

DRINKING PATTERNS AND THEIR GENDER DIFFERENCES IN EUROPE

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Abstract — **Aims:** To compare drinking habits and to examine differences between drinking cultures in different regions and countries in Europe; to examine gender differences in drinking habits and to compare them over countries. **Methods:** Data consisted of independently conducted, centrally analysed surveys in the general population aged 20–64 years in 14 European countries. Central measures were abstinence, frequency and volume of drinking overall and by beverage type, amounts drunk per drinking day, and heavy episodic drinking. **Results:** There were clear gender differences in all drinking measures, except for wine drinking. Differences between genders were often smaller than average in northern Europe. Gender ratios did not show systematic changes by age, with the exception that young men and women differed less than older men and women in the frequency of heavy episodic drinking. The results on beverage preferences indicate that the distinction among wine/beer/spirits cultures have implicitly been based on male drinking. Our expectation was for more daily light drinking integrated in everyday life in the Mediterranean countries, more heavy episodic drinking associated with weekends and celebrations in the North, with the traditional beer-drinking countries somewhere in between. The differences observed were usually in the direction expected. However, no country represented an ideal type of drinking culture, i.e. drinking for ‘mood-changing effects’ only or for ‘nutritional purposes’ only; all countries were mixtures of these two extremes. **Conclusions:** There were clear and consistent gender differences in all countries, while the differences in drinking between countries and regions were not as obvious.

INTRODUCTION

An examination of sales statistics reveals that the large differences in the level of per capita consumption of alcohol between European regions have diminished over time. If Western Europe is divided into a northern tier of countries where spirits used to be the predominant alcoholic beverage, a southern tier of Mediterranean countries where wine predominates, and a tier in between of countries where beer predominates, the convergence is mostly due to an increase in consumption in traditional beer-drinking countries and former spirits-drinking countries until the 1970s, and a decrease in consumption in the traditional wine-drinking countries thereafter (Sulkunen, 1983; Leifman, 2002a). Also the differences in beverage preferences between the regions have diminished so that at least in relative terms the popularity of traditional beverages in each region has decreased and the share of new beverage types has increased (Sulkunen, 1983; Leifman, 2002a). Even though differences between regions in volume of drinking and in beverage preferences are still clear in spite of homogenization, the question arises whether there remain substantive differences between drinking cultures among European countries. Has convergence resulted in a situation where the cultural position of drinking would seem to be similar across European countries? Survey data can shed some light on this question and also on gender and age patterns of drinking.

Numerous typologies of the cultural position of drinking have been proposed in the literature, as recently reviewed by Room and Mäkelä (2000). In the European context, probably the most used and well known is the division between wet and dry societies. Traditionally, wet (as opposed to dry)

drinking cultures were characterized by a weak (strong) temperance tradition, a high (low) volume of consumption, a low (high) proportion of abstainers, frequent fairly heavy drinking (infrequent very heavy or binge drinking), a high (low) level of problems related to chronic heavy drinking, and a low (high) level of alcohol poisoning (Room and Mitchell, 1972). Mediterranean countries have been presented as the main representatives of wet countries and the Nordic countries as representatives of dry countries. The wet–dry continuum as such is problematic in today’s Europe, where differences in volume and abstinence no longer differentiate the traditional wet and dry countries.

Other typologies would make related divisions. Ullman (1958) spoke about ‘integrated’ and ‘unintegrated’ drinking customs. Mäkelä’s (1983) angle was to separate different use-values of alcohol. The two most relevant ones for European drinking cultures are the use of alcohol as a nutrient and the use of alcohol as an intoxicant. Partanen’s (1991) analysis extracted two important dimensions of drinking cultures: the culture’s ‘engagement with alcohol’ and the typicality of ‘serious drinking’, that is, drinking to intoxication. Similarly, Room and Mäkelä (2000) end their review by suggesting two most central dimensions of drinking cultures: the regularity of drinking and the extent of drunkenness.

The first aim of this paper is to compare drinking habits and the current differences between drinking cultures in different regions and countries in Europe. We try to describe as well as possible the two central elements of drinking cultures that were identified in the literature: (i) involvement with alcohol (abstinence, frequency of drinking overall) and (ii) drunkenness, binge drinking, or more generally the quantity of drinking on a drinking day. In addition, we examine (iii) the differences in beverage choices (beverage-specific frequency and volume), which is also an important element of drinking cultures.

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On the basis of previous findings we expect that in the Mediterranean traditionally wine-drinking countries there should be more daily light or moderate drinking integrated into everyday life; i.e. the frequency of drinking overall should be the highest there while the frequency of binge drinking and the quantities drunk per drinking day should be lowest. Similarly, we expect that binge drinking would be more common and the frequency of drinking lower in northern (former spirits-drinking) countries, while the traditional beer countries of Central Europe are expected to lie somewhere in between these two drinking cultures. On the basis of statistics, we know that the drinking of wine is more common in the traditionally wine-drinking countries, and that of beer in the traditional beer-drinking countries (World Drink Trends, 2005), but what is of special interest here is the variation between genders in the beverage preferences.

Our second interest lies in the gender differences observed in drinking habits and their comparison over countries and drinking cultures. It is of interest to see whether gender differences in drinking are found universally in the European context and whether the magnitude of the gender differences varies across countries and drinking measures. Have the typologies of European drinking cultures been implicitly based on the drinking of males, with a different patterning found among women, or are the cultural differences replicated in each gender?

The present analysis is part of the Gender, Alcohol and Culture: An International Study (GENACIS). This is an international collaborative study with multiple parts, one part of which is an EU-funded project focusing on comparisons between European Union member states or associated countries. The regions and countries to be included in the present analyses are the following: Former spirits-drinking countries in Northern Europe—Finland, Iceland, Norway, Sweden ('North'); Mediterranean, traditionally wine-drinking countries in the south of Europe—France, Italy, and Spain ('South'); and the larger group of European countries between these regions, which are mainly traditionally beer-drinking countries in Central or Western Europe—Austria, the Czech Republic, Germany, Hungary, The Netherlands, Switzerland, UK ('Central'). The age-range covered in the paper is 20–64 years, which is common for all countries included in the analysis (with the exception of Germany, where data are for respondents aged 20–59).

Previous European comparisons

Even though a number of investigations have compared drinking habits in some European countries, studies including a relatively wide range of European countries and also a good selection of measures of drinking are rare (Simpura and Karlsson, 2001). In a recent comparison of drinking patterns and problems in nine European countries that was based on existing surveys and emphasized women's drinking it was found that the rate of abstention was not particularly dependent on the drinking culture, whereas the frequency of drinking was the highest in the South and lowest in the North; among men the most popular beverage type was in accordance with the image we have of the respective drinking cultures (wine in Italy and France; beer and wine in Switzerland; beer in the rest of the countries), while among women there

were deviations from this pattern: beer in Finland, beer and wine in the Czech Republic, and wine in the rest of the countries (Bloomfield *et al.*, 1999; Ahlström *et al.*, 2001).

Two other comparisons have included countries from different regions in Europe. An analysis of the Eurobarometer data on the 12 EC countries in 1988, i.e. excluding the northern drinking culture, showed that a larger proportion of older people than young people consumed wine, and they did so more often than young people; a larger proportion of young than old drank beer. Men and women differed less in the frequency of drinking the beverage type that was new in the drinking culture than in the frequency of the traditional beverage type. (Hupkens *et al.*, 1993; Knibbe *et al.*, 1996).

The so-called European Comparative Alcohol Study (ECAS) survey included former spirits-drinking countries, traditional beer-drinking countries, and traditional wine-drinking countries, two countries from each category. The comparison was made difficult by the fact that the coverage rate (volume of drinking in the survey as percent of official statistics) varied to an unusual extent, between about one-third and an exceptionally high 96% in the UK. According to the results, regular drinking was most common in Southern Europe and least common in Northern Europe, while the quantity reported to be drunk per occasion was the highest in northern Europe and UK. Only in these latter three countries did the youngest age group drink the most—both per occasion and on an annual basis. However, the frequency of heavy drinking occasions was the highest among young people (18–29) in all countries (with the exception of Italy). (Hemström *et al.*, 2002; Leifman, 2002b).

In addition to these studies representing a wide selection of European countries, there are others with a more limited selection of countries: Hauge and Irgens-Jensen (1986, 1987) and Mäkelä *et al.* (1999, 2001) compared Nordic countries; Hanhinen (1995) compared Nordic countries, Italy, and Germany; Knibbe and Lemmens (1987) compared The Netherlands, Germany, and Switzerland; and in the comparisons reported by Fillmore *et al.* (1995, 1997) and Wilsnack *et al.* (2000), some European countries were included in a more global framework. The latter report was particularly about gender differences in drinking. Further, in the European School Survey on Alcohol and Other Drugs (ESPAD), pupils aged 15–16 have been compared (Hibell *et al.*, 2004).

The contribution of the current report as compared with previously published reports is that it includes a better selection of drinking measures and countries with national data; it also takes a closer look at gender differences; additionally the data come from recent surveys conducted in years 1997–2002 (Austrian data are from 1993), use comparable age groups, and have been analysed centrally by one team, which improves comparability.

DATA AND METHODS

Data

Table 1 describes the samples used in the comparison. The surveys were independently conducted in the different countries, but the data were centrally analysed. The data were collected in all countries in the last few years of the 1990s or early 2000s, with the exception of Austria, where

Table 1. Survey characteristics

Country	Year	Sampling Frame	Survey mode	N men 20–64 years	N women 20–64 years	Response rate, %	Coverage rate	
							A ^a	B ^a
Finland	2000	National	Face-to-face	832	829	79	54	42
Iceland	2001	National	Mixed (half/half postal and telephone survey)	970	1086	70/57	63	54
Norway	1999	National	Face-to-face	799	867	Quota	91	68
Sweden	2002	National	Telephone	2085	2138	68	78	59
Austria	1993	National	Face-to-face	2937	3083	Quota	61	57
Czech Republic	2002	National	Face to face	1172	1201	73 ^b	74	68
Germany	2000	National	Postal	3580	4327	51	57	53
Hungary	2001	National	Face-to-face (with self-administration for alcohol questions)	1055	1157	Quota	24	19
The Netherlands	1999	Regional (Limburg)	Postal	1723	1911	71	57	54
Switzerland	1997	National	Telephone	4516	5332	68	55	53
UK	2000	National	Face to Face and CAPI	775	811	Quota	63	53
France	1999	National	Telephone	4725	5899	71	51	47
Italy	2001/02	Regional (Tuscany)	Postal+ telephone	1311	1319	61	80	69
Spain	2003	Regional (Galicia, Valencia, Cantabria)	Face-to-face (sensitive questions self-administered)	688	689	Quota	43	40

^aA: estimated mean/recorded consumption; B: estimated mean/(recorded + estimated unrecorded consumption); Unrecorded: Leifman 2001; WHO Global Alcohol Database.

^bOnly refusals were counted as non-response.

the data were collected in 1993. Most samples were national, with the exceptions of The Netherlands (data from the Limburg region) and Italy (data from the Tuscany region). Survey modes and the sizes of the samples varied between the countries. Response rates in those countries for which the data exist suggest relatively high response rates in general (around 70%, with exceptions).

Coverage rates, which aim to measure the proportion of all alcohol actually consumed that is reported in surveys, were calculated in two ways. The first and simpler set of coverage rates (the mean of estimated volume of drinking divided by estimated sales per all inhabitants) showed wide variation (Table 1). We did not have the sales data for the regions in Italy and The Netherlands that were included in the surveys, and, therefore, the coverage rates for these countries should be regarded with caution. For example, the Italian (Tuscany) high coverage rate may be accounted for by the fact that the numerator applies to a central wine region with a higher than average consumption while the denominator applies to the whole of Italy. Additionally, some of the variance may be attributable to the proportion of alcohol drunk by age groups not covered by the study, particularly those aged 65 or more.

The second coverage rates are otherwise similar, but an estimate of unrecorded alcohol consumption (including, for example, imported, home-made and illicit alcohol) (Leifman, 2001; WHO Global Alcohol Database) has been added to the denominator. The estimates of unrecorded consumption have large margins of error as compared with sales statistics, and these errors differ in size and direction from one country to another. Hence, the second coverage rate is not necessarily always better than the first one, but taken together they give an improved picture of the coverage of the current data than either one alone. The variation in the coverage rates

decreased when estimates of unrecorded consumption were incorporated. The coverage rates adjusted for unrecorded consumption were generally ~50%. These levels are typical of alcohol surveys (Midanik, 1988). After taking estimates of unrecorded consumption into account, the coverage rate was much lower than average for Hungary (19%) and clearly greater than average for Italy (69%), the Czech Republic (68%), and Norway (68%).

The comparison of the two different coverage rates implies that in Norway and Sweden the high coverage rate is mostly accounted for by a higher than average level of unrecorded alcohol consumption. The differences in the coverage rates warn us against comparing the levels of consumption over countries on the basis of the survey estimates and also against uncritical comparison of other measures that are closely dependent on the volume of drinking.

Measurement

The main instruments used for measuring alcohol consumption varied from one country to another. Beverage-specific quantity-frequency questions were used in the Nordic countries (Finland, Iceland, Norway, and Sweden), the Czech Republic, Germany, and Switzerland, usually with an additional question on overall frequency. The time reference was implicitly or explicitly 12 months in Finland, Iceland, Sweden, and the Czech Republic. In Norway the respondent could choose between a 1 week, a 1 month, and a 12 month reference time, and in Germany and Switzerland a longer reference time (12 months) was only used if there was no consumption in a shorter reference time (7 days in Switzerland, 1 month in Germany). In Austria questions were asked on overall quantity and frequency in the preceding 7 days, on frequency of

drinking in the past 3 months, and beverage-specific quantity yesterday. The Hungarian survey used questions on 1 month beverage-specific frequency, beverage-specific quantity on last drinking occasion, and 12 month overall frequency. The Netherlands had frequency and quantity in weekdays and weekends. The UK used 12 month overall frequency, 7 day recall, and quantity on last drinking occasion. For France there were 12 month and 7 day beverage-specific frequency, beverage-specific quantity yesterday, and overall quantity last Saturday. For Italy, no frequency data were available, but an estimate of 12 month beverage-specific volume could be used. In Spain, beverage-specific usual quantity and generic frequency were used.

In different countries there was variation in the kind of question used to estimate proportion of abstainers. In some countries, the definition of abstinence was based on one question on overall frequency, whereas in others it is based on beverage-specific frequencies of drinking. In most cases, there was an explicit time reference to the previous 12 months, while in Switzerland this was implicit.

In most countries respondents were questioned on overall frequency of drinking. In France and Norway, the maximum of beverage-specific frequencies was used instead. In Sweden, there was only a very crude measurement of overall frequency, and, hence, we used the maximum of this overall frequency and beverage-specific frequencies. In The Netherlands, one question was on how many weekdays the respondent drinks on the average and another on how many weekend days. The overall frequency was derived as the sum of these. The most common reference period was 12 months or 'usually' (Finland, Iceland, Sweden, Czech Republic, The Netherlands, Switzerland, and UK). In Norway, the respondent could choose between a 1 month and a 12 month reference period. In Austria, Germany, France, and Hungary, the frequency came from a shorter time frame (7, 30, 7, and 30 days, respectively), but if this was zero, a longer time frame was used (3, 12, 12, and 12 months, respectively).

The Nordic countries, the Czech Republic, Germany, and Switzerland had beverage-specific questions on usual quantity of drinking. Additionally, Austria and France asked about quantities drunk yesterday; Hungary asked about beverage-specific quantities drunk on last drinking occasion. In the analyses, only those respondents have been included who reported some quantity for the beverage type being analysed. For example, in Austria and France all those who did not drink wine 'yesterday' were excluded from the analysis of wine drinking quantity. Hence, the measurements in the different countries should be roughly comparable even though there may be some bias in the comparison of Austria, France, and Hungary as compared with the other countries due, for example, to memory effects or a systematic difference in how the amounts on the previous drinking occasion are reported as compared with a more abstract 'typical' occasion.

The typical or usual quantity over beverage types drunk can be estimated in several ways. For Hungary (where beverage-specific quantities on the last drinking occasion were asked) and for Spain (where we had beverage-specific quantities on a 'usual drinking occasion'), the estimates were summed over beverage types to obtain an estimate of typical quantity. For the Netherlands, usual quantity was estimated as the weighted sum of reported typical quantities on weekdays and

weekends (with corresponding frequencies as weights). For France, estimates of quantity yesterday and on last Saturday were available, with the latter representing weekend drinking. We combined the estimated quantity yesterday, with weight 5/7, with the estimated quantity on last Saturday (weight 2/7) (if all quantities were 0 for a respondent, this respondent was dropped from the analysis on quantities in the French data as well as in data for other countries).

In the other countries, the estimate of usual quantity over beverage types was obtained by dividing volume (= sum of the products of beverage-specific quantities and frequencies) by estimated overall frequency of drinking (= the maximum of overall frequency and beverage-specific frequencies). These estimates are shown in the tables. Additionally, for the countries with beverage-specific data, we calculated volume divided by the sum of beverage-specific frequencies, which is the same as the weighted sum of beverage-specific quantities, with beverage-specific frequencies as the weight. Because estimated overall frequency was smaller than the sum of beverage-specific frequencies (either due to memory bias or because different beverages are drunk on the same drinking occasion), the second option generally resulted in estimates of overall quantity 30–40% smaller than the second, but both measures yielded rather similar results on differences between countries and genders.

Annual volume of drinking was based on beverage-specific usual quantity and usual frequency questions in the four Nordic countries, the Czech Republic, Germany, and Switzerland; in France, Hungary, the Netherlands, and Spain, a modification of the same principle was used (France: quantities based on yesterday's consumption and frequencies on previous 7 days; Hungary: quantities based on last occasion, frequency not beverage-specific; the Netherlands: generic quantity and generic frequency were separately asked for weekdays and weekends; Spain: beverage-specific usual quantity and overall frequency). In Italy, volume estimate was based on beverage-specific volume estimates (estimated by respondents). In Austria the estimate was based on consumption during the 7 days preceding the interview; in the UK volume was based either on the preceding 7 days or a quantity-frequency estimate (if the respondent was not a weekly drinker or if that estimate was 0).

Measurement of heavy episodic drinking: most often, the frequency of drinking a given number of drinks (e.g. five, six or eight drinks) was asked. In Norway, there were three beverage-specific questions, with the cut-point given in bottles and litres. In the tables, the maximum of these frequencies was used (which results in a conservative estimate). In Hungary, the frequency used was the sum of frequencies of drinking three to five drinks and the frequency of drinking six or more drinks (where one drink is ~20 g).

RESULTS

Abstainers

Differences between countries and genders. The proportion of current abstainers was relatively low throughout Europe among men (4–14%; an exception was Spain 27%; Table 2), while there was much more variation in the proportion among

Table 2. The proportion of current abstainers by age and sex (%)

				Men			Women		
	Men	Women	Ratio	20–34	35–49	50–64 ^a	20–34	35–49	50–64 ^a
Finland	7	8	1.1	4	7	10	6	5	12
Iceland	11	12	1.1	9	9	15	10	10	20
Norway	6	6	1.1	5	5	9	5	4	12
Sweden	8	15	1.8	6	8	10	13	14	17
Austria	—	—	—	7	5	5	17	12	19
Czech R.	9	20	2.2	9	7	12	14	19	28
Germany	4	6	1.4	5	4	5	6	4	8
Hungary	9	26	2.8	6	11	12	17	24	37
The Netherlands	14	31	2.2	17	10	17	32	25	39
Switzerland	9	22	2.4	10	8	9	23	20	22
UK	8	16	1.9	7	10	8	10	13	25
France	4	9	2.1	4	4	5	11	7	8
Italy	9	23	2.5	11	8	9	22	22	24
Spain	27	49	1.8	26	27	28	41	49	58

^aAge category for Germany is 50–59.

Table 3. Overall frequency of drinking (mean, times per year) by age and sex

				Men			Women			Ratio		
	Men	Women	Ratio	20–34	35–49	50–64 ^a	20–34	35–49	50–64 ^a	20–34	35–49	50–64 ^a
Finland	81	43	1.9	76	86	80	43	44	41	1.8	2.0	1.9
Iceland	50	28	1.8	48	54	48	27	31	26	1.8	1.7	1.8
Norway ^b	58	32	1.8	49	62	66	29	36	32	1.7	1.7	2.0
Sweden ^b	63	42	1.5	51	62	75	33	43	49	1.6	1.4	1.5
Austria	175	79	2.2	160	186	184	70	87	81	2.3	2.1	2.3
Czech Republic	113	45	2.5	93	126	123	40	55	39	2.3	2.3	3.1
Germany	144	80	1.8	120	154	167	65	89	89	1.8	1.7	1.9
Hungary	78	23	3.5	58	91	90	20	24	23	2.9	3.8	3.8
The Netherlands	129	74	1.7	96	134	154	47	88	86	2.1	1.5	1.8
Switzerland	151	77	2.0	113	156	192	56	80	100	2.0	1.9	1.9
UK	104	73	1.4	94	100	119	69	76	74	1.4	1.3	1.6
France ^b	177	94	1.9	125	178	243	66	96	129	1.9	1.9	1.9
Italy												
Spain	141	56	2.5	107	150	180	48	64	56	2.2	2.3	3.2

All respondents.

^aAge category for Germany is 50–59.

^bFrequency is the maximum of overall (when available) and beverage-specific frequencies.

women (6–31%; Spain 49%). The proportion of female abstainers was lower than average in Northern countries, but otherwise the regions did not systematically differ from each other. Similar results were found for life-time abstaining (not shown as a table). Most typically, the ratio of female to male abstainers was around two, with smaller ratios observed particularly in Northern Europe.

Effect of age. Among Northern and Eastern European men and women (Czech Republic and Hungary), and additionally in UK and Spain among women, the proportion of abstainers increased with increasing age, while in other countries there was no such relationship (Table 2). The male-female ratio of abstainers did not change systematically with age (not shown as a table).

Overall frequency of drinking

Differences between countries. Among both men and women the frequency of drinking was greatest in Central and Southern Europe (Austria, Germany, the Netherlands, Switzerland,

France, and Spain), where men reported drinking on average once in 2–3 days and women reported drinking once in 4–6 days. Drinking frequency was clearly lower in Northern Europe and Hungary (although in Hungary this could be a biased result due to the low coverage rate) (Table 3). The mean values are relatively strongly influenced by maximum values, which varied somewhat from one country to another, but the proportion of weekly drinkers, which does not share this problem, varied between countries and genders in a similar manner to the mean frequency (results not shown as tables). This increases our confidence in the results shown in Table 3.

Gender differences. Mean frequency of drinking was estimated to be 40–250% higher among men than among women. Gender ratio of drinking frequency was greater than average in the former Eastern bloc countries—the Czech Republic and Hungary—and lower than average in the Northern countries. The gender ratio did not change systematically with drinking frequency.

Table 4. Mean frequency of drinking (times per year) by beverage type

	Men			Women			Ratio		
	Beer	Wine	Spirits	Beer	Wine	Spirits	Beer	Wine	Spirits
Finland	65	16	18	21	16	7	3.1	1.0	2.8
Iceland	40	20	14	17	18	7	2.4	1.1	2.0
Norway	47	22	21	19	22	9	2.5	1.0	2.5
Sweden	26	27	18	8	32	8	3.4	0.9	2.2
Czech Republic	112	23	28	27	27	12	4.1	0.8	2.4
Germany	114	41	21	32	50	10	3.5	0.8	2.0
Switzerland	95	113	34	19	82	13	4.9	1.4	2.7
France	69	146	50	16	77	21	4.2	1.9	2.4

All respondents.

Effect of age. The connection between drinking frequency and age varied systematically between regions among both men and women (Table 3). In Northern countries frequency tended to be either relatively independent of age or increase moderately with age; also in the former Eastern bloc countries and in the UK and Austria, frequency increased moderately with age. In the rest of the countries, and in France in particular, a pattern of strongly increasing drinking frequency with age was most common. Thus, the differences between European regions were also most pronounced in the oldest age group. This may be a reflection of differences in the effect of ageing. In a drinking culture where drinking is more closely connected to celebrating or special occasions, the younger age groups' relative share of all drinking is likely to be higher, and where drinking is more closely integrated with meals, ageing is more likely to result in a higher frequency. An alternative, or at least complementary, interpretation would be a cohort effect: in southern Europe where per capita consumption has decreased, members of older cohorts partly represent the old drinking pattern with a higher frequency of consumption; correspondingly, in northern Europe where consumption has increased, the older cohorts drink less than the younger cohorts will at the same age.

Frequency of drinking by beverage type

Differences between countries. The frequency of drinking different beverage types could only be compared between some of the countries (Table 4). Among both men and women, France and Switzerland showed the highest, and Northern Europe together with the Czech Republic the lowest frequency of drinking wine, with Germany positioned closer to the Northern countries. Among men, the highest frequency of drinking beer was reported in Central Europe (Czech Republic, Germany, and Switzerland). Among women, Swedes reported a lower rate of drinking beer than women in other countries. The drinking of spirits was not most frequent in any one region of Europe, but the highest reported frequencies were found among men in France, Switzerland, the Czech Republic, and Norway.

When comparing the beverage-specific drinking frequencies between countries, as above, the results for men and women did not differ greatly from each other. In contrast, if beverage preferences within countries are examined, the picture was quite different for men and women. When looking at men, most countries were portrayed as beer-preferring countries, with France and Switzerland as wine-preferring

countries and Sweden in between. Among women, Finland was the sole country with a clear beer-preference, while in the other countries wine was either the clearly most preferred beverage type or, in Iceland and the Czech Republic, was preferred equally with beer.

Consequently, the gender difference in mean drinking frequency was by far the lowest for wine; France and Switzerland, where the frequency of drinking wine was the highest, were the only countries with a clear gender difference (Table 4). There was no systematic age pattern in the male–female ratio of drinking frequency either overall or for any specific beverage type (tables by age group not shown).

Effect of age. The phenomenon of increasing drinking frequency with age was in great part accounted for by the strong increase in frequency of wine drinking with age, although the frequency of drinking spirits generally increased slightly with age as well (data not shown).

Amounts drunk by beverage type

There was a large amount of variation between countries in terms of how quantities of alcohol consumed were measured (see the section on measurement). Only rarely was a direct question on a typical quantity used. We start by looking at those countries that had beverage-specific information and continue by examining what can be said about differences in quantities over beverage types.

Which beverages did men and women report drinking in the largest quantities (given that they drank the beverage at all)? Among men, in most cases beer was the beverage drunk in the largest quantities (Sweden, Austria, Czech Republic, Hungary, Germany, Switzerland; Table 5). French men drank wine in the largest quantities and Norwegian, Finnish, and Icelandic men spirits. Among women, the beverage that was reported to be drunk in largest quantities varied more but in half of the cases was wine (Sweden, Austria, Czech Republic, Germany, and France).

Gender differences in the amounts of beer and spirits drunk were clear. Thus, men reported drinking beer and spirits much more often than women (Table 4), and when they did, they reported drinking it in larger quantities (Table 5), although the gender difference for frequency was more considerable than for quantity. For wine the situation was different: men and women reported drinking wine equally often (Table 4) except in wine-drinking countries where men reported larger frequencies, and when wine was drunk, the difference between

Table 5. Mean quantities (grams of pure alcohol) per drinking day by beverage type

	Men			Women			Ratio		
	Beer	Wine	Spirits	Beer	Wine	Spirits	Beer	Wine	Spirits
Finland	39	26	49	21	21	24	1.8	1.3	2.0
Iceland	36	29	68	28	27	44	1.3	1.1	1.6
Norway	41	36	62	29	31	32	1.5	1.1	1.9
Sweden	61	35	45	29	35	27	2.1	1.0	1.7
Austria ^a	40	36	29	24	25	22	1.7	1.4	1.3
Czech Republic	57	49	44	26	41	29	2.2	1.2	1.5
Germany	37	33	15	19	37	12	2.0	0.9	1.3
Hungary ^b	31	19	22	15	10	14	2.1	1.8	1.6
The Netherlands									
Switzerland	25	20	17	19	16	15	1.4	1.2	1.1
UK									
France*	11	26	13	7	15	10	1.4	1.8	1.3
Spain									

Beverage specific drinkers only.

^aBased on quantity yesterday.

^bBased on beverage-specific quantities in the previous drinking occasion. In other countries based on the usual or typical quantities.

Table 6. Mean quantity^a (grams of pure alcohol) per drinking day by age and sex

	Male/female ratio	Men			Women			Ratio		
		20–34	35–49	50–64 ^b	20–34	35–49	50–64 ^b	20–34	35–49	50–64 ^b
Finland	1.7	72	54	52	41	34	28	1.7	1.6	1.8
Iceland	1.3	64	44	38	47	34	30	1.4	1.3	1.3
Norway	1.5	96	76	53	67	46	35	1.4	1.6	1.5
Sweden	1.5	107	70	55	64	52	44	1.7	1.4	1.3
Austria	1.6	45	44	40	29	29	25	1.6	1.5	1.6
Czech Republic ^c	1.5	85	80	68	56	52	43	1.5	1.6	1.6
Germany	1.2	48	42	43	36	35	36	1.3	1.2	1.2
Hungary ^d	2.4	39	35	30	15	16	14	2.7	2.2	2.2
The Netherlands ^a	1.6	47	39	36	29	24	22	1.6	1.6	1.6
Switzerland	1.7	37	33	30	21	19	18	1.8	1.7	1.6
UK	1.8	67	54	45	38	31	23	1.8	1.8	1.9
France ^d	1.9	31	33	37	18	18	18	1.8	1.8	2.0
Spain ^a	1.3	44	32	31	34	23	20	1.3	1.3	1.5

Drinkers only.

^aQuantities usually derived as volume divided by estimated overall frequency based on reported usual quantities. Spain: quantities summed over beverage types.

The Netherlands: quantities summed over weekend/weekday categories.

^bAge category for Germany is 50–59.

^cQuantity per drinking occasion rather than per day.

^dBased on quantity on a specific drinking occasion in the near past.

men and women in the quantities drunk was again very small, with some exceptions, among them France.

Effect of age. In cases where typical amounts decreased with age, this could be mainly attributed to decreasing amounts of beer drunk; for wine such a decrease in amount drunk was rather an exception to the rule; in France amounts even increased with age (data not shown).

Amounts drunk over beverage types

The estimates on quantity over beverage types were derived in such diverse ways in the different countries that we avoid direct comparison of countries but instead concentrate on comparing gender and age ratios.

Gender differences. Men reported drinking 20–140% larger quantities of alcohol than women did (Table 6). No clear

regional pattern was observed in the gender differences (Table 6); nor was a systematic change by age evident. (Table 6).

Effect of age. In general, the typical quantities drunk diminished with age; exceptions were women in Austria, Germany, and Hungary; and both men and women in France (Table 6). The countries with the greatest reduction with increasing age in reported quantities (among both men and women: Norway, Sweden, Iceland, UK, Finland) are those where drinking has traditionally been least integrated into daily life.

Gender and age differences in the volume of drinking

Owing to the differences in measurements and in coverage rates already noted in the methods section, we concentrate here on gender ratios and age patterns, which should be less affected by differences in coverage rates.

Gender differences. In most countries, men reported drinking from two to four times as much alcohol as did women (Table 7). With the crude assumption that women constitute 50% of the population, the male/female ratios of mean volume were transformed to the proportion of all alcohol consumed by women. There were no systematic differences between the different regions in this proportion; it varied between 12% in Hungary to one-third in Sweden and on average was around one-fourth. The male-to-female ratios were smaller when the data were restricted to drinkers only, particularly in countries with high rates of abstinence among women. Gender ratios did not change systematically with age. The gender ratios for various beverage types varied in a similar way to frequencies of drinking (results not shown as tables).

Effect of age. Different regions in Europe showed clearly different age patterns in volume of drinking (Table 7). A pattern of decreasing volume by age was most common among men and women in Northern countries. In the former Eastern bloc countries (Czech Republic and Hungary) the peak was observed in the middle-age group (35–49). In countries of

Central Europe, the most common pattern was a slight increase in volume with age. In Southern Europe the volume of drinking most often clearly increased with age, particularly among men.

Gender and age differences in heavy episodic drinking

Again, survey questions on the frequency of drinking a large amount of alcohol on one occasion varied from one country to another with regard to the cut-point used when defining 'large' (see Table 8 for the cut-points used) and in the way the question was formulated. Therefore, we again focus on within-country comparisons of gender and age groups.

Gender differences. Men reported heavy episodic drinking approximately three to six times more often than women did (Table 8). In Northern Europe the ratio was somewhat smaller than that in other countries, i.e. there was a smaller difference between men and women in drinking large amounts of alcohol. This was the case in all age groups. Throughout Europe, the smallest gender ratios were found in the young age groups,

Table 7. Male/female ratio of mean volume, and the median volume (in grams per day^a) of drinking among drinkers by age and sex

	Male/female ratio of mean volume			Median volume								
				Men			Women			Ratio		
	All respondents	Drinkers only	% Drunk by women	20–34	35–49	50–64 ^b	20–34	35–49	50–64 ^b	20–34	35–49	50–64 ^b
Finland	3.1	3.0	25	9.7	9.6	5.5	2.9	2.2	1.8	3.3	4.4	3.1
Iceland	2.2	2.2	31	6.2	7.4	5.3	2.6	2.5	2.1	2.4	3.0	2.5
Norway	2.7	2.7	27	8.2	7.4	5.0	3.0	2.5	1.6	2.7	2.9	3.1
Sweden	2.0	1.8	33	9.1	7.4	7.1	4.0	3.8	3.0	2.2	1.9	2.3
Austria	3.8	3.4	21	14.2	17.1	14.2	2.8	2.8	2.8	5.0	6.0	5.0
Czech Republic	3.8	3.3	21	16.0	22.9	14.7	2.9	3.8	2.7	5.5	6.0	5.4
Germany	2.2	2.2	31	11.3	12.5	14.5	3.7	4.8	4.6	3.0	2.6	3.2
Hungary	7.3	5.8	12	2.5	5.0	4.6	0.5	0.7	0.5	4.8	7.7	8.7
The Netherlands	2.8	2.2	26	10.7	11.4	12.9	3.2	4.3	5.0	3.3	2.7	2.6
Switzerland	2.9	2.5	25	9.8	11.6	13.9	3.8	4.2	5.6	2.6	2.8	2.5
UK	2.5	2.3	29	11.4	8.8	9.1	3.2	3.4	3.4	3.6	2.6	2.7
France	3.7	3.5	21	5.0	8.4	23.5	1.5	2.3	2.7	3.3	3.6	8.7
Italy	2.6	2.2	28	9.9	13.6	31.3	2.2	3.5	12.8	4.6	3.9	2.4
Spain	3.5	2.5	22	10.7	16.7	17.1	4.3	4.4	4.3	2.5	3.8	4.0

^aThe measure is annual volume of drinking, expressed in units of grams per day.

^bAge category for Germany is 50–59.

Table 8. Mean frequency (times per year) of episodic heavy drinking by age and sex

Country (cut-point X ^a)	Frequency of X ^b			Men			Women			Ratio		
	Men	Women	Ratio	20–34	35–49	50–64 ^b	20–34	35–49	50–64 ^b	20–34	35–49	50–64 ^b
Finland (6+; 60 g)	16.9	5.3	3.2	18.6	18.6	13.4	6.5	6.2	3.2	2.9	3.0	4.2
Iceland (5+; 65 g)	17.3	7.0	2.5	21.2	15.9	14.5	10.0	5.8	4.4	2.1	2.7	3.3
Norway (70/75/110 g ^c)	9.5	3.1	3.0	11.4	10.7	4.4	4.6	2.8	1.3	2.5	3.9	3.5
Sweden (5+; 70 g)	12.2	3.8	3.2	16.6	12.4	7.7	6.5	3.1	1.9	2.6	4.1	4.1
Czech Republic (5+; 90 g)	19.6	3.7	5.2	15.6	26.0	16.9	4.1	4.4	2.5	3.8	6.0	6.6
Hungary (3+; 60 g)	38.3	7.8	4.9	25.4	47.4	44.6	8.1	5.3	10.3	3.2	8.9	4.3
Germany (5+; 70 g)	23.5	4.7	5.0	23.4	24.3	22.5	5.0	4.6	4.5	4.7	5.3	5.0
The Netherlands (6+; 60 g)	27.0	5.6	4.8	26.0	25.9	29.4	5.6	6.6	4.0	4.6	3.9	7.3
Switzerland (8+; 80 g)	3.7	0.7	5.7	5.0	3.5	2.5	0.9	0.7	0.3	5.3	5.4	7.7

All respondents.

^aIn number of drinks and in approximate grams.

^bAge category for Germany is 50–59.

^cSeparately by beverage: beer, wine, and spirits. when these were asked separately. Standard drink size varies from one country to another.

i.e. in the older age groups the gender gap in heavy episodic drinking was even more pronounced than among younger age groups. The smallest difference between men's and women's heavy episodic drinking was, thus, found among the young in the Northern countries.

Effect of age. Among both men and women, there was a clear age gradient in Northern Europe in the frequency of heavy drinking such that the frequency decreased with increasing age (Table 8). This was also the case in Switzerland, but not in the rest of the countries (Czech Republic, Hungary, Germany, and the Netherlands), where no systematic age pattern in heavy episodic drinking was evident.

DISCUSSION

The results obtained for the different drinking measures will be summarized and discussed here, first, with regard to what they tell us about gender differences in Europe and, secondly, with regard to what they tell us about regional or country differences in drinking habits.

Gender differences in drinking in Europe

The three central elements of drinking cultures that were discussed in the introduction are also relevant with regard to gender differences in drinking: (i) involvement with alcohol (abstinence, frequency of drinking, and to some extent volume of drinking), (ii) drinking large amounts of alcohol on one occasion, and (iii) beverage choice. The questions we want to answer are: what kinds of gender differences are observed throughout Europe, and to what extent are there systematic differences between regions or countries in these gender differences? Further, to what extent do generations differ in this respect?

In all aspects measuring involvement with alcohol (abstinence, frequency, volume), in quantities drunk, and in heavy episodic drinking there were clear and large gender differences throughout Europe. This result is in accordance with what has been observed elsewhere (Fillmore *et al.*, 1997; Wilsnack *et al.*, 2000). A typical male/female ratio was 2–3, although much variation was observed by country and by measure of drinking; e.g. the gender ratio was generally somewhat higher for the frequency of drinking than it was for the quantity of drinking, and it was still higher for the frequency of heavy episodic drinking. The analyses (all of which were not presented in the article) showed that the selection of higher cut-points and, thus, of measures depicting more extreme drinking behaviour resulted in higher gender ratios. This finding has also been observed in previous research on European drinking behaviour (e.g. Knibbe and Bloomfield, 2001).

With regard to beverage types, there were pronounced gender differences for beer in particular and also for spirits, with men drinking these beverages more frequently, in larger quantities per drinking day, and in higher volumes. In contrast, women generally drank wine as often as men did, and also in equally large quantities. In men's drinking world, wine, as compared with beer, is a beverage that is drunk in smaller quantities per occasion, which probably often means that it is

drunk in different settings—wine probably often consumed with meals; in women's drinking world wine is drunk in equally large or even larger quantities per drinking day than beer, which suggests that a larger proportion of women's wine drinking takes place outside meals. Hupkens *et al.* (1993) found that men and women differed less in the frequency of drinking the beverage type that was new in the drinking culture than in the frequency of the traditional beverage type. The current results tend to point more towards the gender differences being smallest for wine, whether or not it is a new beverage in the drinking culture.

France was an exception with regard to wine. The frequency of drinking wine was the highest there, but it was also the beverage drunk in largest quantities per drinking day among French men (elsewhere it was drunk in clearly smaller quantities than beer), and the quantities of wine drunk per drinking day even increased with age (whereas elsewhere and also for other beverages in France the quantities decreased or remained at the same level). This could be at least partly due to a generational effect: new generations still appreciate wine but increasingly choose quality wines rather than table wines and drink smaller quantities than previous generations (Beck and Legleye, 2005). French men's wine-drinking frequency also exceeded that of women to a greater extent than elsewhere.

Men's and women's drinking worlds appeared to be closer to each other in Northern countries than elsewhere. This could be seen from results on abstaining, frequency of drinking overall, and frequency of heavy episodic drinking. In contrast, gender ratios for quantity per drinking day did not differ systematically among different regions in Europe.

Across all different aspects of drinking examined here, there were surprisingly little systematic differences between age groups in the gender ratios. No systematic age patterns in the gender ratios were observable for abstaining, frequency of drinking overall, beverage type, quantity per drinking occasion, or volume of drinking. But many aspects of drinking do vary between age groups, indicating either a change because of ageing or a different drinking pattern in the different cohorts. However, these changes—by age or cohort—seem to have been rather similar among men and women in relative terms. The only dimension of drinking where a clear age pattern of gender differences was observed was the frequency of heavy episodic drinking: young men and women seem to be more alike, or rather somewhat less different, in heavy episodic drinking than older age groups are.

Differences between countries in drinking habits

We expected to find that there would be more daily light drinking integrated into everyday life in Mediterranean countries (a higher frequency of drinking overall and of drinking wine and smaller quantities of alcohol drunk on one occasion), that alcohol in the Northern countries would be less integrated into everyday life, more reserved for special occasions and drunk, on average, in larger quantities on a drinking day, and that Central European countries would be somewhere in between. Were these expectations confirmed by our data, and was this the case for both men and women? Are younger generations more similar across countries than older generations? The aforementioned three aspects of drinking are of

interest here, too: involvement with alcohol, drinking large amounts of alcohol on a drinking day, and beverage choice.

The results on regional differences in the frequency of drinking confirmed expectations and previous results (Ahlström *et al.*, 2001; Hemström *et al.*, 2002): the highest frequency of drinking was reported in Southern and Central European countries, while the lowest frequency of drinking was reported in Northern countries. This result applied to all gender and age groups, although it was more pronounced among the older generations. Abstinence rates among men showed little variation, and among women rates were lower in the 'dry' Northern countries than in the 'wet' countries. Hence, in the European context, abstinence can no longer be viewed as a feature characterizing and distinguishing different drinking cultures, as it was in the past (Room and Mitchell, 1972).

The observed regional differences in beverage-specific frequencies of drinking were mostly in agreement with what was expected: drinking wine was most common in France and Switzerland and least common in Northern European countries and the Czech Republic; drinking beer was most common in Central Europe (Czech Republic, Germany, Switzerland) among men, and among women as well in some Nordic countries; no particular 'spirits-drinking zone' was visible. The overall picture was quite similar among men and women. However, when looking at beverage preferences within countries, the results for women and men diverged. When looking at men, most countries were portrayed as beer-preferring countries, with France and Switzerland as the most clearly wine-preferring countries. In contrast, when looking at women alone, Finland was the sole country with a clear beer-preference, while most other countries emerged as wine preferring cultures. Hence it seems that the distinction between wine/beer/spirits cultures have implicitly been based on male drinking. In future attempts to develop typologies of drinking cultures, it would be very important to pay more attention to gender differences.

The examination of age patterns offers the last piece of evidence on differences in drinking habits in European countries because, due to differences in measurement, we wanted to avoid comparing reported levels of heavy episodic drinking. The interpretation of these results on age patterns can be illuminated by taking two extreme, hypothetical cases of drinking cultures that are characterized by different use-values of alcohol (see Mäkelä, 1983). In the first hypothetical drinking culture, the only function that drinking has is its use as an intoxicant, i.e. it is only drunk for its mood-changing effects, with nearly all drinking taking place in connection with weekends and special events, and in relatively large amounts ('mood-changing model'). In this case, one would expect strong age patterns in drinking, with more abstainers in older age groups, particularly among women. This is because the only culturally available alternative to drinking (to intoxication) would be abstinence, and in the older generations, particularly among women, attitudes towards intoxication can be assumed to be stricter and the interest in this kind of drinking behaviour lower. Volume of drinking, frequency of drinking overall, and of heavy episodic drinking would be expected to decrease with age, because drinking at parties and celebrations can be assumed to be more important for younger than for older people. In the other hypothetical

drinking culture the sole use-value of alcohol would be that of a nutrient, with alcohol (mainly wine) only drunk in connection with meals for its nutritional and gastronomic properties ('nutritional model'). In this case the age pattern would be very different: when people get married, have children and start spending more time at home and around the kitchen table, alcohol's function as a mealtime beverage becomes more important. Hence, in this case there might not be very strong age patterns in abstinence, but frequency, and to some extent volume of drinking, would increase with age. In practice these two models exist simultaneously in all countries but to differing extents.

The results indicated that in Northern Europe and in the UK, and to some extent also in the former Eastern bloc countries, there was more youthful drinking that points at drinking being a less integrated part of the culture at large: the proportion of abstainers was lower in the younger age groups, and the frequency of drinking did not increase considerably with age; volume decreased with age in Northern Europe and in the UK and showed an inverse U-shape in the former Eastern bloc countries. In Northern Europe, the frequency of heavy episodic drinking decreased with age, and the quantities reported to be drunk per drinking day decreased by age most in Northern Europe and the UK. For Southern Europe (which was in some cases represented by France only) the results were rather the opposite and for central European countries somewhere in between.

Hence, none of the countries examined here were such extreme cases as depicted by our 'mood-changing model' and 'nutritional model', but all countries were mixtures of these two patterns. However, there were more traces of the mood-changing model in Northern European countries and the UK, and to some extent also in former Eastern bloc countries, while the Mediterranean countries in particular, and to some extent the central European countries, were somewhat closer to the nutritional model. This conclusion is not based solely on the characteristics of the male drinking culture, as the same regional differences were visible among women as well. Similarly, despite the fact that per capita consumption and beverage preferences have converged in Europe, the regional differences in drinking patterns were still visible even in the young age groups. Owing to the scarcity of research in different regions of Europe on drinking patterns in previous decades, very little can be said about whether drinking patterns are converging. The only conclusions that could be drawn in a review of the subject were that there has been a slow convergence in the abstinence rates and in rates of daily drinking, owing to a decrease in the former in Nordic countries and a decrease in the latter in 'wine countries' (Simpura and Karlsson, 2001).

It should be noticed that the connection between the 'models' and the expected age patterns in drinking is based on the assumption that the effect of ageing is central in the differences between age groups. In practice, cohort effects also are important, as the convergence of per capita consumption between Southern and Northern Europe has resulted in a situation where current younger age groups are likely to have adopted new, drier drinking habits in Mediterranean countries and new, wetter drinking habits in northern countries. It was not possible to disentangle the effect of ageing from the cohort effect with cross-sectional data, and it remains

a challenge for future studies to address the dynamics between age, cohort, and period in transforming European drinking cultures.

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