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The Berne-Munich Lifestyle Panel

Background and baseline results from a longitudinal health lifestyle survey

Summary

The Berne-Munich Lifestyle Panel (BMLP) studies health relevant lifestyles among some 2000 adults in Switzerland and Germany. This paper introduces the theoretical background and empirical concept of the BMLP. Sociological theory provided the guidelines for the development of an empirical model that measures structures and dynamics of health lifestyles. Health lifestyles are explained as the product of the complex interplay between health related behaviours, orientations and social resources. Residents of Berne (Switzerland) and Munich (Germany) in the age between 55 and 65 years were contacted in 12 months periods and interviewed by telephone (CATI). The questionnaire comprised some 200 questions on selected aspects of health lifestyles and health status. Interviews were conducted in two waves in Munich (1996 and 1997) and three waves in Berne (1996/97/98). The paper reports findings from baseline data analysis and explores cultural differentiations with respect to the distribution of 1. health relevant behaviours, orientations and social resources, 2. triggers of lifestyle change (life events), 3. mediating factors (Health Locus of Control, Sense of Coherence). Initial results from the search for patterns of health behaviours are also reported. The findings show considerable differences but also impressive similarities in health lifestyle elements across the two samples. There is also preliminary evidence for meaningful patterns of health behaviours in the cohort under investigation. Moreover, the findings clearly demonstrate the need for a gender specific approach in the analysis of cultural differences in health behaviours and lifestyles.

Since the late 1960ies the lifestyle approach has become increasingly popular in health research. In its early stages of application its major contribution was to draw attention to the behavioural aspects of health and risk of disease. With respect to methodological advancements the lifestyle approach has strengthened the development of multivariate models measuring the more complex links between various risk behaviours and health. Since the 1980ies, however, the lifestyle approach in health research has been criticised for its shortcomings and pitfalls, particularly when it is used in a rather narrow risk-factor-type conception. Indeed, until today many so called "lifestyle" studies are little more than risk behaviour studies often stressing individual behaviour while overlooking structural factors. Such and other obvious limitations can be explained by an apparent lack of theory and a restricted, discipline-bound perspective, typical for many earlier approaches.

More recently, attempts have been made to overcome these limitations and to develop more comprehensive health lifestyle models[1,2]. In line with sociological lifestyle theories and compatible with the Public Health paradigm, one can argue that lifestyle research should be focused on populations and distinct sub-groups rather than on individuals. Also, an interdisciplinary perspective is needed that accounts for the bio-psycho-social factors and their complex links. In order to overcome the limitations of a restricted perspective on health risk, salutogenic approaches to health lifestyles including the factors that promote or maintain good health, also need to be developed. In the present paper the Berne-Munich Lifestyle Panel study (BMLP) is introduced. This study

explores health behaviours in a comprehensive lifestyle perspective and offers a new approach towards a Public Health based understanding of lifestyle[3]. It applies a sociological framework with reference to Max Weber's sociology of lifestyle, life chances and life conduct and explores empirically the links of structural and behaviour factors of health. Health lifestyles are explained as the product of the complex interplay between health related behaviours, orientations and social resources. Health lifestyles are defined here as interacting patterns of health related behaviours, orientations and resources adapted by groups of individuals in response to their social, cultural and economic environment[4,5].

In the BMLP the three health lifestyle dimensions and their correlates are measured by some 200 items. A longitudinal study that includes almost 2000 adults has been conducted in Berne (Switzerland, N = 1119) and Munich (Germany, N = 780). In both countries, data are collected by telephone (CATI) applying almost identical questionnaires in both samples. Cross-sectional data provide the grounds for comparative analysis which can be used for testing for cultural specificity and cross-cultural similarities. However, today there is empirical evidence on male-female differences that may intervene or interact with cultural differences in health and health behaviour[6,7]. Consequently, the present study also examines gender differences in the observed cultural variations.

Future analyses of the longitudinal BMLP data will allow to study stability and change of health lifestyle structures over time. The present paper, however, provides the introduction into the conceptual and methodological background of this new approach. Baseline results from the first wave of data collection describe the distribution of

health lifestyle factors across the two city samples.

Conceptual Background

In 1993 Cockerham and his colleagues published a theoretical account of Max Weber's theory of lifestyle and its contributions to our understanding of modern health related lifestyles[8]. One major conclusion that can be drawn from this theoretical analysis is, that lifestyles are the product of a complex interplay between structurally anchored life chances and creative actions or achievements of individuals who act upon given objective and subjective life conditions. Health lifestyles are neither totally determined by social conditions nor purely a matter of individual choices. Rather, within restricting socio-economic conditions and cultural normative borders, individuals have a more or less wide range of choices from a variety of health related behaviours[2]. The development and realisation of health relevant behaviours and orientations depend on the availability of sufficient social resources such as income, time, education. In turn, such resources can positively or negatively be affected by health damaging behaviour patterns. Increased health risk or lower health status are likely to reduce resources and life chances, in the case of HIV risk behaviour even survival chances, and to increase or perpetuate social inequality. The unequal distribution of social resources is at the core of the sociological understanding of health lifestyles as a collective rather than an individual phenomenon[4].

Research questions and measurement model in the BMLP

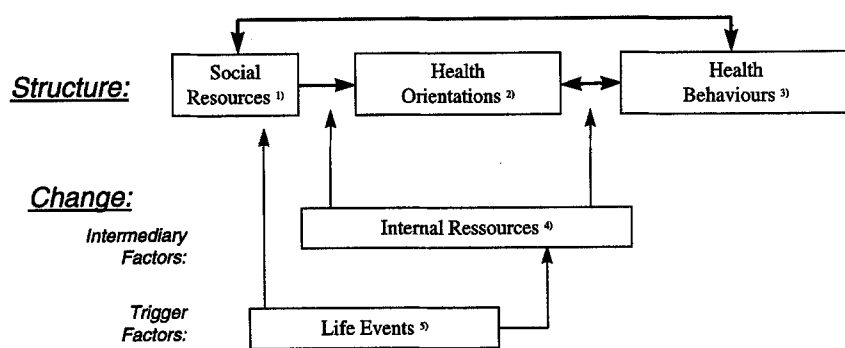The BMLP project approaches substantive and methodological issues in health lifestyle research. It

applies a bio-psycho-social definition of health[9]. Health in its broader definition is considered as an outcome of health relevant lifestyles while particular dimensions of health (physical and psychological functioning) are, at the same time seen as important resources for realising certain health relevant behaviours. With respect to stability over time, we assume that health lifestyles are complex dynamic systems[10] with an increased probability of change after the occurrence of major life events[5]. We further assume that the effect of life events on health lifestyle patterns will depend on a mediating effect of individual internal resources. In the present study "Health Locus of Control"[14] and "Sense of Coherence"[15] are included as examples for such internal resources. Longitudinal comparative data are collected to perform five tasks:
1. Selection and development of meaningful health lifestyle indicators and descriptive analysis of their distribution in a defined population. 2. Analysis of the links between health lifestyle elements within and between the three dimensions of behaviours, orientations and resources. 3. Identification of distinct health lifestyle groups based on patterns of health related behaviours, orientations and resources. 4. Analysis of stability and change of health lifestyles over time and across two city populations in two European nations. 5. Explorations into selected cross-national differences and gender variations.

The present paper reports baseline findings on tasks 1, 2 and 5. Analyses on tasks 3 and 4 are currently underway.

Figure 1 presents the measurement model of the BMLP.

Data and Methods

The BMLP is a study of health lifestyles in a specified age cohort. The

Structure:

Social Resources [1] → Health Orientations [2] ↔ Health Behaviours [3]

Change:

Intermediary Factors:

Internal Ressources [4]

Trigger Factors:

Life Events [5]

1) Financial resources, education, occupational prestige, social support, etc.
2) Trust in modern and alternative medicine, rationality orientations, concern about eating, religious beliefs, etc.
3) Smoking, alcohol consumption, physical activity, eating habits, set belt use, etc.
4) Health Locus of Control, Sense of Coherence.
5) Major Life Events.

Figure 1. Measurement model in the BMLP.

age group of 55 to 65 years was chosen for three reasons. First, from a Public Health and Health Promotion perspective, adults in transition between active labour and retirement status present an important, yet "under-researched" population. Second, we expect patterns of health behaviours and orientations in that later stage of life to be more consistent, stable and therefore more clearly detectable. And third, major life events such as loss of a spouse, major ill-ness, unemployment etc. are more likely to occur in this age group, providing sufficient numbers of cases to explore the effect of life events on the dynamics of health lifestyles.

Two random samples were drawn from official registration lists of German speaking inhabitants in the municipalities of Berne (Switzerland) and Munich (Germany). Sample sizes were N = 1913 in Berne and N = 1526 in Munich. Interviews were conducted by tele-phone (CATI) and yielded net completion rates in Berne of 64.4% (N = 1119) and in Munich of 57.7% (N = 780) in the first wave. The second wave yielded 82.9% (N = 924, Berne) and 75.4% (N = 595, Munich) net completion rates. In Berne a third wave yielded a net completion rate of 92% (N = 839). The questionnaire comprised some 200 questions on health lifestyles, health status and sociodemographic factors with mainly closed answer categories. Questionnaire items where selected to measure three health lifestyle dimensions (behaviours, orientations, social resources), triggers of lifestyle change (life events), intermediary factors (Health Locus of Control and Sense of Coherence) assumed to modify the effects of the triggers on the lifestyle structure. Wherever possible, lifestyle elements and their correlates were assessed using pre-tested items or scales.

This paper presents data from the first wave. The following health lifestyle elements were selected for the analyses (see appendix for more details on the variables).

Health Lifestyle elements	Variables
behaviours	smoking, eating habits, physical activity, alcohol consumption, recreational behaviour
orientations	attitudes towards alternative and conventional medicine, religiousness, attitudes towards healthy eating, rationality orientations towards health behaviour [a]
social resources	income, education, occupational prestige [b], leisure time, social support
lifestyle change factors	Life Events [c], Health Locus of Control [d], Sense of Coherence [e]

[a] Rationality orientations in health behaviour is a newly developed concept based on Max Weber's sociological action theory (for a theoretical introduction see[8]). Two forms of rationality are distinguished: formal rationality describes actions oriented towards the most efficient means to an end while substantive rationality is more strongly oriented towards basic values such as cultural norms and values. Rationality orientations in health behaviour were assessed asking 9 questions on formal or substantive reasons for why people should behave healthily or avoid unhealthy behaviours (for a first empirical application see[11]).
[b] see[12].
[c] modified list of 18 life changing events[13].
[d] see[14].
[e] Thirteen items short form from the "SOC Questionnaire"[15], adapted for telephone application[16].

The BMLP questionnaire also includes some 80 items to study the physiological and psychological dimensions of health. Concepts and empirical findings of measuring health status in the BMLP will be published separately.

Basic descriptive statistics were utilised for baseline analyses. Findings on the general distribution of health lifestyle elements in the two study populations are presented here. Data were analysed by first constructing comparable answer categories, then testing for cross-cultural differences using contingency tables. Cross-cultural differences were further explored for their gender specific nature.

Empirical Findings

Tables 1–4 present two kinds of results from contingency table analyses of lifestyle data in the two city samples. First, comparisons between the two samples are displayed. Second, cultural differences and similarities are examined for possible gender effects. Table 5 lists in a summary form which associations in Tables 1–4 showed statistically significant cultural differences, for the whole sample and for both gender groups separately. Tables 6, 6a and 6b finally, display correlation coefficients corresponding to bi-variate patterns among health lifestyle behaviours.

Behaviours

Table 1 presents findings for prevalences of health lifestyle behaviours. *Smoking* behaviour is measured in a three-category coding scheme (non smoking or less than one cigarette a day; one to ten cigarettes a day; more than 10). Comparing these categories we find a striking similarity in Berne and Munich. The proportion of non, light, and heavy smokers are almost the same in Berne (78.9%; 7.8%; 13.3%) and Munich (79.9%; 7.7%;

12.5%). This cross cultural similarity is observed for both genders. With respect to *beer* drinking, based on three categories of consumption, we find in Berne significantly more non consumers of beer and in Munich higher rates of daily beer drinking (p < 0.001). Testing for cultural differences in men and women separately underlines this pattern. Among men about 60% in Berne and about 78% in Munich consume beer (p < 0.001); respective numbers for women are 15% in Berne and 45% in Munich (p < 0.001). Conversely to beer consumption, *wine* drinking is more frequent in Berne than in Munich (p < 0.05). However, an assumption about a general cultural effect referring to the well known "beer culture" in Bavaria and the tradition of wine production and consumption in Switzerland is not supported by our data. Exploring gender differences Table 1 shows that women in Berne and in Munich show highly similar wine consumption patterns. Consequently the culture effect in wine consumption seems to apply among men only (p < 0.001).

Fruits, salads, potatoes and vegetables are included here for their role as the main sources of vitamin C in the general population in Switzerland and Germany. Bernese men and women eat more of these food stuffs but also consume more *meat* than their Munich counterparts (p < 0.001). *Sausage and ham* consumption is significantly higher in our Munich sample (p < 0.001). These results on the cultural differences in eating hold for both genders.

Concerning *physical activity* we find strong similarities in our Bernese and Munich samples: no sports (Berne: 36.8%; Munich: 37.3%), two hours or less per week (Berne: 28.5%; Munich: 27.8%) and three hours or more (Berne: 34.7%; Munich: 34.9%). The similarities in physical activity are found for both genders.

Seat belt use is reported high in Munich (95.1% always or very often) as well as in Berne (90.4%). However, in Berne the proportion of respondents in the category seldom/never (6.3%) is almost twice as high as in Munich (3.5%). While Bernese men are more likely not to use seat belts compared to their Munich counterparts (p < 0.01), this difference is smaller and statistically not significant between Bernese and Munich women.

Based on three categories (often/very often; some times, rarely/never) *going for walks* is significantly more frequent in Munich than in Berne (p < 0.01). However, this difference is only found among men (p < 0.05) yet not among women.

With respect to health lifestyle behaviours overall, we find strong similarities in the distribution of smoking and physical activity in Berne and Munich. While other health behaviours show considerable cross-cultural variations, we find no indication for a singular trend or consistency with respect to more healthy or unhealthy behaviours typical in one or the other city population. Gender specificity in cultural differences in health behaviour is considerable. Wherever cultural differences are observed for only one of the two sexes, they occurred among men. While women in Berne and in Munich differ significantly only with respect to beer consumption and eating habits, men show additionally cultural variation in wine consumption, seat belt use and going for walks. Table 5 presents an overview of the observed cultural variations for the whole sample and separately for the two genders.

Orientations

For comparative analysis substantive and formal *rationality orientations towards health behaviour* were coded into two sub-categories, measuring agreement versus dis-agreement or indifference. A majority in

Behaviours	Berne (both genders)	Munich	Men		Women	
			Berne	Munich	Berne	Munich
Cigarette smoking[b]	n = 1116	n = 770	n = 491	n = 354	n = 625	n = 416
non-smokers or < 1	78.9	79.9	77.2	76.9	80.3	82.5
1–10	07.8	07.7	05.9	07.3	09.3	07.9
> 10	13.3	12.5	16.9	15.8	10.4	09.6
Alcohol consumption[b]						
beer n = 1115	n = 776***	n = 491	n = 362***	n = 624	n = 414***	
no beer	65.4	39.8	39.9	22.4	85.4	55.1
less than 1 glass	23.9	45.7	37.9	51.1	12.8	41.1
1 glass or more	10.8	14.4	22.2	26.5	01.8	03.9
wine	n = 1118	n = 776*	n = 492	n = 362***	n = 626	n = 414
no wine	32.6	36.7	24.4	32.0	39.0	40.8
less than 1 glass	41.0	42.5	35.6	41.4	45.2	43.5
1 glass or more	26.5	20.7	40.0	26.5	15.8	15.7
Eating habits[c]						
fruit/vegetables	n = 1114	n = 777***	n = 490	n = 361***	n = 624	n = 416***
daily	52.9	33.7	40.0	28.3	63.0	38.5
less than daily	47.1	66.3	60.0	71.7	37.0	61.5
meat	n = 1117	n = 779***	n = 492	n = 362***	n = 625	n = 417***
less than 3 times	38.9	50.7	27.0	39.2	48.3	60.7
3 times or more	61.6	49.3	73.0	60.8	51.7	39.3
ham/sausage	n = 1117	n = 779***	n = 492	n = 362***	n = 625	n = 417***
less than 3 times	87.3	49.6	80.1	36.2	93.0	61.2
3 times or more	12.7	50.4	19.9	63.8	07.0	38.8
Sport intensity[b]	n = 1100	n = 767	n = 481	n = 358	n = 616	n = 409
no sports	36.8	37.3	34.1	35.8	39.0	38.6
2 hours or less	28.5	27.8	25.2	26.8	31.0	28.6
3 hours or more	34.7	34.9	40.7	37.4	30.0	32.8
Seat belt use	n = 1063	n = 749**	n = 473	n = 351**	n = 590	n = 398
very often/always	90.4	95.1	86.9	93.4	93.2	96.5
often	03.3	01.5	04.4	02.0	02.4	01.0
never/sometimes	06.3	03.5	08.7	04.6	04.4	02.5
Going for walks	n = 1115	n = 774**	n = 492	n = 358*	n = 623	n = 416
often/very often	50.9	59.2	48.2	58.7	53.1	59.6
sometimes	25.6	20.9	27.0	20.7	24.4	21.2
never/rarely	23.5	19.9	24.8	20.7	22.5	19.2

[a] Codings see appendix
[b] Per day
[c] Per week

p-values based on Chi-Square tests: * p < 0.05; ** p < 0.01; *** p < 0.001

Table 1. Health related behaviours in the BMLP. Presented are row percentages first for the two city samples and second for men and women separately. Significance tests apply respectively to culture differences between the two city samples and to cultural differences within each gender group[a].

Orientations	Berne (both genders)	Munich	Men		Women	
			Berne	Munich	Berne	Munich
Substantive rationality	n = 1107	n = 774***	n = 488	n = 361***	n = 619	n = 413***
disagree/indifferent	33.5	10.3	36.1	09.4	31.5	11.1
agree	66.5	89.7	63.9	90.6	68.5	89.9
Formal rationality	n = 1084	n = 723	n = 482	n = 341	n = 602	n = 382
disagree/indifferent	49.6	50.8	52.7	52.8	47.2	49.0
agree	50.4	49.2	47.3	47.2	52.8	51.0
Trust in modern medicine	n = 1107	n = 769***	n = 488	n = 358	n = 619	n = 411**
not at all/little	02.6	03.9	02.0	02.5	03.1	05.1
indifferent	23.8	32.1	20.7	27.7	26.3	36.0
considerable	36.0	30.2	35.5	32.4	36.5	28.2
much	37.5	33.8	41.8	37.4	34.1	30.7
Trust in alternative medicine	n = 1032	n = 664*	n = 453	n = 309	n = 579	n = 355*
not at all/little	19.4	17.9	24.5	22.0	15.4	14.4
indifferent	33.3	37.7	36.6	39.5	30.7	36.1
considerable	31.4	25.2	26.5	24.6	35.2	25.6
much	15.9	19.3	12.4	13.9	18.7	23.9
Concerns with healthy eating	n = 1088	n = 713**	n = 480	n = 331**	n = 608	n = 382
never/rarely	25.3	18.4	35.0	25.7	17.6	12.0
often	39.8	40.1	40.2	39.6	39.5	40.6
very often/always	34.9	41.5	24.8	34.7	42.9	47.4
Religiousness (strength)	n = 1013	n = 660***	n = 438	n = 303**	n = 575	n = 357
not at all/little	26.5	18.8	35.6	24.8	19.5	13.7
indifferent	42.1	49.8	40.0	50.2	43.7	49.6
considerable/much	31.5	31.4	24.4	25.1	36.9	36.7

a Codings see appendix. p-values based on Chi-Square tests: * p < 0.05; ** p < 0.01; *** p < 0.001.

Table 2. Health related orientations in the BMLP. Presented are row percentages first for the two city samples and second for men and women separately. Significance tests apply respectively to culture differences between the two city samples and to cultural differences within each gender group[a].

both samples agreed on substantive reasons for health enhancing behaviours in the general population (see Table 2). Yet, cultural differences were found as answers in Munich showed higher scores on substantive values (Berne: 66.5%, Munich: 89.7%; p < 0.001).

This cultural difference is found among men and women. Agreement scores for formal rationality were generally lower than for substantive rationality (Berne: 50.4%, Munich: 49.2%) and yielded no significant cultural differences.

Trust in modern medicine appears stronger in Berne (37.5% in the highest category) than in Munich (33.8%, p < 0.001). However, this difference holds only among women (p < 0.01). Strong *trust in alternative medicine* is overall less frequent when compared to mo-

dern medicine and more prevalent in the Munich compared to the Bernese sample: 19.3% in Munich but only 15.9% of respondents in Berne report much trust in alternative medicine (p < 0.05). As indicated by the gender separating statistics table this slight cultural difference is to be attributed to a significant variation among women only (p < 0.05).

Concerns with healthy eating are stronger among Munich than among Bernese respondents (p < 0.01). Gender specific analysis reveals that this cultural difference is mostly due to higher scores among Munich men, when compared to Bernese men (p < 0.01). Women in Munich and Berne pay more attention to their diet than their male counterparts and do so to a similar degree in both cultures (always/very often: Bernese women 42.9%, Munich women 47.4%).

On average, reported strength of *religious beliefs* is lower in our Bernese sample (p < 0.001). This difference is mostly due to a higher proportion reporting no or almost no religious beliefs in Berne (Berne: 26.5%, Munich: 18.8%). There is no such cultural variation among women. The statistical difference is therefore due to variations among men only (p < 0.01).

As the summary table (Table 5) shows, health lifestyle orientations vary considerably between the two samples, with formal rationality in health behaviour being the only exception. Cultural differences in the perception of medicine show a gender specific effect, as only women differ significantly between the two samples while men in Berne and Munich report highly similar orientations towards modern and alternative medicine. On the other side, for men there is a significant cultural difference in their orientation towards healthy eating and religiousness while in this respect women in Berne and Munich appear to be more alike.

Resources

Monthly household *income* is higher in our Bernese sample, for women as well as for men (p < 0.001). Even after taking into account that standard costs of living might be about 15–20% higher in Berne compared to Munich, the difference is still considerable. However, with respect to our second measure of financial resources (savings, property etc.) Munich respondents report more privileged *property* conditions (p < 0.001). This difference holds again for both genders. *Education* as measured by highest educational degree earned is higher among Bernese respondents (p < 0.001). *Occupational prestige* is similar in both samples; yet, among women occupational prestige is higher in Munich than in Berne (p < 0.001). Quantity of *leisure time* was assessed based on respondent's perception of subjective sufficiency. This measure is used here as an approximation of leisure time free of personal obligations. Time in that sense can be considered as a resource e.g. for engaging in health enhancing behaviours. Applying three categories "(much) too little", "just enough" or "too much" leisure time, we find no significant differences between Bernese and Munich respondents. Gender specific analysis shows, however, more favorable scores for this health lifestyle resource among Bernese women compared to their Munich counterparts (p < 0.05). *Social support* as an indicator for social resources for health and health behaviours was assessed in a simple form by asking the number of persons (within and outside the family) one can rely on in difficult situations. The proportion of respondents who reported more than one such support person, was significantly higher in the Bernese sample (p < 0.001). About one fifth among Munich respondents reported none or one support person within the family (in Berne 10%).

Some 40% in Munich had less than two persons outside their family (in Berne 20%). This cultural difference is found in both gender groups.

An overview of the observed differences in the distribution of resources is provided in Table 5. Overall, respondents in the Bernese sample appear better off with respect to most of the social and economic resources examined here. Bernese respondents report better conditions with respect to income, education and social support. Furthermore, women in Berne report a higher degree of satisfaction with the amount of leisure time, while Munich women show higher occupational prestige scores when compared to their Bernese counterparts. Except for the property and for the prestige variables Bernese women report more favourable social resources relevant for health lifestyles than Munich women.

Lifestyle change factors

Table 4 presents comparative findings on such variables that are considered as triggers or modifying factors for health lifestyle changes. Based on a standardised list of 18 *life events*[13] a comparison between the two city samples shows a similar number of events reported for the last 12 months. In both city samples only about 25% of respondents reported none of such events. We found no significant differences among women in both cities. Munich men, however, showed higher incidence rates for life events than their Bernese counterparts (p < 0.05). More frequent events included retirement, financial crisis, illness or accident of partner.

Three dimensions of *Health Locus of Control* (internal, external control of health by medical experts, fate) were measured utilising a standardised HLC scale[14]. Answer scores were categorised for each dimension into low, medium/in-

Resources	Berne (both genders)	Munich	Men		Women	
			Berne	Munich	Berne	Munich
Income per month[b]	n = 1080	n = 686***	n = 484	n = 335***	n = 596	n = 351***
2000 or less	05.8	35.7	03.3	33.1	07.9	38.2
2001 – 4000	47.6	50.4	43.6	51.6	50.8	49.3
4001 and more	46.6	13.8	53.1	15.2	41.3	12.5
Property per household[b]	n = 1032	n = 620***	n = 471	n = 310**	n = 561	n = 310***
50 000 or less	26.8	22.4	22.5	14.8	30.5	30.0
50 001 – 100 000	23.3	20.3	21.4	21.3	24.8	19.4
100 001 – 500 000	35.2	29.2	37.4	33.9	33.3	24.5
500 001 – 1Mio.	10.3	18.4	11.7	18.1	09.1	18.7
more than 1Mio.	04.5	09.7	07.0	11.9	02.3	07.4
Education (school degree)	n = 1115	n = 774***	n = 493	n = 361***	n = 622	n = 413***
level I	34.6	67.4	24.3	57.1	42.8	76.5
level II	46.3	15.0	42.2	17.2	49.5	13.1
level III	19.1	17.6	33.5	25.8	07.7	10.4
Occupational Prestige (Treiman Score)	n = 1074	n = 744	n = 491	n = 353	n = 583	n = 391**
15–30	14.3	11.0	12.2	08.2	16.1	13.6
31–40	24.1	25.5	21.2	20.7	26.6	29.9
41–50	28.5	28.8	23.2	30.6	32.9	27.1
51–60	20.9	20.6	20.6	19.3	21.1	21.7
61–78	12.2	14.1	22.8	21.2	03.3	07.7
Leisure time	n = 1113	n = 775	n = 490	n = 360	n = 623	n = 415*
too less/much too less	20.0	22.7	23.7	21.7	17.2	23.6
just enough	75.6	72.9	72.9	72.5	77.7	73.3
too much	04.4	04.4	03.5	05.8	05.1	03.1
Social support within family	n = 1102	n = 758***	n = 486	n = 349**	n = 616	n = 409***
none or 1 person	09.8	19.1	10.7	17.5	09.1	20.5
two or more persons	90.2	80.9	89.3	82.5	90.9	79.5
Social support outside family	n = 1089	n = 719***	n = 477	n = 333***	n = 612	n = 386***
none or 1 person	19.8	38.7	21.2	41.7	18.8	36.0
two or more persons	80.2	61.3	78.8	58.3	81.2	64.0

[a] Codings see appendix.
[b] In SFr. for the Bernese sample; in DM for the Munich sample.

p-values based on Chi-Square tests: * p < 0.05; ** p < 0.01; *** p < 0.001.

Table 3. *Social resources in the BMLP. Presented are row percentages first for the two city samples and second for men and women separately. Significance tests apply respectively to culture differences between the two city samples and to cultural differences within each gender group*[a].

Lifestyle change factors	Berne Munich (both genders)		Men		Women	
	Berne	Munich	Berne	Munich	Berne	Munich
Life Events	n = 1119	n = 780	n = 493	n = 362*	n = 626	n = 418
0 events	25.0	25.4	24.9	21.3	25.1	28.9
1 event	32.0	29.2	32.7	27.9	31.5	30.4
2 events	23.9	24.1	24.5	11.1	23.5	22.2
3 events	12.5	12.4	11.8	13.5	13.1	11.5
4 or more events	06.5	08.8	06.1	11.0	06.9	06.9
Health Locus of Control						
internal control	n = 1104	n = 768	n = 488	n = 360	n = 616	n = 408
low	02.4	01.3	01.2	00.8	03.4	01.7
indifferent	24.9	22.7	21.5	21.1	27.6	24.0
high	72.6	76.0	77.3	78.1	69.0	74.3
external control from the medical system	n = 1084	n = 748***	n = 473	n = 355***	n = 611	n = 393**
low	42.2	29.8	37.4	23.1	45.8	35.9
indifferent	42.7	54.8	45.7	56.9	40.4	52.9
high	15.1	15.4	16.9	20.0	13.7	11.2
fate	n = 1088	n = 739***	n = 481	n = 352**	n = 607	n = 384
low	29.6	35.9	29.3	36.4	29.8	35.4
indifferent	49.3	49.8	50.7	52.6	48.1	47.3
high	21.1	14.3	20.0	11.1	22.1	17.3
Sense of Coherence	n = 1066	n = 718	n = 477	n = 337	n = 589	n = 381
mean score or lower	49.8	51.9	44.7	48.4	54.0	55.1
higher than mean score	50.2	48.1	55.3	51.6	46.0	44.9

a Codings see appendix.   p-values based on Chi-Square tests. * p < 0.05; ** p < 0.01; *** p < 0.001.

Table 4. Lifestyle change factors in the BMLP. Presented are row percentages first for the two city samples and second for men and women separately. Significance tests apply respectively to culture differences between the two city samples and to cultural differences within each gender group[a].

different and high. A majority of male and female respondents in both cities show a high score on internal control (Berne 72.6%, Munich 76%). In contrast, only some 15% (in Berne and in Munich) yielded high scores on external control. Low external medical control was significantly less frequent among Munich respondents in general (p < 0.001) as well as in both gender groups. Significantly more Bernese re-

spondents believe strongly in fate affecting their health (p < 0.001). Yet, gender specific analysis reveals that this cultural effect is found among men only. While there is no significant difference between Bernese and Munich women, Bernese men are more likely to have a stronger fate attitude (20%) than their male counterparts in Munich (11.1%, p < 0.01). *Sense of Coherence* was measured by applying the 13 item short ver-

sion proposed by Antonovsky[15]. Overall, scores ranged from 25 to 64 points and were on average high (mean scores Munich: 50.0; Berne: 51.3). No cultural difference for either the sample as a whole or within each gender group was observed for the degree of SOC.

Patterns of health behaviours

The lifestyle approach draws attention to the patterning of behav-

	Culture differences across the Bernese and the Munich sample	Culture differences across Bernese and Munich men	Culture differences across Bernese and Munich women
Sport intensity	–	–	–
Going for walks	**	*	–
Consumption of:			
beer	***	***	***
wine	*	***	–
meat	***	***	***
ham/sausage	***	***	***
fruit/vegetables	***	***	***
Cigarettes smoking	–	–	–
Seat belt use	**	**	–
Substantive rationality	***	***	***
Formal rationality	–	–	–
Trust in:			
modern medicine	***	–	**
alternative medicine	*	–	*
Concerns with healthy eating	**	**	–
Religiousness	***	**	–
Income per month	***	***	***
Property per household	***	**	***
Education	***	***	***
Occupational Prestige (Treiman Score)	–	–	**
Leisure time	–	–	*
Social support (family)	***	**	***
Social support (friends)	***	***	***
Live Events	–	*	–
Internal control	–	–	–
External control from the medical system	***	***	**
Fate	***	**	–
Sense of Coherence	–	–	–

a Codings see appendix.
(*) Indicates p-values based on Chi-Square tests in the tables 1 – 4: – p>0.05; * p<0.05; ** p<0.01; *** p<0.001

Table 5. *Overview of cultural variations in health lifestyle variables observed in Tables 1–4ª.*

ioural, social-psychological and so-cial-structural factors. A first step towards the study of such patterns is the exploration of bi-variate relationships among selected health lifestyle items. Tables 6, 6a, 6b present results from correlation analysis of health lifestyle behaviours in the BMLP (for the two city samples and gender subgroups). Variables were coded with higher scores indicating positive behaviours from a health promoting perspective. Only coefficients $r \geq 0.10$ (cut-off level) are considered here. A first general inspection of Table 6 reveals that for almost all correlations above the cut-off level

Behaviours[b]

Berne (N = 1031)	frequent sports	frequent walking	no beer	no wine	modest meat	modest ham/ sausage	frequent vegetable/ fruit	no smoking	always seat belt use
						Munich (N = 716)			
frequent sports		0.180***	−0.091*	−0.108*	0.049	0.044	0.076*	0.097**	−0.002
frequent walking	0.180***		0.008	−0.031	0.013	−0.007	0.115**	0.061	0.085*
no beer	0.021	0.046		0.271**	0.240***	0.245***	0.074*	0.074	0.033
no wine	−0.052	0.028	0.307***		0.127**	0.085*	0.054	−0.088*	0.096**
modest meat	0.060	0.054	0.188***	0.124***		0.400***	−0.027	0.021	−0.062
modest ham/ sausage	0.038	0.016	0.113***	0.026	0.221***		0.033	0.044	−0.016
freq. vegetables/ fruit	0.086**	0.173***	0.168***	0.099**	0.033	0.028		0.101**	0.008
no smoking	0.129***	0.074*	0.069	0.024	0.049	0.053	0.139***		0.054
always seat belt use	0.037	0.109***	0.011	0.035	0.024	0.032	0.076*	0.143***	

[a] Spearman's Correlation Coefficient for the total Munich sample in upper triangle, for the total Bernese sample in lower triangle:
* p < 0.05; ** p < 0.01; *** p < 0.001.
[b] All variables are coded with higher scores indicating health promoting behaviours; codings see appendix.

Table 6. Correlation coefficients for health related behaviours[a].

Behaviours[b]

men in Berne (N = 457)	frequent sports	frequent walking	no beer	no wine	modest meat	modest ham/ sausage	frequent vegetable/ fruit	no smoking	always seat belt use
						men in Munich (N = 338)			
frequent sports		0.172**	−0.065	−0.081	0.043	−0.019	0.018	0.155**	0.040
frequent walking	0.119*		−0.007	−0.054	0.000	−0.094	0.027	0.000	0.101
no beer	0.130**	0.058		0.113*	0.200***	0.242***	−0.015	0.050	−0.052
no wine	0.025	−0.020	0.209***		0.109*	0.036	0.015	−0.16**	0.048
modest meat	0.160**	0.083	0.158**	0.056		0.379***	−0.107*	0.010	−0.074
modest ham/ sausage	0.067	−0.013	0.050	−0.068	0.198***		0.029	0.046	−0.040
freq. vegetables/ fruit	0.120*	0.149**	0.017	0.054	0.027	−0.037		0.098	0.027
no smoking	0.205***	0.076	0.079	−0.046	0.079	0.022	0.095*		0.001
always seat belt use	0.061	0.92*	−0.035	0.028	0.022	−0.029	0.031	0.150**	

[a] Spearman's Correlation Coefficient for the total Munich sample in upper triangle, for the total Bernese sample in lower triangle:
* p < 0.05; ** p < 0.01; *** p < 0.001.
[b] All variables are coded with higher scores indicating health promoting behaviours; codings see appendix.

Table 6a. Correlation coefficients for health related behaviours (Berne – Munich men)[a].

Behaviours[b]	women in Munich (N = 378)								
women in Berne (N = 574)	frequent sports	frequent walking	no beer	no wine	modest meat	modest ham/ sausage	frequent vegetable/ fruit	no smoking	always seat belt use
frequent sports		0.190***	−0.077	−0.120	0.071	0.128*	0.137**	0.046	−0.046
frequent walking	0.237***		0.029	−0.014	0.024	0.067	0.188**	0.125*	0.068
no beer	0.020	0.017		0.363***	0.140**	0.067	0.077	0.038	0.083
no wine	−0.084*	0.068	0.211***		0.090	0.064	0.060	−0.041	0.134**
modest meat	0.023	0.023	0.042	0.089*		0.343***	−0.041	0.006	−0.089
modest ham/ sausage	0.041	0.038	0.012	0.046	0.192***		0.026	0.088	−0.028
freq vegetables/ fruit	0.097*	0.188***	0.135**	0.038	−0.049	0.012		0.088	0.028
no smoking	−0.069	0.070	−0.030	0.063	0.012	−0.079	0.166***		0.114*
always seat belt use	0.028	0.123**	−0.052	−0.015	−0.018	0.083	0.079	0.131**	

[a] Spearman's Correlation Coefficient for the total Munich sample in upper triangle, for the total Bernese sample in lower triangle; * p < 0.05; ** p < 0.01; *** p < 0.001;
[b] All variables are coded with higher scores indicating health promoting behaviours; codings see appendix.

Table 6b. Correlation coefficients for health related behaviours (Berne – Munich women)[a].

statistical associations are positive indicating considerable consistency among those behaviours in Berne and in Munich. Correlation coefficients are on average modest to low. This is in line with findings from earlier studies and was to be expected, given the exploratory character of the study. All bivariate associations above r ≥ 0.10 are statistically significant at least at the p ≤ 0.05 level. With one exception (seat belt use in Munich) all health behaviour variables have a significant correlation with at least one other health behaviour variable.

Our further inspection of correlation Tables 6 to 6b concentrates first on associations between different forms of the same kinds of health behaviours, e.g. between beer and wine drinking as two forms of the same kind of health behaviour i.e. alcohol consumption. Two other kinds of health behaviours to be explored in that

respect are eating behaviours and physical activities. As for the later, a positive correlation between our variables *Sport* and *Walks* indicate that respondents who practice either of the two are also more likely to engage in the other. This relationship is found in both city samples and holds for both genders.

Findings on *eating behaviours* indicate considerable associations between the variables Meat and Ham. Respective results show that among men and women those who consume less meat are also more likely to eat less ham and sausage. This association is considerably stronger among Munich respondents. Among Munich men, we also observe a link between reduced meat consumption and eating less foods rich in vitamin C.

Significant correlations between our variables *Wine* and *Beer* indicate a considerable, and partly expected consistency in these two

forms of alcohol (none) consumption. They suggest that those who don't drink either of the two are also more likely to abstain from the other. Among men the association between no wine and no beer drinking is considerably stronger in Berne. Among women this link appears stronger in Munich than in Berne. Consecutive crosstables analyses (not shown) revealed that among Bernese men 63% of those who don't drink wine also drink no beer, while among those who don't drink beer only 38% also consume no wine. This means that among Bernese men those who don't drink beer are more than 50 percent likely to abstain also from wine drinking, whereas this relationship does not show in the other direction. Among Bernese women, no wine consumption is again highly indicative also for drinking no beer, as 94% of those who drink no wine also don't drink beer. However, only 43% of those who drink no

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beer also drink no wine. The same relationship is observed among Munich female respondents for whom no wine consumption is again more predictive for no beer drinking as the other way around. Only for Munich men no beer consumption appears a relatively stronger indicator, as among them 57% of those who report no beer consumption also don't drink wine, while only 40% of those with no wine consumption also drink no beer.

Table 6–6b also allow a first exploration of bi-variate relationships between different kinds of behaviours. Less *alcohol consumption* is positively correlated with more *healthy eating*. While this association appears stronger for beer compared to wine drinking, there are considerable cultural and gender differences. For example, the positive association between (less) beer and (less) meat consumption is found in Munich for both gender groups, in Berne only for men. Only for Bernese women less/no beer consumption is positively correlated with eating more foods rich in vitamin C. *Non-smoking* shows positive associations with increased *sport participation* (only men) and with *seat belt use* (except Munich men). These and other associations warrant further investigation.

Conclusions

This paper has introduced the Berne-Munich Lifestyle Panel (BMLP), its theoretical background, its basic empirical model and first comparative results. Overall such results show cross-cultural similarities as well as considerable variations in the distribution of health lifestyle behaviours, orientations and social resources. For health behaviours we have explored relationships between different kinds of health behaviours and between different forms of the same kinds of behaviours. As for the later, the results on wine and beer drinking clearly demonstrate the importance of culture and gender specific investigations when studying patterns of alcohol consumption. We found the links between drinking patterns considerably different in the four subgroups of our sample. Beer consumption appears the standard alcohol drink for Munich men only. In this subgroup abstaining from beer is more predictive for not drinking other sorts of alcohol. Among Munich women and for the Bernese population this "reference" effect is not found for beer but for wine. Also, across the two cultures, this reference effect appears stronger for women compared to men.

The findings on the associations between different kinds of health behaviours like that between healthy eating, non-smoking and physical activity generally support the idea of a patterning of health behaviours and add to the increasing empirical evidence in this field of health behaviour research[17–19]. As the present results are based on analyses of bi-variate associations, they still warrant further investigations, applying more sophisticated statistical methods. As previously demonstrated, Cluster- and Correspondence analysis can be applied to study the complex structures of health lifestyles[5,20]. Logistic regression modelling has shown to be an appropriate approach in estimating the effects of one lifestyle dimension on the others[6]. Also, new approaches in graphical modelling appear applicable for future analysis of multi-dimensional health lifestyle data.

In general, the empirical findings presented here stress the importance of context effects on health behaviours. The role of culture and gender conditions on the prevalence and the patterning of health relevant behaviours is strongly underlined by the present results. However, as explained in the theory part, health behaviours are only one aspect of broader health lifestyles. Consequently, more comprehensive models need to be developed. Sociological theory has provided guidelines for such endeavours and suggests that future empirical investigations should concentrate on the links between health behaviour patterns, health orientations and social resources.

Zusammenfassung

Das Bern-Münchener Lebensstil Panel

Hintergrund und erste Ergebnisse einer Längsschnittstudie zu gesundheitsrelevanten Lebensstilen

Das Bern-Münchener Lebensstil-Panel (BMLP) erforscht an Erwachsenen im Alter zwischen 55 und 65 Jahren deren gesundheitsrelevante Lebensstile. Diese Publikation stellt den theoretischen Hintergrund und das empirische Konzept des BMLP vor. In seinen theoretischen Grundlagen basiert die Studie auf soziologischen Ansätzen einer Handlungstheorie die sich speziell um die Einbeziehung strukturell verankerter Bedingungen von gesundheitsrelevantem Verhalten bemüht. Darauf aufbauend wird ein Modell zur empirischen Erfassung von Struktur und Dynamik gesundheitlicher Lebensstile entwickelt. Im Zentrum des empirischen Teils steht eine telefonische Befragung (CATI) von circa 2000 Bewohnerinnen aus den Städten Bern (Schweiz) und München (Deutschland). Der Fragebogen umfasst rund 200 Fragen zu ausgewählten Aspekten des gesundheitlichen Lebensstils und dem Gesundheitsstatus. Die Längsschnitterhebungen wurden in Bern in drei und in München in zwei Wellen, jeweils im Abstand von 12 Monaten durchgeführt. An dieser Stelle werden Ergebnisse aus der ersten Erhebungswelle (baseline) berichtet. Die zentralen Fragestellungen dazu betreffen Kulturunterschiede hinsichtlich der Häufigkeitsverteilungen 1. der Strukturelemente des gesundheitlichen Lebensstils (gesundheitliche Verhaltensweisen, Orientierungen, soziale Ressourcen), 2. lebensstilverändernder Faktoren (Lebensereignisse) und 3. ausgewählter Moderatorvariablen (gesundheitliche Kontrollüberzeugungen und Kohärenzsinn). Ausserdem werden erste Resultate zu Musterbildungen im Gesundheitsverhalten berichtet. Die Ergebnisse zeigen beträchtliche Kulturunterschiede in der Verbreitung von zentralen Elementen gesundheitlicher Lebensstile und verweisen daneben aber auch auf interessante kulturelle Übereinstimmungen. Insgesamt zeigen die Ergebnisse deutlich die Bedeutsamkeit geschlechtsspezifischer Analysen bei der Suche nach Kulturunterschieden in gesundheitlichen Verhaltensmustern und Lebensstilen.

References

1 *Blaxter M.* Health and Lifestyles. London: Tavistock, 1990.

2 *Cockerham WC, Rütten A, Abel T.* Conceptualizing Contemporary Health Lifestyles: Moving beyond Weber. The Sociological Quarterly 1997; *38*:321–342.

3 *Abel T.* Gesundheitsverhaltensforschung und Public Health: Paradigmatische Anforderungen und ihre Umsetzung am Beispiel gesundheitsrelevanter Lebensstile. In: Weitkunat R, Haisch J, Kessler M, eds. Public Health und Gesundheitspsychologie. Bern: Huber, 1997: 56–61.

4 *Abel T.* Measuring health lifestyles in a comparative analysis: theoretical issues and empirical findings. Soc Sci Med 1991; *32*:899–908.

5 *Abel T, Rütten A.* Struktur und Dynamik moderner Lebensstile: Grundlagen für ein neues empirisches Konzept. In: Blasius J, Dangschat J, eds. Lebensstile in den Städten. Opladen: Leske and Budrich, 1994: 216–234.

6 *Abel T, Kohlmann T.* Health lifestyles: a comparative approach to the culture of health concept. In: Lüschen G, Cockerham WC, Kunz G, eds. Health and illness in America and Germany. München: Oldenbourg, 1989: 71–82.

7 *Uitenbroek DG.* Health lifestyle behaviour and sociodemographic characteristics. A study of Varna, Glasgow and Edinburgh. Soc Sci Med 1995; *43*:376–377.

8 *Cockerham WC, Abel T, Lüschen G.* Max Weber, formal rationality and health lifestyles. The Sociological Quarterly 1993; *34*:413–425.

9 *Noack RH.* Gesundheit: Medizinische, psychologische und soziologische Konzepte. In: Gawatz R, Novak P, eds. Soziale Konstruktionen von Gesundheit. Ulm: Universitätsverlag, 1993: 13–32.

10 *Buckley W.* Modern systems research for the behavioral scientist. Chicago: Aldine Publ. Company, 1968.

11 *Abel T, Karvonen S, Weitkunat R.* Zur Bedeutung von Wert- und Zweckrationalität für gesundheitsrelevanten Sport und körperliche Aktivität. Eine explorative Analyse. In: Rütten A, ed. Sport und Public Health. Stuttgart: Verlag Stefanie Nagelschmid, 1998: 241–258.

12 *Treiman DJ.* Occupational Prestige in comparative perspective. New York: Academic Press, 1977.

13 *Brugha T, Bebbington P, Tennant C, Hurry J.* The list of threatening experiences: a subset of 12 life event categories with considerable long-term contextual threat. Psychological Medicine 1985; 15:189–194.

14 *Wallston KA, Wallston BS, DeVellis R.* Development of the multidimensional Health Locus of Control (MHLC) scales. Health-Education-Monographs 1978; *6*:160–170.

15 *Antonovsky A.* Health, stress, and coping: new perspectives on mental and physical well-being. San Francisco: Jossey-Bass, 1979.

16 *Abel T, Kohlmann T, Noack RH.* Eine deutsche Übersetzung des

Résumé

Cadre général et premiers résultats d'une étude longitudinale sur les interactions entre modes de vie et santé:
Le Bern-Münchener Lebensstil Panel (BMLP)

Le BMLP est une étude sur les modes de vie de la classe d'âge des 55–65 ans et sur leurs implications pour la santé. L'article publié ici décrit l'approche théorique et la méthodologie appliquée dans le cadre de cette étude. Au plan théorique, le BMLP se base sur différents modèles d'analyse sociologique développés autour de l'axiome central selon lequel les comportements en matière de santé dépendent étroitement des conditions structurelles environnantes. Au plan empirique, la méthodologie développée pour discerner ces structures et, par conséquent, la dynamique qui sous-tend les modes de vie ayant un impact sur la santé a donc été élaborée dans le droit-fil de ces fondements théoriques. La partie empirique de l'étude repose sur une enquête par téléphone (CATI), réalisée auprès de 2000 personnes habitant les villes de Berne (Suisse) et de Munich (Allemagne). Le questionnaire rédigé à cet effet comprend plus de 200 questions, portant sur des indicateurs précis, définis d'avance comme révélateurs du mode de vie et de l'état de santé de ces personnes. Les données collectées lors de cette étude longitudinale résultent de trois séries d'enquête à Berne et de deux séries à Munich, l'intervalle entre deux campagnes téléphoniques étant à chaque fois d'un an. Les résultats présentés ici sont ceux de la première campagne téléphonique (baseline). Les réflexions et les questionnements auxquels ils donnent lieu tournent surtout autour des dimensions culturelles qui sous-tendent les différences relevées dans la fréquence d'apparition: 1. des aspects structurels ayant une incidence sur les modes de vie en matière de santé (comportements, attitudes, ressources sociales); 2. des facteurs de changement (événements de vie) et 3. des variables considérées comme éléments de pondération (croyances fondamentales en matière de santé et sens de la cohérence). De plus, ces résultats permettent d'esquisser une première typologie des comportements en matière de santé. Les résultats obtenus dans le cadre du BMLP mettent en lumière des différences culturelles très nettes en ce qui concerne certains éléments déterminants pour le mode de vie et la santé, tout en révélant également des convergences fort intéressantes. Dans l'ensemble, l'étude confirme aussi la pertinence d'une analyse différenciée selon les sexes, dès lors qu'on cherche à mieux appréhender les facteurs socioculturels explicatifs des comportements en matière de santé et des styles de vie d'une population donnée.

SOC-13. Arbeitspapier der Abteilung für Gesundheitsforschung des Instituts für Sozial- und Präventivmedizin der Universität Bern. 1995 (unveröffentl.).

17 *Dean K*. Self-care components of lifestyles. The importance of gender, attitudes, and the social situation. Soc Sci Med 1989; *29*:137–152.

18 *Prättälä RS, Laaksonen MT, Rahkonen OJ*. Smoking and unhealthy food habits. How stable is this association? European Journal of Public Health 1998; *8*:28–33.

19 *Steptoe A, Wardle J, Fuller R*, et al. Leisure-time physical exercise. Prevalence, attitudinal correlates, and behavioral correlates among young Europeans from 21 countries. Preventive Medicine 1997; *26*:845–854.

20 *Lüschen G, Niemann S*. Health life-style and social stratification. In: Lüschen G, Cockerham WC, v.d. Zee J, et al., eds. Health systems in the European Union, diversity, convergence, and integration. München: Oldenbourg Verlag, 1995: 101–112.

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Appendix

Items	Variables	Codes[1]
	Behaviours	
1	Sport and physical exercise hours per week	0 = no sports, 1 = 1–2 hours, 2 = 3 hours or more[2]
1	Seat belt use when driving or riding a car	1 = never/rarely, 2 = often, 3 = very often/always[3]
1	Daily consumption of beer	3 = no beer, no alcohol at all, 2 = less than 1 glass[4], 1 = 1 glass or more
1	Daily consumption of wine	3 = no wine, no alcohol at all, 2 = less than 1 glass, 1 = 1 glass or more
1	Consumption of ham/sausage in a regular week	1 = less than 3 times per week, 0 = 3 times per week or more
1	Consumption of meat in a regular week	1 = less than 3 times per week, 0 = 3 times per week or more
3	Consumption of vegetables/salad; fruit; potatoes in a regular week	[5]1 = daily consumption of at least two of these three main sources of vitamin C, 0 = no daily consumption of at least two of these three main sources of vitamin C
1	Number of cigarettes per day	3 = non smokers, smokers but less than 1 cigarette per day, 2 = 1–10 cigarettes, 1 = more than 10 cigarettes
1	Seat belt use when driving or riding a car	1 = never/rarely, 2 = often, 3 = very often/always[6]
	Orientations	
3/2[7]	Substantive Rationality in health behaviour	[8]1 = strongly disagree/disagree/partly agree, 2 = strongly agree/agree
5	Formal Rationality in health behaviour	[7]1 = strongly disagree/disagree/partly agree, 2 = strongly agree/agree
2	How much do you trust in conventional/modern medicine; how much in alternative/natural medicine?	for each item: 1 = little/not at all, 2 = partly yes and no, 3 = considerable, 4 = very strongly
8	How much do you pay attention that you eat not: too much; too sweet; too fatty; too salty; that you eat: enough vitamins; varied; regularly; whole meal food	[9]1 = never/rarely, 2 = often, 3 = very often/always
1	Strength of religious beliefs	[10]1 = none/low, 2 = somewhat, 3 = considerable/much;
	Resources	
1	Household income per month adjusted by number of household members	[11]1 = 0–2000, 2 = 2001–4000, 3 = 4001 or more
1	Household property	[8]1 = up to 50000, 2 = 50001–100000, 3 = 100001–500000, 4 = 500001–1 Mio., 5 = more than 1 Mio.
1	Highest educational degree	[12]1 = level I, 2 = level II, 3 = level III
8	Occupation-Prestige based on the Treiman-Scale	1 = 14–30, 2 = 31–40, 3 = 41 - 50, 4 = 51–60, 5 = 61–78
1	General Self estimate about the degree of time at one's own disposition (leisure time)	1 = none or much too little, 2 = just enough, 3 = too much
2	Number of people within respectively outside the family that one can rely on in difficult situations	1 = 0–1 person, 2 = more than 1 person
	Life change factors	
18	List of life events	[13]0 = no event, 1 = 1 event, 2 = 2 events, 3 = 3 events, 4 = 4 or more events[14]
9	Health Locus of Control: internal, external (medical system), fate (3 Items each)	[15] for internal, external (medical system) and fate: 1 = low, 2 = medium, 3 = high
13	Sense of Coherence (SOC 13 Tele)	[16]0 = mean or lower, 1 = higher than mean

[1] If there is no other annotation missing values are "no answer" and "answer refused".
[2] The categories have been built on basis of the bernese peoples mean (M = 2,6 hours).
[3] Missing: not driving a car (in Berne 56 cases, in Munich 30 cases).
[4] Standard unit in Berne: 1 glass = 0.3 dl; standard unit in Munich: 1 glass = 0.5 dl.
[5] Each item coded from 1 (not at all) to 5 (daily); sumscore recoded in 2 categories.
[6] Missing: not driving a car (in Berne 56 cases, in Munich 30 cases).
[7] Reliability analyses resulted in 3 items for Berne and 2 for Munich.
[8] Each item coded from 1 (strongly disagree) to 5 (strongly agree); sumscore recoded in 2 categories.
[9] Each item coded from 1 (never) to 5 (always); sumscore recoded in 3 categories.
[10] Missing: all respondents with other confessions than catholic, protestant/reformiert or evangelist (in Berne 100 cases, in Munich 116 cases).
[11] In Berne in SFr.; in Munich in DM; 1 DM = 0.83 SFr.
[12] Level I: no degree, degrees from obligatory schools (up to 9 years of schooling); level II: degree from advanced schooling (up to 13 years); level III: high education such as University degree.
[13] Each item coded 0 (no event) or 1 (event); sumscore recoded in 4 categories.
[14] The maximum of events was 8 in Berne and 9 in Munich respectively.
[15] Each item coded from 1 (strongly disagree) to 5 (strongly agree); sumscore recoded in 3 categories.
[16] Mean in Berne 51, mean in Munich 50.