning now to respondents' ratings of change in their bodies over the past five years, I raise the interesting question of to what extent adults pass such judgments on the basis of reports of their weight (using BMI

TABLE 9 Regression of Body Decline Score on Physical and Psychological Characteristics, by Sex (standardized beta coefficients)

Predictor Variables	Women	Men
Physical characteristics		
Physical health rating	-.093*	-.143***
Body mass index (BMI)	.272***	.221***
Total exercise score <sup>a</sup>	-.141***	-.177***
Psychological characteristics		
Emotional/mental health	-.068*	.019
Neuroticism scale <sup>b</sup>	.101***	.097***
Age	-.114***	-.082**
$R^2$	.176***	.140***
$N$	(1411)	(1358)

<sup>a</sup>A four-item scale on the frequency of moderate and vigorous physical activity “long enough to work up a sweat” during the summer and winter, each ranging from “never” to “several times a week or more.”

<sup>b</sup>A four-item scale on the extent to which respondents say they are moody, worrying, nervous, and (not) calm.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

rather than simply weight itself in order to correct for height), and what other factors are involved in the judgment that their bodies have changed for the worse in recent years. Table 9 brings together an array of predictor variables covering both physical and psychological characteristics of respondents, controlling for age, which we have already seen to be strongly related to both body change and BMI.

It is immediately clear from the standardized beta coefficients shown in table 9 that weight plays an equally important role in judgments about changes in their bodies for both men and women; that is, BMI is the most statistically significant predictor of the body decline scores. Independent contributions are also made by ratings of overall physical health: those with excellent health report less change for the worse than do those in very poor health. Closer analysis shows that physical fitness and energy level are the most significant, rather than weight and figure, as shown in table 9 (data not shown). By contrast, both men and women who engage in moderate or vigorous exercise are less inclined to report worsening conditions of their bodies.

The regression analysis also alerts us to the importance of psychological attributes; an elevated score on the neuroticism scale predicts greater body change for the worse. It should be noted, however, that the neuroticism scale does not measure a clinically diagnosed mental illness. Adults who score high on this scale are not “neurotic” in any technical

psychiatric sense; they may simply be worrying types subject to mood changes or may have an easily excitable temperament (the items in the scale tap precisely these characteristics—nervousness, worrying, moodiness, and, reverse-coded, not calm). Some aspects of the tendency to neuroticism have genetic roots, and therefore the tendency is likely to be a long-standing characteristic of the adult. (In an analysis of the neuroticism scale, using data from the MIDMAC sample of twins, we estimate the heredity component to be 56 percent.) A high score on such a scale could have an effect on self-assessments by exaggerating even minor personal faults or body sensations or, in an ironic twist, by avoiding the enticement of an inflated sense of self-esteem that a consumer culture encourages.

One particular sex difference is suggested by the contrast between men and women in the influence of physical as opposed to emotional/mental health: men's rating of their physical health has more impact on their sense of body decline than such a rating has for women; by contrast, only women's emotional health impacts on their sense of body decline, which is not true for men. In more detailed regression analysis not shown here, a comparable analysis on the component items in the body decline score shows even stronger differences than that shown in table 9. It is on figure/physique that the difference between the sexes is sharpest: physical health is a significant predictor of worsened condition of the physique of men but not women, and whereas emotional/mental health affects women's reports of a worsening of their figures, it does not affect men's. It is tempting to interpret this difference in terms of social context: the cultural emphasis on women's looks may impact more deeply on women's emotional state in assessing change in their bodies; by contrast, more men hold jobs that require physical fitness and stamina, with the result that poor physical health is more significant to men's assessment of changes in their bodies.

#### WORRY ABOUT LOSS OF ATTRACTIVENESS

At this point it is appropriate to return to the measures in MIDUS of women's self-reported worries about getting older. Recall that in table 3 we found few women concerned about being unable to have children as they got older, with the exception of younger women who had not yet had a child. Loss of attractiveness, by contrast, was a source of worry to two out of three women. The first question I pose is whether age makes a difference here: at what age do women report the highest worry about loss of attractiveness, and do unmarried women express more concern

TABLE 10 Worry about Loss of Attractiveness with Age, among Women, by Age and Marital Status (percentage expressing at least some worry)

Marital Status	25–29	30–39	40–49	50–59	60–69	70–74
Married or cohabiting	66.4	78.4	71.7	60.7	50.8	30.0
<i>N</i>	(110)	(208)	(219)	(196)	(126)	(40)
Not married or cohabiting	77.4	70.5	69.0	66.4	42.3	25.3
<i>N</i>	(62)	(122)	(145)	(128)	(104)	(51)

than married women? Table 10 provides the answers to both questions: age clearly plays a larger role than marital status, with the percentage reporting some worry on this score declining among married women from 66 percent among the youngest to 30 percent among the oldest women, with an even greater contrast among the women who are neither married nor cohabiting, a drop from 77 percent to 25 percent.

There is an interesting interaction between age and marital status among the younger women: unmarried women in their late twenties show the highest worry percentage (77 percent), whereas among married women it is women in their thirties with the highest worry level (78 percent). A divorce-prone society may be particularly susceptible to heightened concern for one's looks, either to keep a spouse or to improve one's chances for a new one when returning to the singles scene at an older age. For unmarried or divorced women, the youthful images of self that are particularly revered in American society impose additional pressure to look younger than they are.

It is unfortunate that we neglected to include any question about loss of attractiveness for men in the MIDUS sample. There is only indirect evidence that men are showing an increasing concern for their looks, as witness the increased resort to male cosmetics, fashion diversity, cosmetic surgery (particularly liposuction reduction of the abdomen), and efforts to forestall or cover up baldness, or, in some social niches of society, to prefer a shaved head over thinning hair. Strenuous exercise to build upper arm biceps preoccupies thousands of men in health spas. Interestingly, even male G.I. Joe dolls for boys have shown an increasing emphasis on the size of upper arm biceps: when the doll first appeared in 1964, the proportionate width of his biceps was equivalent to 12.1 inches; then in 1974 they were bulked up to 15.2 inches. In his most recent incarnation in 1998, an appropriately renamed G.I. Joe Extreme has an incredible 26.8-inch bicep, a size even in excess of those attained by advanced bodybuilders.

Jackson Katz (1999) claims that one source of this trend toward greater attention to physical size and shape in male figures is a reaction to women's

challenge to male dominance in so many spheres of life—in education, the workplace, and sports—over the past twenty-five years. Elizabeth Fox-Genevise argued a somewhat similar theme, pointing out that men are becoming frustrated by a world in which they have lost a good deal of control through an erosion of their socioeconomic advantages and the social irrelevance to their major roles of their physical superiority (Fox-Genevise 1991). Today's action figure toys for young boys, if they are taken as a male ideal, have little prospect of being translated into the boys' later adult lives except through bravado acts of high risk-taking in active sports, or in symbolic form by risk-taking in the stock market or casinos. Alas, it must be left to future contacts with MIDUS respondents or other surveys of adults to investigate the extent to which men of various ages report worry about the loss of attractiveness as they age, what predicts high or low levels of such concern, and how their profile compares with that shown here for women.

More pertinent to the analysis of women's attractiveness worries is an interesting finding from an analysis of HRT among postmenopausal women in the MIDUS sample (Keating et al. 1999). My co-authors of this medical journal article are all physicians or medical researchers in public health. When they analyzed the MIDUS data on HRT use, these authors expected that women with cardiac risk factors or diabetes mellitus would be highly likely to rely on hormone replacement therapy, but women with these conditions were less, not more, apt to report HRT. To my colleagues' surprise, the single psychological variable that predicted current hormone use was worry about attractiveness. There are echoes here of the claim made in Robert Wilson's early 1966 thesis in *Feminine Forever* that estrogen was the magical drug that assured continued sexual attractiveness well past midlife. Contemporary women seem more responsive to appeals to their femininity than to physicians' claims that medical risk factors should prompt reliance on estrogen replacement.

The next step in this analysis is to explore in greater depth what determines whether women worry about the loss of attractiveness as they get older, and to do so with attention to the likely difference between young and middle-aged married women. The results of this multivariate analysis are shown in table 11. In addition to physical measures and an expanded set of psychological variables, I introduce socioeconomic status measures here, on the expectation that higher economic status may trigger heightened concern for attractiveness among middle-aged women, knowing as they must that many middle-aged, high-earning men have many opportunities to meet and attract younger professional and business women of

TABLE 11 Regression of Worry about Attractiveness among Young and Middle-Aged Married Women (standardized beta coefficients)

Predictors	Young (25–39)	Middle-Aged (40–59)
Socioeconomic status		
Respondent's education	.043	.043
Respondent's personal earnings	-.001	-.009
Spouse's earnings	.075	.145**
Body		
Physical health rating	.070	-.015
Body decline score	.067	.110*
BMI	-.058	-.101*
Psychological		
Emotional/mental health	-.025	-.040
Neuroticism scale	.163**	.108*
Troubled marriage scale <sup>a</sup>	.098+	.150*
Self-acceptance scale <sup>b</sup>	-.195**	-.190***
<i>R</i> <sup>2</sup>	.115	.166
<i>N</i>	(333)	(412)

<sup>a</sup>A five-item scale based on extent of disagreement with spouse concerning money matters, household tasks, and leisure-time activities; how often respondents thought their relationship was in trouble during the past year; and how likely they thought it was they might separate in future.

<sup>b</sup>A three-item psychological well-being scale, based on extent to which respondent agreed or disagreed with self-descriptive statements: "I like most parts of my personality"; "When I look at the story of my life, I am pleased with how things have turned out so far"; and "In many ways I feel disappointed with my achievements in life" (reverse-coded).

+ $p < .10$ . \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

equal status, intelligence, and shared interests. Middle-aged women have seen the young trophy wives, usually the second wives, of their husbands' colleagues; they have seen their women friends be replaced by younger wives, and they know such women could replace them as well.

The major story told by the findings reported in table 11 is consistent with these expectations: among young married women in their late twenties and thirties, the major predictors of worry about attractiveness are all psychological variables: high scores on neuroticism, a troubled marriage, and low self-acceptance are the strongest predictors of such women's worry about loss of attractiveness as they get older. The same three psychological variables are also significant among older women in their forties and fifties, but now these variables are joined by status and physical variables in predisposing them to concern for their looks. As predicted, it is women married to high-earning spouses, whose marriages are troubled, and who report a worsening condition of their bodies in recent



years, who are most worried about their looks. It is not the case, however, that being overweight is a factor here; in fact, it is low BMI women who are more worried than high BMI women, suggesting that many middle-aged women who are overweight have accepted their condition, given up the fight against the bulge, and no longer worry about loss of attractiveness. (Perhaps their husbands are as overweight as they are!)

In an effort to explore these findings in greater depth, I undertook a special analysis of the married middle-aged women who reported high worry about loss of attractiveness and tried to ascertain what characterized those women in this special group who relied on hormone therapy compared with those who did not. The hormone-users in this special group showed a slight tendency to be married to men ten or more years older than themselves, a profile that suggests some of these hormone-using women were themselves younger trophy wives, whose husbands would be particularly concerned about their wives' retaining the youthful looks that had attracted them in the first place. This adds to the interpretation that hormone use is resorted to by women more for the purpose of retaining a youthful appearance than for coping with medical risk factors. In light of the abrupt termination of the major WHI clinical trial on HRT, many middle-aged American women may have been wiser than physicians and medical researchers in rejecting the idea that hormone replacement was a beneficial means of protecting heart and uterine health as they age.

#### SEX, ATTRACTIVENESS WORRY, AND THE MENOPAUSAL TRANSITION

To tie together some of the themes explored in this chapter, I turn now to the MIDUS measures on the sex lives of women in midlife. The key questions in this analysis are whether worry about attractiveness or perception of a body changing for the worse plays a role in either frequency of sex or satisfaction with sex lives generally, and whether the stage of menopausal transition has any bearing on women's sex lives. On this latter question, the issue is whether it is menopausal status or chronological age that relates to a lowering of sex frequency or satisfaction among older women.

Table 12 shows a decline in sex frequency among married or cohabiting women between 40 and 60 years of age by the stage of their menopausal transition: 61 percent of premenopausal women report having sex once a week or more, whereas this figure drops to 41 percent among postmenopausal women. But when we look at the regression of sex frequency, using beta coefficients, we readily see that it is not menopausal stage per

TABLE 12 Frequency of Sex and Menopausal Stage

Frequency of Sex, by Menopausal Stage, among Married/Cohabiting Women Aged 40–59 (percentage)			
	Premenopausal	Perimenopausal	Postmenopausal
Once a month or less	17.8	25.3	34.2
Two or three times a month	21.5	22.1	24.9
Once a week or more	60.7	52.6	40.9
	100.0	100.0	100.0
<i>N</i>	(76)	(95)	(237)

Regression of Sex Frequency on Age, Postmenopausal Stage, Body Decline, and Physical Health (standardized beta coefficients)	
Age	-.407***
Postmenopausal stage <sup>b</sup>	.044
Body decline score	-.064*
Physical health rating	.005
<i>R</i> <sup>2</sup>	.198***
<i>N</i>	(845)

<sup>a</sup>Item read "Over the past six months, on average, how often have you had sex with someone?"

<sup>b</sup>Dummy variable on menopausal stage: 1=postmenopausal; 0=peri- or premenopausal.

\**p* < .05. \*\*\**p* < .001.

TABLE 13 Regressions of Frequency of Sex, and of Overall Satisfaction with Sex Life, on Age, Postmenopausal Stage, and Worry about Attractiveness (standardized beta coefficients)

Predictor Variables	Sex Frequency	Sex Life Satisfaction <sup>a</sup>
Age	-.399***	-.243***
Postmenopausal stage	-.037	-.036
Worry about attractiveness	-.049*	-.128***
<i>R</i> <sup>2</sup>	.175***	.173***
<i>N</i>	(1425)	(1425)

<sup>a</sup>Satisfaction with sex life is an overall single rating of 0–10, where 0 means "worst possible" and 10 means "best possible."

\**p* < .05. \*\*\**p* < .001.

se but age and reports of body decline in recent years that are the significant predictors: it is the older women and those reporting a worsening condition of their bodies who report less frequent sex. Menopausal status contributes no independent effect, nor does the women's report of the general condition of their physical health.

Finally, table 13 shows that menopausal stage has no effect on either sex frequency or sex-life satisfaction. Both behavior and satisfaction decline significantly with age, with an added influence of worry about

loss of attractiveness. That some accommodation is made to declining sex drive is suggested by the fact that frequency is more strongly affected by age than is general satisfaction with the domain of sex in one's life. By contrast, worrying about the loss of attractiveness shows greater influence on satisfaction than on sex frequency, perhaps reflecting the fact that satisfaction is an individual's judgment, whereas frequency of sex is a function of desire on the part of two partners in a relationship.

### CONCLUSION

Contrary to much recent attention to the problems associated with menopause, the 1995 MIDUS survey does not demonstrate any pervasive trauma during this normal transition in women's lives. In the contemporary period, menopause is not subjectively associated with the end of fertility, because the last wanted birth takes place long before most women experience the first signs of menopause. An increasing proportion of women take control of their fertility in a more direct sense by having their fallopian tubes tied, and typically they do so years before they go through the menopausal transition.

A small minority of women report elevated symptoms typically associated with menopause. Only 12 percent of postmenopausal women in their fifties report having the prototypical menopausal symptom of hot flashes "almost every day." Nor are the symptoms of sweating, insomnia, hot flashes, irritability, or discomfort during intercourse restricted to women during the menopausal transition: many younger and older women, and a minority of men report such symptoms as well. Our findings show echoes of those Bernice Neugarten found a very long time ago in her analysis of a wide range of symptoms that gynecologists took to be linked to menopause but which she showed were often found among young women in their twenties and thirties (Neugarten and Kraines 1964).

More importantly, there are other variables that are strong predictors of such symptoms. We have identified several, including long-standing characteristics such as a history of menstrual period pain; high sensitivity to internal and environmental factors such as high or low temperatures, loud noises, or hunger contractions; and role stress at home or on the job—all of which contribute independently to elevated symptoms, as does poor mental or physical health.

Additional findings reported in this chapter help to place menopause in a larger life-course framework and to identify other characteristics of heightened significance during the middle years. The analysis of both self-reports and objective body measurements underlines the general

point that past research has overinterpreted aging symptoms as being menopause induced. Our analysis of body decline showed an acute awareness of changes in physique, physical fitness, and energy level consistent with the gradual decline in functional capacity over the age of 30 for both men and women.

It is worth repeating that we regret not having asked men about whether and to what extent they worry about their looks as they get older. Not only would this tell us an important story about men's perceptions of aging, but it would stimulate interest in research that could illuminate social behavior that seems aimed at hiding one's actual age, again something that seems to obsess men as well as women in our society.

Yet another question that begs for new research is what the criteria are by which men judge female attractiveness. Do such criteria change as men get older? With the media so heavily focused on adults under 40, there is little to go on in thinking about the criteria that older men and women hold to. A related question is how women's views of themselves are affected by their perception of men's criteria in judging them. A personal experience highlights this point. It took me some ten years to persuade my mother to give up her high-heeled shoes and wear sturdy comfortable walking shoes that would make it easier for her to get around in light of her knee and hip problems. Though sympathetic to her self-perception that her legs and slim feet had long been among her most attractive features, it was hard to be sympathetic to her defense of the high heels—"What would men think of me in such dowdy shoes?" She was then 86 years of age, but she had little patience for my answer that men would think she was a sensible woman!

In this chapter I have demonstrated that menopause for most women is indeed a benign event that past medical and psychoanalytic perspectives had led us to misinterpret. This is not to belittle in any way the difficulties experienced by a minority of women who do suffer anguish and physical discomfort in midlife (I include myself among them), as they cope with severe mood fluctuation, insomnia, and hot flashes while fulfilling obligations to others in their families and on their jobs. In coping with menopause and other aspects of aging, women are dealing with their unique biology, personal menstrual history, particular life situations, ways that others perceive and treat them, especially their close women friends, co-workers, and intimate partners, and expectations flowing from the high cultural emphasis on youth and sexual attractiveness in American society.

We think there is a special need to give focused attention to the impact that the cultural emphasis on youth and sexual attractiveness has on women, and on men as well. The notion that one should perform at 50 or 60 as one did at 30 is not limited to job performance; it applies to sexual performance and athletic performance as well. Something strikes us as very unnatural and wrong-headed about a society that encourages pill-taking from childhood to old age: pills to active youngsters that keep them quiet and attentive at school; steroids to young athletes that build muscle-bound bodies but trigger aggressive behavior; tranquilizers and pep pills to get us through a fast-paced work day and sedatives to sleep at night; Viagra to perform sexually; Premarin or Prempro to look younger if not to avoid coronary disease or osteoporosis; and Prozac to ease depression in old age. There are deeply rooted economic and political pressures underlying the social institutions that reinforce the pill-popping habits in American society, and they go far beyond the ability of a social survey to identify and explore. Nonetheless, I hope that with the help of our findings from the rich MIDUS data set, we have paved the way for many new research paths toward a deeper understanding of the middle years in the lives of women—and men.

#### NOTES

1. The larger WHI study was designed to test more than the health effects of the estrogen-progestin combination, and these different arms continue at the forty clinical centers: they include studies of the effect of low-fat diets, and calcium and vitamin D supplementation, and a study of the effects of estrogen alone in women who have had a hysterectomy. Unless unexpected risks emerge as the latter arm proceeds, these trials are expected to continue until March 2005.

2. The operational definitions of the three stages of the menopausal transition in the MIDUS data set are as follows. Women considered to be in the *postmenopausal stage* answered yes when asked if their menopausal periods had stopped permanently, “not counting a temporary stop because of such things as pregnancy, birth control, extreme dieting, or medication.” In addition to these 666 women, we added 53 cases of women who did not answer the question but were between 55 and 74 years of age, by which time 92 percent or more women are postmenopausal. This yields a total of 719 postmenopausal women. Women considered to be in the *perimenopausal stage* were identified by one of two criteria: (1) their periods are not permanently over, that is, they have menstruated at least once in the previous three months but their periods are less regular, lighter, or heavier than a year ago (287 women); and (2) they said that their periods were not permanently over, but they have not menstruated during the previous three months and they think this may be “the beginning of menopause” (10 cases), for a total of 297 perimenopausal women. Women considered to be in the *premenopausal stage*

were so classified if they met one of three criteria: (1) their periods were not permanently over, they have menstruated during the past three months, and they report no change in cycle length or menstrual flow (395 cases); (2) they report their periods are not permanently over but they have not menstruated during the past three months due to pregnancy, dieting, or side effects of medication (28 cases); and (3) they did not answer the question whether their periods were over permanently or not, but all were under 40 years of age and not classifiable as perimenopausal (25 women). This yields a total of 448 premenopausal women.

3. Voda conducted the study in the American Southwest several decades ago. Several of the women interviewed reported that the major stimulus encouraging them to air condition their cars and homes was precisely the discomfort of sweating associated with hot flashes and night sweats, which they had found intolerable when they were in their midforties (Voda 1982).

4. Ruth Clifford Engs (2000) argues that in American history, physical fitness movements go along with moral and religious movements, creating three cycles that focus on "clean living." These extremist moral crusaders, along with health zealots, overdo their proscriptions for clean living, which leads to a countermovement whose members reject such pleas and indulge instead in drinking, smoking, more sex, and a sedentary life. Engs predicts that today's baby-boomer parents, along with evangelical adherents, may produce not like-minded children but an upcoming generation of youth who reject public health messages or parental examples in favor of self-indulgence. But the weight profile we have shown in today's midlifers does not suggest they are providing very good examples of fitness to their children.

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