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Life-style, aging and work ability among active Finnish workers in 1981—1992

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Objectives Life-style is an important factor in explaining the changes in health and well-being in old age. In this study life-style was defined according to Abel's definition as combining life chances and life conduct. The main question concerned the change in life-style components and work ability over a 11-year period.

Methods The study population comprised workers who responded to a questionnaire in both 1981 and 1992 and were still working in 1992 (N = 924). The changes in the dimensions of life-style (hobbies, living habits, life satisfaction) were tested with Pearson's chi-square test. The associations between life-style, work ability, and health were analyzed by correspondence analysis.

Results Physical activity was the life-style factor that showed a major change; it increased among both genders. All other leisure-time activities decreased during the follow-up. The women's satisfaction with their life situation increased, but the men were less satisfied at the end of the study. Work ability, as measured with the work ability index, was a crucial factor in these changes. If the work ability remained good, the respondents were also more active and more satisfied with their life. This effect of work ability was strong, especially with respect to the men's satisfaction with their life situation.

Conclusions Life-style, work ability, and perceived health are highly associated, and studying them separately may give a simplistic view of the interaction between aging and work. In the future, more comprehensive approaches should be applied.

Key terms aging, capability, living habits, life satisfaction, follow-up study, work ability index.

There has been an increasing interest in life-style factors in the area of occupational health and well-being. It has been widely accepted that work conditions and other work-related matters alone do not satisfactorily explain the variability in employees' abilities to work (1). There is need for more comprehensive studies to determine the associations between work ability and life-style.

Life-style can be looked at from at least 3 different points of view. A narrow definition restricts life-style only to health-related aspects: "A healthy life-style means avoiding unnecessary risks such as too little exercise, alcohol and substance abuse, raised blood pressure, increased levels of cholesterol, obesity and smoking [p 5]" (2). These factors, which could also be called living habits, lead to a healthier and, possibly, longer life. Most of the empirical research that has been done earlier has studied these factors. The results clearly suggest the importance of physical exercise, moderate alcohol use, low-fat diet, and nonsmoking in maintaining one's general capability and ability to work (2).

The other definition of life-style is broader; it also includes cultural factors and consumption, ways of life, and what Bourdieu (3) calls "habitus." In this context one could speak of a "lifestyle of a working class" or of a young life-style.

A third concept of life-style can be placed between the 2 definitions already given. According to this perspective, individual life-styles are patterns of the (behavioral) choices people have made that have been constructed according to socioeconomic circumstances and available choices (4, 5).

Thomas Abel and his colleagues (6—8) have been inspired by Max Weber's distinction between Lebensführung (life conduct) and Lebensstil (life-style). They have created the following definition: healthy life-styles comprise patterns of health-related behavior, values, and attitudes adapted by groups of persons in response to their social, cultural and economic environment (6). This definition covers the following two areas: structural conditions (life chances), which include such factors as in-

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come and education (also called resources), and the personal choices a person makes (life conduct), or living habits.

All these definitions can be called objective approaches to life-style. There is, however, a more subjective approach. It includes both human values and attitudes and personal factors (9, 10).

The perspective adopted in this study is near Abel's presentation, with the exception that we have also included the subjective dimension (11) (figure 1).

Life satisfaction was included in the life-style model because it is connected with the objective dimensions of life-style and because it is also a crucial factor in determining general well-being and happiness. After having scrutinized several longitudinal studies, Palmore (12), for instance, has suggested the following predictors of life satisfaction: (i) health or lack of physical disability, (ii) socioeconomic status, especially changes in it, (iii) social activity. (iv) work (retirement does not itself cause lower satisfaction, but other associated factors (eg, poor health, lowering income) may, and (v) sexual activity and enjoyment.

In our study we have primarily attempted to determine the connections between factors of life-style (living habits, hobbies, and life satisfaction) and aging, the associations between life-style factors and changes in work ability, and the role of aging in the changes that occur in life-style and work ability.

Subjects and methods

The study was based on a large follow-up of municipal workers (13, 14) who answered a questionnaire in both 1981 and 1992. This study includes, however, only persons (N = 924) who were working in the same occupation at both times (table 1). The still active workers were mainly (44%) doing mental work. Of the men and women 38% and 31%, respectively, did physical work. More women (27%) did mixed mental and physical work than the men (15%). The age distribution was similar for the men and women. The mean age of these active workers was 47 years in 1981.

The three dimensions of objective life-style were measured as follows: (i) living habits (physical exercise, tobacco use and alcohol consumption), (ii) hobbies (reading, studying, attending clubs or associations, and handwork or handicrafts), and (iii) resources (work content, ie, physical or mental work or work with mixed physical and mental demands).

The subjective dimension was satisfaction with one's life situation.

Work ability was measured with the work ability index (15). This widely used index measures self-assessed work ability and has 7 items (subjective estimation of present work ability compared with the lifetime best, perceived work ability in relation to both physical and mental demands of the work, number of diagnosed diseases, subjective estimation of work impairment due to disease, sickness absence during past year, own prognosis of work ability after 2 years, and psychological resources). For this article, a cutpoint value of 27 points was used (16). If the index value was more than 27, the work ability was considered moderate or good, otherwise it was considered poor. With this design it was possible to compare 2 work ability groups in 1992, those whose work ability remained moderate or good (N = 610) throughout the follow-up and those whose work ability decreased (N = 153).

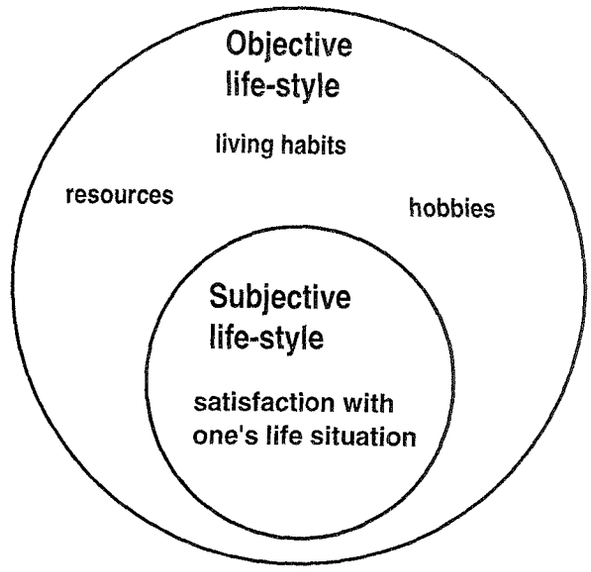

Figure 1. Components of life-style in this study.

The results are based mainly on the comparison of frequency tables. The significance of the life-style changes were tested with Pearson's chi-square statistic. In 1992, the associations between the life-style components, work ability, and perceived health, described elsewhere (17), were studied with multivariate correspondence analysis. This analysis is a weighted principal com-

Table 1. Distribution (%) of the men and women according to type of work in 1981—1992.

Type of work	Men[a] (N = 350)	Women[b] (N = 574)	All[c] (N = 924)
Physical work	38.3	30.9	33.7
Mixed physical and mental work	15.4	26.8	22.5
Mental work	46.3	42.3	43.8

[a] Mean age: 47.3 (SD 1.8) years.
[b] Mean age 46.9 (SD 1.8) years.
[c] Mean age 47.0 (SD 1.8) years.

Table 2. Hobbies of the men and women in 1981 and 1992 by age in 1981.

Hobby	Age group			
	44—48 years		49—51 years	
	Men (%)	Women (%)	Men (%)	Women (%)
Reading, daily				
1981	23	40	23	44
1992	19	37	19	41
Studying, once or twice a week				
1981	25	23	20	29
1992	23	20	17	26
Attending clubs or associations, once or twice a week				
1981	24	20	26	21
1992	18	16	19	10
Doing handwork or handicrafts, daily				
1981	7	38	6	31
1992	4	22	4	21

Table 3. Hobbies of the subjects in 1981 and 1992 according to type of work in 1981.

Hobby	Type of work		
	Physical (%)	Mixed physical and mental (%)	Mental (%)
Reading, daily			
1981	22	40	40
1992	23	36	35
Studying, once or twice a week			
1981	8	21	38
1992	3	19	36
Attending clubs or associations, once or twice a week			
1981	18	19	26
1992	12	12	21
Doing handwork or handicrafts, daily			
1981	33	29	17
1992	20	18	10

Table 4. Living habits of the men and women in 1981 and 1992 by age in 1981.

Living habit	Age group			
	44—48 years		49—51 years	
	Men (%)	Women (%)	Men (%)	Women (%)
Physical exercise, at least twice a week				
1981	34	34	29	29
1992	36	45	32	40
No alcohol use				
1981	13	34	17	35
1992	13	19	17	17
Smoking				
1981	19	9	16	10
1992	20	9	16	11

ponent analysis of a contingency table. It converts frequency table data into a graphic display in which each row and column of a table is represented by a point in the display. This technique is useful for comparing proportions in large multiway tables (18, 19).

Results

Hobbies

There was a slight general decrease in leisure-time activities in all the age groups of the men and women (table 2). Especially among older women, the daily handwork or handicrafts decreased remarkably, as did the attendance of clubs and associations (from 21% to 10%).

The decrease in hobbies was not associated with the type of work (table 3). All the activities decreased almost the same amount, and the differences between the work groups remained the same. Reading was the most common hobby in the mixed work and mental work groups, studying was the most frequent among the persons who did mental work, and handwork or handicrafts dominated the physical work category.

Living habits

Physical exercise increased in all the age groups, among both the men and the women (table 4). The increase was stronger for the women, in both age groups 11%, and only minor among the men. Smoking habits remained the same during the follow-up; smoking was about twice as common among the men as among the women. There was some change in alcohol consumption in that the number of those who did not use alcohol at all decreased (15—20%) among the women during the follow-up.

There were some differences in living habits between the work groups (table 5). Brisk physical exercise increased the most among the persons in the mental work group (from 34% to 46%), but also in the physical work group (from 29% to 34%). The increase in the proportion

Table 5. Living habits in 1981 and 1992 by type of work in 1981.

Living habit	Type of work		
	Physical (%)	Mixed physical and mental (%)	Mental (%)
Physical exercise, at least twice a week			
1981	29	37	34
1992	34	38	46
No alcohol use			
1981	36	27	19
1992	25	17	10
Smoking			
1981	14	13	11
1992	15	13	11

of alcohol users was about 10% in all the work groups, and it remained the most frequent in the mental work group. In all types of work, smoking habits did not change during the follow-up.

Satisfaction with one's life situation

The women were more satisfied with their life situation than the men (table 6). This was true in both age groups, and the difference in satisfaction between the age groups and between the genders increased during the follow-up. The older age groups were more satisfied than the younger ones.

There were also differences in satisfaction between the work groups, the most satisfied with their living situation being those in mental work. The changes during the follow-up were only minor, with the exception of the mixed physical and mental work group, in which life satisfaction increased by 7% (table 7).

Life-style and changes in work ability during the follow-up

The main question of this study concerned the connections between changes in work ability and the dimensions of life-style. Work ability was indeed a crucial factor determining how life-style was manifested (figure 2).

The persons whose work ability remained moderate or good also retained activity in their hobbies (studying and attending clubs and associations) and increased their physical exercise as compared with those whose work ability had decreased. The level of studying and attending clubs or associations remained the same for the men and the women with good work ability but diminished in the decreased work ability group. Especially among the men, decreased work ability was associated with decreased activities in clubs and associations. The differences between the work ability groups were the most striking for physical exercise, and especially the women with good or moderate work ability increased their physical exercise significantly. The groups with decreased work ability also decreased their physical activity during the follow-up.

Satisfaction with one's life situation increased if the work ability remained good or moderate, but decreased if it decreased. Another interesting point was that the changes were greater for the men than the women. Both the increase in satisfaction with one's life situation in the good or moderate work ability group (10% —>16%) and the decline in the decreased work ability group (14% —>7%) occurred for the men.

Life-style, work ability and health

To explore the associations between the life-style dimensions, work ability, and health, all the factors were presented in a multidimensional table, which also formed the base for the correspondence analysis. On the basis of the analysis, four major types of life-style were constructed (figure 3). The first type consisted of subjects who used alcohol and smoked more than the others, but they were also more active in attending clubs and associations than the others (type 1: alcohol and tobacco users). The opposite type was the domestic group. They did not smoke and did not use alcohol, and their activities were centered around handwork or handicrafts (type 2: domestics). The third type consisted of active self-developers. They were very happy with their life situation, they had brisk physical exercise at least twice a week, and they also studied frequently and were keen on reading (type 3: self-developers). The fourth type was the passive subjects. They did not take physical exercise and did not have other hobbies either (type 4: passives). This dimension, self-developers versus passives, between types 3 and 4, was where the differences in perceived health and work ability were situated. Good perceived health and good work ability were typical for the workers who were satisfied and interested in developing themselves (type 3). Decreased work ability and poor perceived health were characteristic of passive people (type 4). Work content was also important. Physical work

Table 6. Satisfaction of the men and women with their life situation in 1981 and 1992 by age in 1981.

Degree of satisfaction	Age group			
	44—48 years		49—51 years	
	Men (%)	Women (%)	Men (%)	Women (%)
Very satisfied				
1981	8	14	14	17
1992	10	19	18	24
Satisfied				
1981	72	75	69	71
1992	72	71	64	68
Not satisfied, don't know				
1981	19	12	17	11
1992	18	11	18	9

Table 7. Satisfaction with life situation in 1981 and 1992 by type of work in 1981.

Degree of satisfaction	Type of work		
	Physical (%)	Mixed physical and mental (%)	Mental (%)
Very satisfied			
1981	9	10	18
1992	12	17	21
Satisfied			
1981	71	80	71
1992	72	73	66
Not satisfied, don't know			
1981	21	11	11
1992	16	11	13

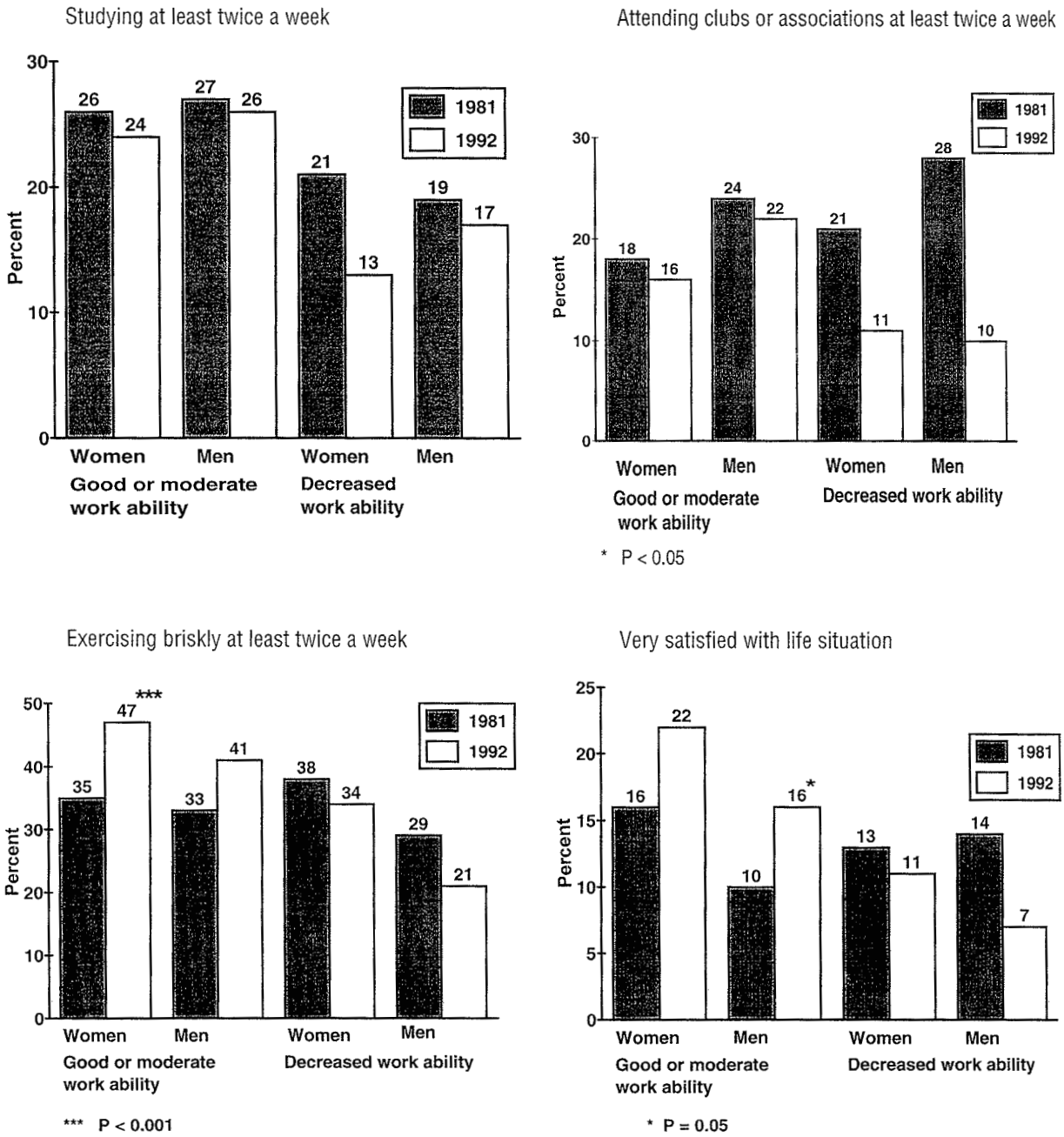

Figure 2. Proportions of life-style components in 1981 and 1992 by work ability and gender. The changes in rates were calculated by Pearson's chi-square test.

was typical of the passive subjects and mental work was done primarily by self-developers.

Age was not associated to either dimension (alcohol and tobacco users versus domestics or self-developers versus passives). Both age groups were near each other in the middle of the figure, and therefore age had only minor importance. Men and women were placed at the opposite sides of the chart along with the dimension of alcohol and tobacco users (type 1: men) and domestics (type 2: women).

Discussion

The results indicated that life-style actually did change during the 10-year follow-up period. Especially vigorous physical exercise and satisfaction with one's life situation increased in all the work groups and age groups. Interest in physical activity has increased steadily in Finland from the late 1970s (20), and it is possible that there has been a general increase in favor of physical activity. It must also be remembered that the subjects who were

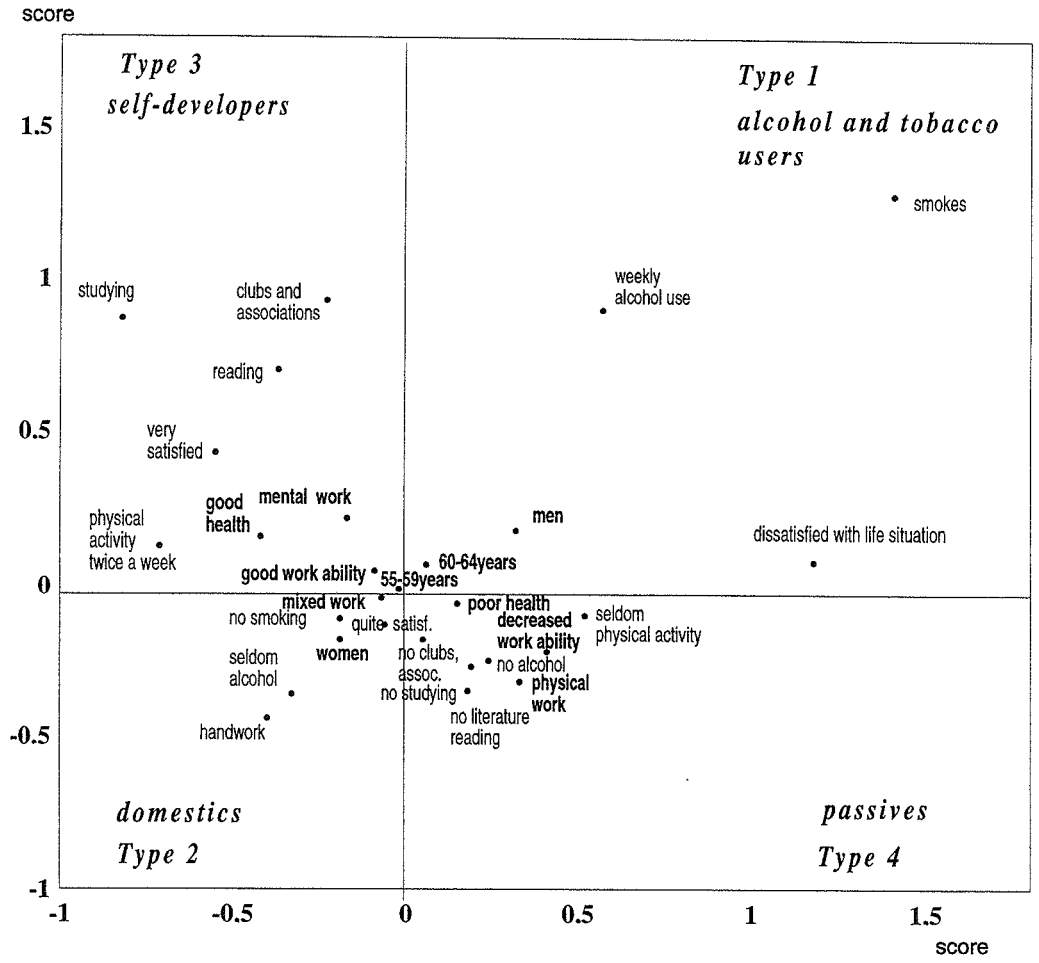

Figure 3. Life-style factors and their associations with perceived health, work ability, type of work, gender, and age in 1992 — graphic representation of a multivariate correspondence analysis. The figure can be interpreted as follows: factors with little importance appear in the middle of the chart (eg, age group), factors of types 1 and 4 are independent of each other as are types 2 and 3, and factors of types 1 and 3 are negatively correlated, as are types 2 and 4.

still active workers in 1992 were "survivors"; they comprised only 15% of the total study population at entry.

The increase in life satisfaction — especially in the older age groups (60—64 years in 1992) and mental work — is not a simple matter either. If we compare these subjects with the retired members of the same cohort, we find that the satisfaction with one's living situation was higher among the retired persons, even among those who had retired due to work disability (21). The most important factor associated with the life satisfaction of the active workers was work ability. If it decreased during the follow-up, the satisfaction with one's life situation decreased. This was true especially for the men, a finding suggesting that it is especially difficult for men to adapt and cope with decreasing work ability. This adaptive flexibility, or resilience, has been studied recently. Resilience refers to strategies of aging persons to deal with the interaction between decreasing capacities and the environment, either by assimilative activity (compensation of functional resources) or by accommodative processes (eg, changing goals) (22).

The fact that an unhealthy life-style was associated with decreased work ability is itself an important result. Instead of trying to determine which of these factors is the cause and which is the effect, we should try to break this "vicious circle" and activate those with decreased work ability.

Hobbies also diminished during the follow-up in all the occupational groups. This was mostly true for those whose work ability had decreased, but it might also re-

flect the fact that the demands of work increased as the subjects aged. As a consequence, in the last work years there is no extra energy left for hobbies.

The association between life-style dimensions, perceived health, and work ability was studied by a new method, correspondence analysis. This method seems to apply well to explorative analysis in which the main goal is not causal inference and the testing of models.

There are 2 interesting points in the results of the correspondence analysis. First, perceived health and work ability were associated only for the self-developer — passive dimension of life-style. Smoking and alcohol use, on the contrary, were not associated with self-assessed health and work ability. It must be remembered, however, that the effects of living habits are not always linear and that among those who are physically active are also smokers and alcohol users (6).

Second, rather surprisingly, age was not associated with any dimension of life-style. The rather narrow range of age (44—51 years) at the onset of the study might explain this finding and also the selection of the subjects (survival). Late middle-age (ages 55 to 64 years), however, seems to be a period of stable life-style. Major changes come later with transition to retirement.

The results of the correspondence analysis suggest that the dimensions of life-style, work ability, and perceived health are strongly associated, and studying them separately may give a simplistic view of the interaction between aging and work. In the future, one should strive for a more comprehensive approach to these matters. It is important to determine the role of life-style in maintaining or improving work ability during aging. New preventive measures are urgently needed because the large baby-boom cohorts born after the Second World War in many countries will be over 50 years of age in the year 2000.

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