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Patterns of health-related behaviour and their cross-cultural validity – A comparative study on two populations of young people

Summary

The study aimed at exploring health-related behaviour patterns among young people. The approach was cross-cultural and the study was focused on identifying culturally valid behaviour patterns in two countries, Finland (F) and Switzerland (CH). Data came from two surveys and included 16- and 18-year-old respondents (F: study year 1993, n = 280, CH: study year 1992/3, n = 272). Three intake behaviours – eating, drinking and smoking – were analysed by means of cluster and logistic regression analyses. Three cross-culturally valid behaviour clusters emerged: a healthy, an unhealthy and a mixed pattern where unhealthy eating behaviours were combined with non-smoking and low alcohol use. The determinants of the patterns were tested by comparing the two countries in relation to the socio-demographic characteristics of the young people that belonged in the same cluster. In both countries the structure of the determinants was almost identically indicating high cross-cultural stability. The study suggests that among young people of this age there is clear and cross-culturally consistent patterning of health-related behaviours.

Health-related behaviour of young people has been studied in numerous surveys. From the early 1980s onwards also descriptions of socio-demographic variation and of changes over time in health-related behaviour among young people are readily available for an overview see [1–3].

Although the basic determinants of health-related behaviour have already been described in many countries, there is less consensus over the extent to which these findings can be generalized across cultures. It is often difficult to evaluate whether studies reflect culturally or nationally specific features or whether they can be applied to a broader range of countries. Most studies still describe the behaviours and their determinants within one country only e.g. [4–11]. Concentrating predominantly on a single country may result from the strong requirements that cross-national comparison sets for studies.

According to Hui and Triandis[12] operationalization in a cross-cultural study requires finding a balance between the precision of measurement and the meaningfulness of the comparison. Measurement precision refers to such factors as the accuracy of translation and the scalar equivalency between the cultures under study. The meaningfulness of a comparison, instead, points to more abstract characteristics of the study framework. It is only meaningful to compare cross-culturally equivalent constructs (conceptual/functional equivalence) that are operationalized in a similar vein across cultures see also[13].

Obviously the two requirements cannot be fully satisfied at the same time, which is probably why most cross-national studies seem to worry mainly about guaranteeing as precise measures as possible by administering identical instruments and back-translation. However, precise measures do not guarantee meaningful comparison in a situation when e.g. the goals of two behaviours differ. For example, in the U.S. "talking walks" is likely to represent a pursuit to promote one's health, whereas in Germany it includes a popular means for transport and a hobby ("Wanderungen")[14].

The comparative studies that have been conducted among young people have often concentrated on only one behaviour[15,16], or where many behaviours are reported, their relationship with each other has not been thoroughly analysed e.g.[17–19]. In many of these studies health-related behaviours have been conceptualized as isolated, atomistic ways of action that are analysed by means of correlative techniques, an approach which does not fully take into account their mutual relationships and possible connections to the broader lifestyle of the individual[20].

Those studies that have concentrated on cross-cultural health-related behaviour *patterns* have predominantly explored adult populations[21–23]. Even though the analyses have not involved young people, the literature suggests that culturally consistent behaviour patterns can be detected. Here, we concentrate on analysing such patterns among young people since it is at youth that many of the health-related behaviours are adopted. It is also likely that at this age consistent patterns are formed for the first time. Moreover, young people are increasingly subjected to global youth culture that may facilitate more general patterns cross-culturally.

The purpose of the study is to explore whether there are cross-culturally valid health-related behaviour patterns among young people from two populations. First, we analyse if a core of three intake behaviours namely eating, drinking and smoking see[24] form clear patterns among young people. Intake behaviours refer to a group of practices that involve making oral use of substances into the body. The patterns of these behaviours are explored using two data sets, one from Switzerland, one from Finland, in order to find out if young people can be consistently grouped according to their health-related behaviours. The second aim is to study the structure of these groups across the two cultures by comparing their behaviour patterns and their sociodemographic determinants. The main emphasis in the comparison is to identify functional equivalence between the behaviour patterns, i.e. patterns that carry similar meaning in different cultures.

Methods

Material

The data came from two sources. In Switzerland those 16 and 18 year-olds who took part in the Swiss Health Survey 1992/3 were selected (n = 272, overall response rate 71%)[25,26]. In this study data describing health-related behaviours as well as the basic sociodemographic characteristics of the respondents were obtained by means of structured telephone interviews from a nationally representative sample of Swiss citizens.

The Finnish data came from the 1993 Adolescent Health and Lifestyle Survey see [27]. Here, structured questionnaires were mailed to a nationally representative sample of 16 and 18 year-old Finns, who answered a similar set of questions concerning their health-related behaviour and social background as in the Swiss study. Among these age groups the overall response rate was 76% (total n = 4864). To ensure that differences in the size of the data sets would not disturb the statistical significance tests, a 5% random sample of the originally larger Finnish data was taken (n = 280). Reducing the number of cases in the Finnish data set was required to be able to perform a cluster analysis as the matrix required for the hierarchical cluster analysis would have been too large for the computer to build using the original data. Where appropriate also complete data were used (not shown) to control for the effect of the sampling of the data. Essentially the findings were similar.

Measures

When selecting the measures emphasis was placed on reaching high conceptual equivalence rather than on ensuring that questions would have been precisely identically phrased and scales exactly similar. Since the data came from two different surveys with somewhat different measures, finding perfect item equivalence would also have been impossible. As our interest, however, was more on studying whether cross-nationally equivalent behavioural *patterns* can be identified, conceptual equivalence was considered more important than identically phrased and scaled single items.

Three health-related behaviours were studied using four measures of the main "intake" behaviours – eating, drinking and smoking. Earlier studies have shown these behaviours to correlate with each other e.g.[24,28], although the extent to which they group young people has not been reported. The conceptual equivalence of the measures was defined on the basis of an assessment of their perceived healthiness in the general population. Non-smoking, low alcohol use and diet rich in vegetables are among the first determinants of health that lay people mention spontaneously when health is discussed[29–31]. In this respect milk was, however, assessed to function differently in the two cultures as will be discussed later.

Alcohol use was measured by equivalent questions in the two countries. In Switzerland, the question was: "How often do you drink alcoholic drinks?" with seven response alternatives ranging from "every day" to "never". In Finland, the question was: "How often do you

use alcohol?", but the respondents were instructed to count also smaller amounts such as a sip of wine. There were nine alternative responses ranging from "daily" to "I do not use alcohol". To harmonize the indicators the variables were recategorized into five categories: "daily" (in Switzerland, CH 2% of the respondents; in Finland, F 0%), "several times a week, but not daily" (CH 6%; F 7%), "once or twice a week" (CH 31%; F 15%), "less than weakly" (CH 33%; F 68%) and "never" (CH 29%; F 10%).

In both countries the measure of *smoking* was based on a combination of two variables: one describing smoking status ("smoker" – "non-smoker" in Switzerland; "daily smoker" – "non-smoker or smokes less than daily" in Finland) and the daily amount of smoking. These were combined to a three-point measure with categories "daily ten or more cigarettes" (CH 12%; F 14%), "nine or less cigarettes daily" (CH 9%; F 13%) and "non-smoker or not daily" (CH 79%; F 73%) in both countries.

Two measures of *eating* were used to describe respondents' perception of health-relevant aspects of eating in the two countries. In Switzerland, eating was measured by a sum score of the frequencies of *eating* a) *raw vegetables or salad* and b) *fruit* (resulting in a 17-point score from "never" (1%) to "both daily" (55%)). On a preliminary analysis (data not shown) these two indicators correlated statistically significantly with each other (Pearson's r = 0.29) thus allowing them to be summed into a single measure. Preliminary analyses also suggested a further dimension of eating behaviour indicated by *the frequency of drinking milk* and it was taken as a separate measure into the study (nine responses: "never" (15%) to "daily" (58%)). Also in Finland two measures reflecting local food culture were used: one measuring healthy eating (the frequency of *eating vegetables or root crops* either raw or as a salad during last week; with response alternatives ranging from "never" (9%) to "on six or seven days" (20%)) and one measuring *the type of milk* preferred ("What kind of milk do you drink usually" with five alternatives from "high-fat milk" (containing 3.9% fat) (5%) to "I do not drink milk" (16%)). In Finland, in contrast to Switzerland, milk can be considered a national drink with 85% of our sample usually drinking milk: Not drinking milk or drinking non-fat milk was considered to denote an eating pattern that is perceived as healthy. In Switzerland, where milk is relatively less often used, drinking milk was expected to be perceived as part of a healthy lifestyle. The fact that milk drinking frequency correlated positively with other healthy behaviours supported this inference (Table 2).

Methods

The data sets were analysed separately using the SPSS for Windows (release 6.1.2) statistical package[32]. First, differences in group means of the behaviours were studied across gender and age groups to detect any cultural particularities in the two countries. These findings will only be summarized briefly as the measures were not directly comparable cross-culturally. Second, to estimate the extent to which we had succeeded in finding measures that were conceptually equivalent cross-nationally, a correlation analysis was used as an exploration of the equivalence. In the third phase of the study, the patterns of health-related behaviours were studied using hierarchical and K-means cluster analyses. Cluster analysis was selected as it provides a means to study health-related behaviour patterns by identifying groups of individuals that share similar habits. In the final phase of the study the groupings obtained through cluster analysis were compared to test the stability of the clusters. This was mainly done by using logistic regression analysis with a dichotomous cluster membership variable as the dependent variable. Four conceptually equivalent socio-demographic characteristics were included in the analysis as explanatory variables. These were gender, age, family type, education and, in Switzerland, interview language as a measure of cultural background.

The models were constructed forward stepwise. First, the main effects of the socio-demographic variables were introduced into the model. After all significant main effects were included the significance of their mutual interactions were tested. To reach the most parsimonious model only interactions between significant main effects were introduced into the model.

Results

Descriptive results

There were more girls (58%) and 16-year-olds (55%) than boys or 18-year-olds in the Finnish data. In Switzerland the age distribution was reversed, but both genders were equally represented. Standard, i.e. two original parent families were more prevalent in Finland (73%) than in Switzerland (CH 55%). The educational distribution was similar in both countries with majority of young people studying in upper secondary school (CH 53%; F 56%). Approximately a third of young people studied in other schools (CH 28%; F 32%). The rest were school leavers, i.e. those that did not continue in school after the compulsory education (CH 17%; F 12%). The majority (62%) of the Swiss respondents spoke German. But there were also respondents speaking French (31%) or Italian (7%) represent-

	Switzerland (n = 272)			Finland (n = 280)		
Variable	**Range**	**Mean**	**Std. dev.**	**Range**	**Mean**	**Std. dev.**
Abstinence	1–5	3.82	0.99	1–5	3.81	0.70
Non-smoking	1–3	2.67	0.68	1–3	2.60	0.72
CH: Daily milk use F: No milk	1–9	6.43	3.31	1–5	3.17	1.23
Healthy eating	1–17	14.92	3.04	1–5	2.72	0.88

Table 1. *Description of the health-related behaviour variables. 16- and 18-year-olds in Switzerland and Finland.*

ing thus young people with this type of cultural background.

The behaviour measures are described in Table 1 showing their ranges, means and standard deviations. According to these parameters alcohol use frequency was similar in both countries but smoking was slightly less prevalent in Switzerland than in Finland. The eating behaviour indicators were not identical in the two countries, but the high mean of eating suggests that the Swiss eating patterns are healthier than the Finnish ones. The distributions of the variables were also quite skewed so they were standardized.

In both cultures girls tended to show more health promoting eating behaviour than boys. In Switzerland healthy eating was statistically significantly more frequent among girls than boys (f-test for group means $p = 0.0002$). In Finland, the relationship was similar, although not significant ($p = 0.07$). In Finland, girls also drank less fat containing milk than boys ($p = 0.000$).

Smoking and alcohol use were not related to gender in either country. Instead, they varied significantly with age so that in both countries alcohol drinkers were more frequent among the 18-year-olds than the 16-year-olds (for Switzerland $p = 0.01$, for Finland $p = 0.004$). In Switzerland also smoking was more frequent among the older age group ($p = 0.02$, Finland $p = 0.48$). Both in Finland and in Switzerland the correlations between the behaviours were positive and mostly of similar magnitude (Table 2). In both countries the correlation between smoking and drinking was highest but the bivariate correlations tended to be slightly higher in Finland.

The difference between the two countries was largest in the relationship between the two dietary indicators. In Finland not drinking milk correlated significantly positively with the frequency of eating healthily, while in Switzerland the relationship was reversed: frequent drinking of milk correlated with a healthy diet (Table 2). Swiss non-drinkers of milk were least likely to eat healthily. The discrepancy in the correlations supports the assumption that the cultural meaning of milk varies between Finland and Switzerland.

Finland (n = 280)	**1.**	**2.**	**3.**	**4.**
1. No milk use	*			
2. Healthy eating	**0.28**	*		
3. Abstinence	0.04	**0.13**	*	
4. Non-smoking	0.08	**0.14**	**0.39**	*
Switzerland (n = 272)				
1. Daily milk use	*			
2. Healthy eating	0.10	*		
3. Abstinence	–0.02	0.07	*	
4. Non-smoking	0.04	0.12	**0.42**	*

Table 2. *Bivariate correlations (Pearson's r) between health-related behaviour variables in Finland and Switzerland. (Statistically signifant correlations in bold).*

Patterns of health-related behaviour

As most of the behaviours correlated positively with each other, cluster analysis was performed. For example, the strong correlation between smoking and alcohol use suggests that young people can be grouped on the basis of the frequency of these behaviours. Earlier studies[21, 22] suggested at least a two cluster pattern. As also the eating behaviour items were in Finland significantly related to each other, it appeared that also a more complex pattern could reflect the health-related behaviour groupings in the data. So, two, three and four cluster solutions were studied in both countries.

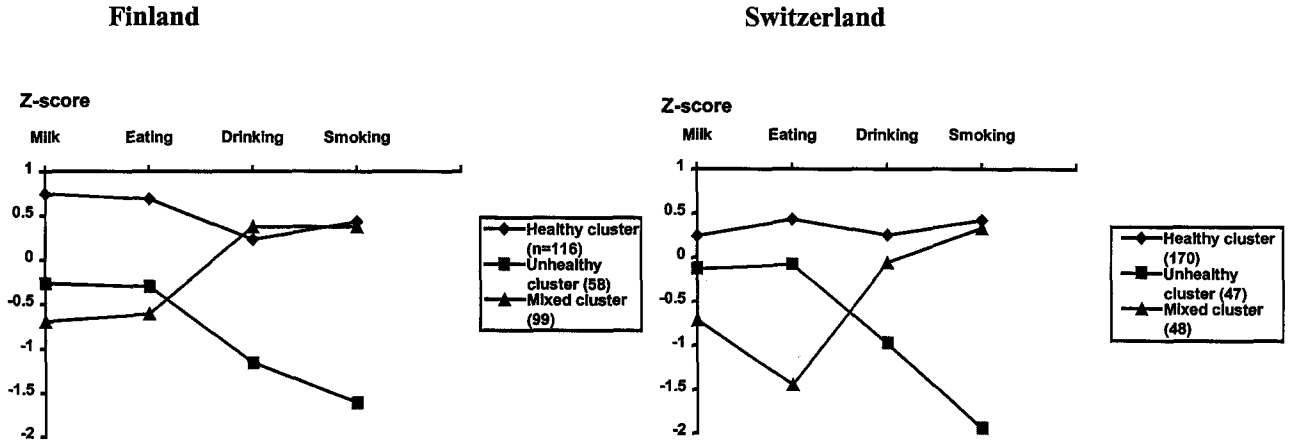

Figure 1. *The three-cluster solutions of health-related behaviours in Finland and in Switzerland. Standardized cluster centers among 16 and 18 year-olds.*

In both countries an equivalent three-cluster solution was found most meaningful. The two cluster solution could not capture all the cross-culturally stable patterns. The four cluster solution showed much more cross-cultural variation and it comprised quite small groups suggesting instablity for the patterns. The three clusters comprised a consistently health-enhancing, a health-compromising and a mixed group of young people, which was also theoretically most convincing.

In both countries the largest cluster showed a consistently healthy behaviour (Figure 1). In Finland this group comprised of 42% of the young people, in Switzerland 64%. The second cluster was roughly of the same size – 20% – in the two countries. It comprised of young people who drink alcohol, smoke frequently and have a health-compromising diet. In Finland, this group showed poorer eating behaviour than the equivalent group in Switzerland. In both countries young people of the third cluster had the poorest diet. This group had the lowest values both on eating and milk use variables, yet these behaviours were connected with little alcohol use and non-smoking. In Finland, the group included 36% and in Switzerland 18% of the young people.

Cluster means and the F-test measures for the three clusters are presented in Table 3. The F-test measure, which is the ratio of the variance found between clusters and within clusters, is in both countries largest for smoking. This suggests that cluster membership is mostly based on differences in smoking status. However, since the F-test probability value is low for all of the behaviours, they all are required to separate the groups.

As cluster analysis is known to give sometimes inconsistent findings, the results were in addition to inter-cultural comparison validated by testing the consistency of the three clusters over two other cluster solutions. This was achieved by correlating each of the three clusters with equivalent clusters from the other solutions. The results showed high inter-cluster consistency as the relevant correlations

Health behaviour	Finland (n = 273)				Switzerland (n = 265)			
	Cluster mean	Error mean	F	Probability[a]	Cluster mean	Error mean	F	Probability[a]
Milk use	56.83	0.58	98.27	0.00	17.17	0.88	19.59	0.00
Healthy eating	48.14	0.64	74.98	0.00	65.79	0.50	130.16	0.00
Abstinence	49.30	0.64	77.18	0.00	28.23	0.80	35.27	0.00
Non-smoking	93.65	0.33	282.82	0.00	106.47	0.22	488.28	0.00

[a] The (descriptive) F-test probability tests null-hypothesis that the between-cluster mean is equivalent to the within-cluster mean. A low value denotes the rejection of this hypothesis.

Table 3. *Cluster mean squares for the health-related behaviour variables in Finland and Switzerland.*

	CH: Daily milk use /F: No milk use	Healthy eating	Abstinence	Non-smoking
Finland (n = 273)				
Healthy cluster (120)	0.78	0.57	0.12	0.51
Unhealthy cluster (65)	–0.19	–0.31	–0.77	–1.68
Mixed cluster (88)	–0.89	–0.53	0.37	0.50
Switzerland (n = 265)				
Healthy cluster (165)	0.27	0.43	0.25	0.44
Unhealthy cluster (50)	–0.15	–0.03	–0.89	–1.89
Mixed cluster (50)	–0.75	–1.38	–0.04	0.35

Table 4. *Cluster centers for health-related behaviours using original codings in Finland and Switzerland.*

ranged from 0.44 to 0.95 in Switzerland. In Finland they were even higher ranging from 0.85 to 0.94. This suggests high stability of the clusters established in the three-cluster solution as the same cases tended to group together even if the number of clusters differed.
A further validation was conducted by using the original, but cross-culturally non-comparable codings for the health behaviour variables and clustering then cases into two, three and four clusters in both countries. The three clusters were supported by an analysis of cluster sizes and cluster patterns over different cluster solutions. In both countries an equivalent three-cluster solution to the one described above was found (Table 4). As these provided less cross-cultural comparability, further analyses were based on comparatively more meaningful clusters (see the Measures).

Determinants of cluster membership

To find out if young people in the same cluster share similar socio-demographic characteristics across cultures, dummy variables (binary) for membership were studied by means of logistic regression analysis. In each model cluster membership was used as the dependent variable. The most parsimonious models obtained are presented in

Cluster one membership	**Switzerland[b] (n = 248)**		**Finland[c] (n = 269)**	
Variable categories	**Parameter estimate**	**p**	**Parameter estimate**	**p**
Gender				
Boys	1.00	0.003	1.00	0.042
Girls	2.32		1.72	
(95% CI)	*(1.34–4.02)*		*(1.02–2.89)*	
Education				
Upper secondary school	1.00	0.021	1.00	0.0001
Other school/School leaver	0.53[a]		0.36[a]	
(95% CI)	*(0.31–0.91)*		*(0.22–0.61)*	

[a] Categories "other" and "school-leaver" combined.
[b] Model: **gender + education.** Residual chi square 4.757 with 4 df.
[c] Model: **gender + education.** Residual chi square 1.813 with 1 df.

Table 5. *Best fit logistic regression models for Cluster one membership (consistently healthy behaviours) in Finland and in Switzerland.*

Cluster one membership	**Switzerland[a] (n = 248)**		**Finland[b] (n = 269)**	
Variable categories	**Parameter estimate**	**p**	**Parameter estimate**	**p**
Age				
16 year old	1.00	0.0027	Not significant	
18 year old	3.20			
(95% CI)	*(1.50–6.85)*			
Education				
Upper secondary school	Not significant	1.00		0.0009
Other school			2.82	
(95% CI)			*(1.45–5.47)*	
School leaver			3.99	
(95% CI)			*(1.69–9.39)*	

[a] Model: **age.** Residual chi square 7.483 with 6 df.
[b] Model: **education.** Residual chi square 2.848 with 3 df.

Table 6. *Best fit logistic regression models for Cluster two membership (consistently unhealthy behaviours) in Finland and in Switzerland.*

Cluster one membership	**Switzerland[a] (n = 248)**		**Finland[b] (n = 269)**	
Variable categories	**Parameter estimate**	**p**	**Parameter estimate**	**p**
Gender				
Boys	1.00	0.016	1.00	0.031
Girls	0.44		0.57	
(95% CI)	*(0.22–0.86)*		*(0.35–0.95)*	
Language				
German	1.00	0.056	Not included	
French	0.90			
(95% CI)	*(0.42–1.90)*			
Italian	3.47			
(95% CI)	*(1.19–10.14)*			

[a] Model: **gender + language.** Residual chi square 1.228 with 4 df.
[b] Model: **education.** Residual chi square 2.848 with 3 df.

Table 7. *Best fit logistic regression models for Cluster three membership (mixed health behaviours) in Finland and in Switzerland.*

Tables 5 to 7 showing the odds ratios of belonging to a particular cluster according to the socio-demographic characteristics.

Gender and education show significant effects on membership in the health-enhancing behaviour cluster (Table 5). Consistently health-enhancing behaviour was more typical for girls than boys and for those attending upper secondary school in both countries. In contrast, cluster two membership (unhealthy behaviours) associated with different socio-demographic factors in both countries (Table 6). In Switzerland, the likelihood of having a consistently unhealthy

behaviour increased with age, while in Finland cluster two members were almost four times more likely to be school leavers than students of upper secondary school.
Membership in cluster three (mixed behaviours) was in both countries related to gender (Table 7) including predominantly boys. In Switzerland the study language was closely associated ($p = 0.056$) with mixed behaviours. The pattern was more typical for Italian-speaking young people than for those speaking German or French suggesting that the pattern is influenced by local culture.

Discussion

We explored the patterning of health-related behaviours among 16- and 18-year-old young people in two European countries. The data came from national samples in Switzerland and Finland. Our research could thus be focused on cross-culturally valid patterns of behaviour. In a cluster analysis three cross-culturally consistent health behaviour patterns emerged. In both countries the largest group of young people (42% of the Finns, 64% of the Swiss) showed healthy behaviour which included non-smoking, low frequency of alcohol use and healthy eating and milk drinking patterns. The second cluster consisted of young people who had precisely the opposite pattern: smoking, frequent alcohol use along with health-compromising eating and milk drinking practices. The third group included young people with a mixed pattern.
The healthy and unhealthy patterns are supported by an earlier comparative study as well. Abel and Kohlmann[22] reported this structure of behaviour patterns among adults from the U.S. and from Germany. However, in their study physical exercise and regular medical check-ups were also included to the healthy behaviour pattern. These items were not included in our study. Consequently, as the two studies are not fully comparable, further studies are needed to estimate the contribution of these behaviours to the health behaviour patterns, among young people particularly.
Further, in our study, a considerable number of young people (36% of the Finns, 18% of the Swiss) reported a mixed behaviour pattern where health-compromising dietary behaviour associated with low alcohol use and non-smoking. Earlier studies that have explored the patterning of health-related behaviours have not been able to identify such a cross-culturally valid cluster. This is probably mainly due to methodological reasons. First, most of the earlier studies have applied correlative techniques, such as factor analysis, which normally do not allow for these kind of statistical "irregularities". Even though factor loadings could be used to group the respondents, much of this research is based on analysing correlations between health-related behaviour variables. At this level correlations between behaviours have been found to range from weak to moderate with the highest correlation normally found between smoking and drinking e.g.[4, 5, 33, 34]. Second, those studies that have utilized also other techniques, such as cluster analysis or log-linear models, have so far not produced cross-culturally comparable findings e.g.[7, 8].
A major methodological problem relates to the use of cluster analysis when identifying behaviour patterns. As cluster analysis is known to produce unstable findings[32], we took special efforts on studying cluster stability. We searched for "stable" behaviour patterns by comparing group sizes over different cluster solutions as well as by comparing behaviour patterns and their socio-demographic determinants across cultures. All these analyses supported the three-cluster solution. Further, the best cross-cultural comparability was gained with the three-cluster solution in which both the behaviour patterns and their determinants were almost identical in the two countries.
From a methodological point of view the present study offers new insights. Cross-culturally high conceptual equivalence was aimed at, when choosing the behaviour measures and measures of their determinants. In accordance with the normative measurement model of Hui and Triandis[12] this meant in some cases selecting either technically non-identical variables or codings. Particularly the cultural meaning of dietary behaviour differed in Finland and Switzerland.
Besides high structural similarity in the patterning of health behaviours important cross-cultural variation was revealed. While in Switzerland frequent consumption of milk associated positively with other health-enhancing behaviours, such as eating salads and fruit, in Finland young people with the most health-enhancing pattern tended to drink low-fat milk or abstain altogether from drinking milk. In Finland drinking high-fat (whole) milk has been part of a traditional meal, and health education has promoted drinking non-fat or low-fat milk. In Switzerland the milk industry has stressed the importance of milk in the diet of children and young people by means of campaigns[35]. Milk has also been provided free at school for pupils in some cantons, which probably has promoted the image of milk as a healthy choice. A recent study showed that the present diet provides enough calcium for only about a half of the Swiss young people[36].
In accordance with earlier studies[37,38] cultural variation was found within Switzerland. A behaviour pattern, where unhealthy dietary patterns were combined with non-

smoking and low alcohol use frequency, was most typical among Italian-speaking young people. The Italian meal has been considered as one of the healthiest from the cardiovascular point of view[39] but low calcium intake particularly among young girls[40] is likely to compromise health. That low frequency of raw vegetable, salad and fruit use combines with lack of dietary fat appears a peculiarity of the Swiss Italian young people.

Despite these differences our main finding is the equivalence of the behaviour patterns and their determinants in the two countries. This result relates to findings from earlier studies as well. Aarø et al.[34] concluded in their review of health behaviour studies that bi-dimensionality is a likely picture of health-related behaviour *variables.* The hypothesis was supported by two comparative studies from nine countries[17, 34]. These studies advocated strongly one addictive and one health-enhancing factor of behaviours. We found some cross-cultural support for the addictive dimension of behaviours as also here smoking and drinking clustered together.

To what degree our and earlier findings can be generalized is an open question. Future studies should explore the patterning of behaviours in countries other than the highly industrialized type. Patterns of health behaviours could differ considerably as was seen in a study by Uitenbroek et al.[23] who reported large differences in behaviour prevalences between adults from East-Central Europe and Britain.

In future also longitudinal and time series studies are needed to find out e.g. whether the mixed pattern of behaviours is a rising trend. Pohjanpää et al.[9] found a "modern" risk behaviour pattern where frequent alcohol use was combined with non-smoking. Even though they did not explore other health-related behaviours, the study suggests an increase in the inconsistency of health behaviours in the 1990s. Our study is in line with the notion that there is a number of young people whose behaviour shows "inconsistency" from the classical cardiovascular disease prevention point of view. In other words, young people of this age do not group simply into those who behave healthily or unhealthily as the previous research suggests. Rather, it is likely that particularly at this age young people orient their behaviour with other objectives in mind than health concerns, such as physical appearance[41] or sociability[42]. Further, as the health protecting effects of moderate alcohol use have become more widely recognized, young people may have difficulties in even perceiving the consistent healthy behaviour.

Whether or not inconsistency in behaviour from disease prevention point of view is increasing, our study shows that theoretically plausible behaviour patterns among young people across cultures can be identified, in industrialized countries at least. Further the study proposes that detecting these patterns requires cross-cultural equivalence in the applied measures as well as a contextually sensitive analysis that takes cultural variation into account. Findings from the present study suggest that young people tend to group into three types of behaviour patterns: a health-enhancing, a health-compromising and a mixed pattern of behaviours.

Zusammenfassung

Muster gesundheitsrelevanter Verhaltensweisen und ihre kulturübergreifende Validität: eine Vergleichsstudie mit zwei Populationen Jugendlicher

In einer kulturvergleichenden Studie wurden gesundheitsrelevante Verhaltensmuster von Jugendlichen in zwei Ländern, Finnland (F) und der Schweiz (CH), untersucht. Die Daten stammen aus zwei Surveys bei 16- bis 18-jährigen Jugendlichen (F: Erhebungsjahr 1993, n = 280; CH: 1992/93, n = 272). Drei Konsumverhalten – Essen, Trinken und Rauchen – wurden mittels Clusteranalysen und logistischer Regression analysiert. Die Ergebnisse zeigen drei kulturübergreifende Muster: ein gesundes, ein ungesundes und ein gemischtes Verhaltensmuster, bei dem ungesundes Essverhalten mit Nichtrauchen und geringem Alkoholkonsum einhergingen. Weitere Analysen zeigten die Abhängigkeit der Zugehörigkeit zu den Verhaltensmustern von soziodemographischen Merkmalen der Befragten. In beiden Ländern waren die Determinanten weitgehend identisch, was eine hohe kulturübergreifende Stabilität anzeigt. Die Studie liefert Hinweise auf distinkte und überkulturell konsistente gesundheitsrelevante Verhaltensmuster bei Jugendlichen.

Résumé

Modèles de comportement influant sur la santé et leur validité supraculturelle: une étude comparative portant sur deux populations de jeunes

Une étude a été consacrée aux modèles de comportement influant sur la santé parmi les jeunes de deux pays, la Finlande (F) et la Suisse (CH). Les données utilisées ont été tirées de deux enquêtes réalisées auprès de jeunes de 16 à 18 ans (F: en 1993, n = 280; CH: 1992/93, n = 272). Trois comportements de consommation – manger, boire, fumer – ont été étudies à l'aide d'analyses par grappes et d'analyses de régression logistique. Trois modèles supraculturels sur le plan du comportement ont été définis: un modèle sain, un modèle nuisible à la santé et un modèle mixte (mauvaise alimentation, non-consommation de tabac et consommation modérée d'alcool). D'autres analyses ont montré qu'il y avait un lien entre l'appartenance à un modèle et les caractéristiques socio-démographiques des jeunes interrogés. Dans les deux pays, les facteurs déterminants les modèles étaient presque identiques, ce qui témoigne d'une grande stabilité supraculturelle. L'étude suggère que parmi les jeunes de cet âge, on trouve des comportements supraculturels cohérents distincts qui ont une influence sur la santé.

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