

Differences and similarities between European drivers in opinions about traffic measures

A cross-national study of the results of the SARTRE-survey

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1. Introduction

As the result of a collaborative effort of 15 research institutes, led by the French Institut National de Recherche sur les Transports et leur Sécurité (INRETS), a representative survey of drivers was conducted in 15 European countries. This project was named 'SARTRE' which stands for 'Social Attitudes to Road Traffic Risk in Europe'. This survey covers a wide spectrum of biographical driver data as well as opinions and attitudes to practically all subjects of road safety. More specifically, the survey focuses on drivers road behaviour, attitudes and opinions concerning drinking and driving, speeding and seat belt use, opinions on accident causation and on traffic measures, experiences with police enforcement, perceptions of behaviours of other drivers, car preferences, experiences with driving in foreign countries, and risk perception.

It has been carried out by national poll institutes, partly by means of the random-route method and partly by the quota method. Altogether more than 17000 drivers participated in the survey. Information on countries, sample sizes and timing of the surveys is given in Appendix 1.

An important aim of the SARTRE survey is to assist European policy makers in their decision making about traffic legislation, measures and campaigns. The planning of an unified traffic policy and the attempt to harmonize traffic measures can benefit substantially from knowledge about cross-national differences and similarities in behaviours, attitudes and experiences concerning traffic. Therefore we need to understand how car drivers from different European countries compare with each other on these matters.

In this paper the focus is on the following research questions:

- (a) Are there important national differences with regard to opinions, attitudes and behaviours concerning traffic?
- (b) How can we describe or interpret the dimensions along which European car drivers differ?
- (c) Which groupings of European countries are similar or dissimilar on a particular dimension?

In this paper we limit ourselves to study the above mentioned questions for two specific topics, 1. opinions about traffic measures in general and 2. opinions and behaviours concerning speed and speeding. The survey data on these two broad issues, traffic measures and speed and speeding, were analyzed to answer the research questions a, b and c.

2. Method

To study the European differences on matters of traffic measures and of speed and speeding, a non-linear canonical correlation analysis was used.

Canonical correlation analysis.

Canonical correlation analysis (hereafter abbreviated as CCA) can be applied when we are dealing with two sets of variables. Our research problem also involves two sets of variables. We want to know how European car drivers differ from each other and are similar to each other on a number of questions

concerning traffic. Thus the research problem may be framed as the study of the relationships between one set of variables indicating different nationalities and another set of variables indicating attitudes, opinions, and behaviours concerning traffic.

In CCA, a weighted sum of variables is constructed for each set of variables in such a way that these weighted sums have a maximum correlation. This maximum correlation is called the *canonical correlation* and the corresponding weighted sums are called the *canonical variates*. The variables in the analyses have correlations with the canonical variates, called 'canonical loadings'. We may consider the canonical variates as dimensions underlying the differences between countries; the canonical loadings can be seen as coordinates or positions on these dimensions. In our interpretation of the results we rely on visual plots of these canonical loadings.

If we are not satisfied with a single pair of canonical variates, a second pair can be computed which has a maximal correlation after the effect of the first pair has been removed. This means that the second pair of variates is perpendicular to the first pair. The number of pairs is also called the number of *dimensions* because it gives the dimensionality of the canonical solution.

The software program: CANALS

Many scales in the SARTRE survey are not metric, or there may be some doubt as to their metric qualities. Therefore, in the case of the SARTRE data, an analysis program should be used which both (1) can handle variables of a non-metric nature and (2) can perform canonical correlation analysis. The program CANALS fulfils these two criteria. CANALS (see Gifi, 1990; van der Burg, 1985; van der Burg and de Leeuw, 1983, SPSS, 1990)) can perform a non-linear canonical correlation analysis on data of different measurement levels (nominal, ordinal, numerical).

Design and interpretation of the analyses

Some remarks on our use of non-linear CCA are in order.

First, in all analyses one set of variables consisted of variables indicating nationalities and a second set of variables consisted of a selected subset of questions concerning traffic. For each country, a dummy variable was created by coding all respondents from that country as '1' and all other respondents as '2'.

Second, in all analyses a three-dimensional solution was specified.

Third, the results of the analyses are based on a re-scaling of the original data. We specified a nominal measurement level for nearly all the survey questions. On the basis of this specification, the analysis program seeks to re-scale the original variable values so as to optimize the relationship between the two sets of variables. More relevant to our research questions, it may be stated that the re-scaling ensures an optimal discrimination between countries along the dimensions.

A last point we'd like to make concerns the interpretation of the results. As we have explained before, the variables in the analyses have correlations with the canonical variates, called 'canonical loadings'. We may consider these canonical variates as 'underlying dimensions' and the canonical loadings as

coordinates or positions on these dimensions.

3. Results

Paragraph 3.1. presents the main findings concerning the international differences on matters of traffic measures. The main results of the analysis on the questions concerning speed and speeding are described in paragraph 3.2. A more detailed, technical coverage of the results, together with additional analyses, is presented in Goldenbeld (1994).

3.1. International differences in opinions about traffic measures

In the analysis the first set of variables consisted of 15 dummy-variables representing 14 countries: Germany/east, Germany/west, Austria, Belgium, Denmark, France, United Kingdom, Ireland, Italy, Netherlands, Portugal, Sweden, Switzerland, Czechoslovakia, Hungary. The second set of variables consisted of a selection of 34 questions from the SARTRE-survey which all concern opinions about traffic measures. These questions are described in Appendix 2.

The canonical correlations for each of the three dimensions were respectively: 0.72, 0.70, 0.59.

A plot of the main opposing countries and questions along the first (horizontal) dimension is given in Appendix 3. For the sake of clarity we have left out a lot of information concerning the positions of countries and questions that do not add anything to our understanding of the first dimension. All the other plots in this paper are also 'cleaned' plots with only the most essential information given.

Let's turn our attention now to the interpretation of the first dimension. The first (horizontal) dimension seems to tap into the degree of strictness in matters of traffic safety. On one side of this dimension we find a cluster of countries (Sweden and Denmark) that prefers lower maximum speeds on motorways, advocates day-time running lights, and that is strict in matters of drinking and driving and seat belt wearing. Located on the other side of the dimension is a group of countries (e.g. Italy, Belgium, France, Portugal) that, relatively speaking, has a less strict attitude towards seat belt wearing and drinking and driving and that permits higher speeds on motorways and does not prefer the obligation to run lights in day-time. The figures in Table 3.1 indicate the extent of these differences.

In Appendix 4 a plot of the main countries and questions along the second (vertical) dimension is presented. The second dimension seems partly to correspond with the degree of economic affluence of countries. On the upper side of this dimension we find economically less well-off countries like Hungary, Czechoslovakia, and Ireland. On the lower side of the dimension the economically affluent countries Austria, Switzerland and Germany/west can be found.

The affluent countries are strong advocates for low speed limits in towns and in residential areas and, not surprisingly, these countries do not see a particular need for

Table 3.1. *Percentages of respondents agreeing with different measures (Source: Cauzard, 1992).*

	Q38j Obligation running light daytime	Q3c Self-decide drink/drive (Strongly) agree	Q20a If careful belts not necessary Agree	Q13d Maximum speed limit on motorways in km/h 110 140-150	
Sweden	In favour 91%	2%	4%	47%	2%
Denmark	86%	2%	14%	17%	4%
France	14%	30%	21%	6%	31%
Italy	13%	27%	31%	7%	30%
Portugal	23%	27%	27%	4%	23%

improving the standards of their roads. The less affluent countries, on the other hand, do not care very much about a low speed limit in residential areas and are much more concerned with the improvement of the conditions of their roads. The figures in Table 3.2 indicate the magnitude of these differences.

Table 3.2. *Agreement with improvement of roads and minimum age 17 for driving, and preferences for speed limits in residential areas (Source: Cauzard, 1992).*

	Q2e Improve standards roads (Strongly) in favour	Q38a Minimum age 17 for driving In favour	Q13c Maximum speed limit in resid. areas 30-40 50-60	
Germany/west	66%	38%	73%	19%
Austria	64%	24%	56%	34%
Switzerland	50%	20%	58%	34%
United Kingdom	93%	86%	26%	69%
Czechoslovakia	97%	56%	47%	43%
Hungary	97%	80%	2%	85%

It should be noted, however, that the association between economic affluence and the positioning on the second dimension is not perfect. For instance, despite its considerable economic prosperity United Kingdom is located nearer to Ireland on the second dimension than to Austria or Germany/west.

Appendix 5 presents a plot of countries and questions along the third dimension. The third dimension involves a specific contrast between the United Kingdom and Ireland on the one hand, and Czechoslovakia and Germany/east

on the other hand. We see in Table 3.3 that the contrast between Czechoslovakia and United Kingdom mainly involves opinions on the legal alcohol limit, with Czechoslovakia having a much larger proportion of respondents who prefer a total prohibition of drinking and driving. The contrast between Germany/east and United Kingdom not only involves differences in opinion on the legal alcohol limit (with Germany/east having a larger proportion who prefer a total prohibition), but also differences in preferred speeds on motorways and in residential areas. The citizens of Germany/east prefer lower speeds on these types of roads than the citizens of the United Kingdom.

Table 3.3. *Preferences for speed limits and for legal alcohol limit (Source: Cauzard, 1992).*

	Q13a Maximum speed in towns (in km/h)		Q13b Maximum speed in res. areas			Q13c Maximum speed on main roads (in km/h)	
	50	60	30	40-50	60	80-90	100-110
Czecho-Sl.	26%	55%	15%	55%	21%	44%	45%
Hungary	25%	62%	0%	25%	62%	42%	47%
Germany/east	67%	17%	59%	33%	1%	57%	38%
Ireland	55%	10%	15%	68%	10%	47%	37%
United Kingdom	65%	16%	26%	55%	14%	31%	36%

	Q13d Maximum speed on motorways (in km/h)		Q29 Opinion legal alc. limit	
	100-110	140-160	Total bar	Higher limit
Czecho-Sl.	20%	19%	72%	22%
Hungary	8%	22%	75%	17%
Germany/east	15%	20%	71%	5%
Ireland	52%	4%	38%	5%
United Kingdom	49%	10%	52%	2%

3.2. International differences regarding speed and speeding

In the analysis of the speed-related questions, the first set of variables comprised 15 dummy-variables representing 14 countries with Spain excluded (For Germany two dummy-variables were created, one representing Germany/west and one representing Germany/east). A selection of 28 questions was chosen for the second set of variables. These questions are reported in

Appendix 6.

The canonical correlations for the first, second and third dimension were respectively .68 .60 .57.

In Appendix 7 main countries and questions along the first (horizontal) dimension are plotted. As can be seen in the figure, the first dimension mainly concerns the differences in preference for a certain speed limit on motorways. Specifically, Sweden and Denmark prefer a lower limit on motorways than Germany/west, Italy and Austria. Also involved in this dimension are the questions concerning violations of limits by other drivers and warning other drivers of a speed control. More often than the German, Italian and Austrian drivers, the Danish and Swedish drivers report that they see violations of the speed limit and that they never warn others of speed controls (see Table 3.4).

Table 3.4. *Preferences for speed limits, speed violations by others and warning of others (Source: Cauzard, 1992).*

	Q13b Maximum speed in res. areas (in km/h)			Q13d Maximum speed on motorways (in km/h)		Q9 How often do others exceed limit?		
	30-40	50	60	110	140	some- times	often	very often
Sweden	64%	33%	0%	47%	1%	8%	41%	47%
Denmark	44%	44%	9%	17%	3%	7%	27%	57%
Italy	27%	38%	19%	7%	18%	47%	22%	21%
Germany/west	74%	17%	2%	1%	11%	23%	39%	21%
Germany/east	78%	13%	1%	6%	9%	9%	42%	41%
Hungary	2%	23%	62%	3%	15%	8%	48%	38%
Portugal	33%	33%	26%	4%	17%	27%	36%	29%

	Q17i Warn others speed trap?	
	Never	Often
Sweden	59%	3%
Denmark	68%	3%
Italy	48%	10%
Germany/west	24%	11%
Germany/east	46%	4%
Hungary	15%	14%
Portugal	38%	9%

A plot of the main countries and questions along the second (vertical) dimension is presented in Appendix 8. The second dimension distinguishes

between countries with different preferences about the speed limit in residential areas and in towns. Germany/east, Germany/west and the Netherlands tend to prefer a lower limit for these areas than Hungary, Portugal and France (see Table 3.5.).

The questions about speed limits differ in that some questions ask after a preferred speed limit (questions 13a, 13b, 13c, 13d), whereas other questions ask after an opinion about a harmonized limit (questions 38d and 38e). An inspection of the canonical loadings (presented in Goldenbeld (1994) shows that the questions on the harmonization of speeds (Q38d and Q38e) have only moderate canonical loadings for the first two dimensions, whereas the

Table 3.5. *Preferences for speed limits (Source: Cauzard, 1992).*

	Q13a		Q13b	
	Maximum speed limit in towns (in km/h)		Maximum speed limit in residential areas (in km/h)	
	30-40	60	30	60
Germany/west	22%	12%	49%	2%
Germany/east	13%	17%	59%	1%
Netherlands	24%	8%	58%	0%
Hungary	2%	62%	0%	62%
Portugal	27%	31%	7%	26%
France	11%	40%	12%	21%

questions on the preferred speed limits (Q13a, Q13b, Q13d) have moderately high or very high canonical loadings for these dimensions. In plain language, this means that European drivers differ more in their opinions about the most preferred speed limit than in their opinions about the harmonized speed limits.

As was found in the first analysis on opinions about traffic measures, the third dimension is dominated by the specific opposition between Czechoslovakia and United Kingdom, with the latter preferring lower speed limits on main roads and in towns and attaching more importance to the fastness of a car as an accident cause than the former (see Table 3.6).

Table 3.6. *Preferences for speed limits, and opinions about accident causation and restriction on speed vehicles (Source: Cauzard, 1992)*

	Q13a			Q13c			
	Maximum speed in towns? (in km/h)			Maximum speed on main roads? (in km/h)			
	40	50	60	60-70	80	90	100-110
Spain	19%	24%	36%	2%	8%	16%	53%
Czecho-Sl.-	5%	26%	55%	3%	14%	30%	45%
Hungary	2%	25%	62%	2%	21%	21%	46%
U.K.	0%	65%	16%	25%	31%	0%	36%
Ireland	23%	55%	10%	12%	24%	23%	37%
Germany/east	8%	67%	17%	3%	28%	29%	37%
Germany/west	14%	61%	12%	7%	16%	10%	49%

	Q38f	Q6e		Q4f	
	Manufacturers should restrict speed vehicles?	Cause accident vehicle too fast?		Cause accident driving too slow?	
	In favour	seldom/ sometimes	very often	seldom/ sometimes	very often
Spain	48%	49%	15%	61%	11%
Czecho-Sl.	32%	63%	9%	76%	3%
Hungary	20%	41%	21%	76%	3%
U.K.	55%	35%	29%	61%	12%
Ireland	62%	26%	34%	64%	11%
Germany/east	42%	30%	30%	76%	5%
Germany/west	32%	31%	28%	64%	8%

4. Summary and conclusions

In this paragraph we summarize the main findings, present the general conclusions and discuss possible implications for European traffic policy.

The analysis of the opinions on traffic measures indicates the following major dimensions along which countries can be ordered:

1. The first dimension involves several opinions on different traffic issues and can be conceptualized as the degree of strictness in matters of traffic safety. The more 'strict' countries (Sweden, Denmark) prefer relatively low speeds on motorways and an obligation to run lights during daytime, they consider belt use absolutely necessary and they tend to reject the individual freedom to drink and drive. For the relatively speaking less 'strict' countries (Italy, Portugal, France), the opinions on these issues tend to be less outspoken or to be in the opposite direction.
2. The second dimension is partly but not perfectly correlated with the economic prosperity of the countries: on one side of this dimension are relatively poor

countries (Hungary, Czechoslovakia, Ireland) who are very much in favour of an improvement of the quality of their roads, whereas the richer countries (Germany/west, Switzerland, Austria) on the opposite side of the dimension are more concerned with restricting speed in residential areas and in towns.

3. The third dimension orders countries according to preferences for speed limits in towns and on main roads with English and Irish drivers preferring lower limits on these types of roads than Hungarian or Czechoslovakian drivers.

The analysis on the questions about speed and speeding indicates three dimensions of international differentiation. On all three dimensions differences of opinion on speed limits are involved.

1. The first dimension involves an ordering of countries on the basis of their preferred speed limit on motorways. At one extreme of this dimension we find Swedish and Danish drivers who prefer relatively low speed limits on motorways in contrast to German, Italian and Austrian drivers.

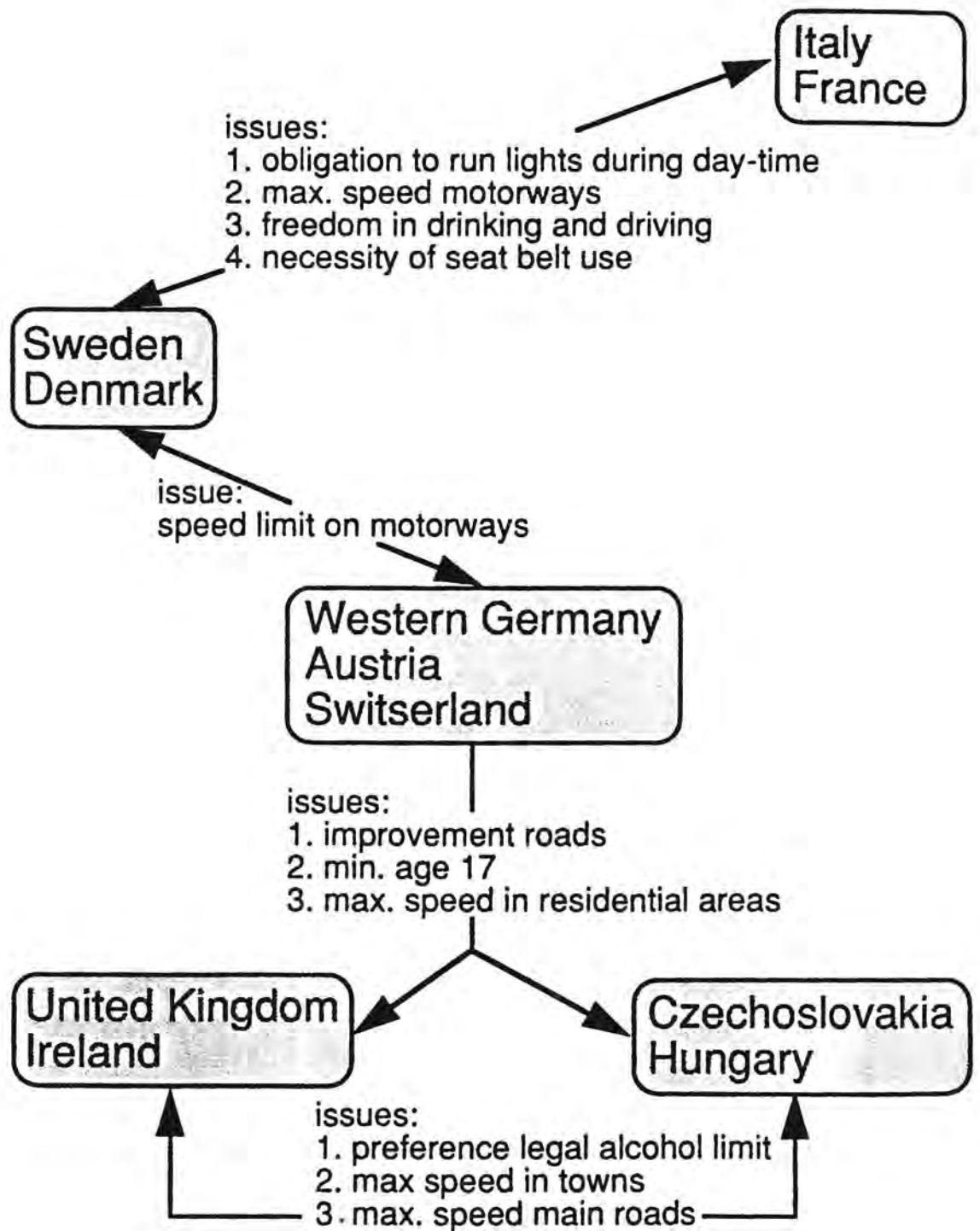
2. The second dimension differentiates between countries in terms of their preferred speed limits in residential areas and in towns. At one extreme of this dimension are German and Dutch drivers who prefer low speed limits in towns and in residential areas; on the other extreme we find Hungarian, French and Portuguese drivers who tend to prefer somewhat higher limits in these areas.

3. The third dimension involves differences of opinion on the maximum speed limit on main roads and on the causes of accidents. The countries that tend to attach little importance to speed as an accident cause (Hungary, Czechoslovakia), prefer a higher speed limit on the main roads.

Instead of interpreting our results in terms of dimensions, we may think of them as indicating a network of opposing clusters of countries where specific issues give rise to specific oppositions between groupings of countries (see Figure 4.1). Seen in this way the results have revealed the following opposite clusters of countries¹:

- Sweden and Denmark vs. Italy and France (topics of difference: obligation run lights day-time, speed limit on motorways, attitude seat belt use, freedom in drinking and driving)
- Sweden and Denmark vs. Germany/west, Austria, Switzerland and Italy (topic of difference: speed limit on motorways)
- Hungary, Czechoslovakia, United Kingdom, Ireland vs. Germany/west, Austria and Switzerland (topic of difference: need for improvement of roads, minimum age 17 for driving speed limit in residential areas)
- Hungary and Czechoslovakia vs. United Kingdom and Ireland (topics of difference: preferred alcohol limit, speed limits in towns and on main roads)

¹ We only mention here the most extreme countries in the clusters. The terms 'opposing' and 'opposite' refer to opposing positions on a statistical dimension. These terms are in no way meant to imply that these countries intentionally oppose each other's traffic policy.

Figure 4.1. *The network of international differences.*

It may be asked how 'robust' this structure of findings is. Some survey questions posed difficulties for a complete or a valid comparison of the results. The question about the speed limits in residential areas (Q3b) posed translation problems with respect to the concept of 'residential areas'. Furthermore, this question was not answered by the Spanish respondents. The question about the preferred legal alcohol limit (Q29) provided non-comparable answer categories (e.g. the category 'higher limit') because of differences in existing legislation. The question asking after the opinion about a lower limit for inexperienced drivers (Q30c) was not answered by Czechoslovakian drivers. However, the contrasting clusters of countries in the presented network were found in several analyses in which the questions 13b, 30c or 29 were either included or excluded. Therefore, despite the difficulties with these questions, we believe that the network of international differences as presented in Figure 5.1. is essentially valid.

The more general conclusions about international differences in opinions, attitudes and behaviours concerning traffic and traffic regulations are the following:

1. When only speed related opinions, attitudes and behaviours are taken into account, international differentiation is to a large extent dominated by differences of opinion on the preferred speed limits on different types of roads. The questions about speeding behaviour, causes for accident, technical devices for restricting speed, experiences with speed enforcement, engine size and about yearly amount of kilometres driven were not important in differentiating between the European countries on these two dimensions.
2. When several measures are taken into account, differences of opinion on preferred speed limits are still very important in characterizing international differentiation.
3. The most general conceptual dimension of international differentiation includes opinions on several traffic measures (speeding limit on motorways, seat belt use, drinking and driving, the obligation to run lights during day-time). This means that a more general attitude towards traffic safety can be postulated rather than several, independent attitudes towards specific issues.
4. Differences of opinion about the speed limit on motorways, the speed limit in towns and in residential areas, and about the speed limit on main roads, are reflected in different dimensions of the analysis. This means that general tendency to prefer either high limits or low limits, irrespective of the type of road, is not typical for most of the European countries. In other words, the international differences of opinion about the speed limits change with the type of road that is being considered.
5. The questions about the harmonization of speed limits throughout Europe have lower canonical loadings for each dimension than the questions about the preferred speed limits, indicating that there is more general agreement on 'harmonized' limits than on 'the most subjectively preferred' limits.
6. There is a close correspondence between official traffic legislation and public opinion. E.g. the citizens of countries that have a legal obligation to run light during daytime or that legally require a minimum age of 17 year for driving a car, tend to favor these regulations, whereas citizens of other countries who lack these regulations tend to disapprove of these regulations. Likewise, the

differences of opinion about speed limits on different types of roads, are associated with existing differences in speed limits.

What are the possible implications of these results for the development of an European traffic policy? On the one hand, some differences between countries seem to reflect a more general attitude towards traffic safety. This attitude may include deep-seated beliefs about the role of state interference and of individual responsibility in the traffic area. It may be difficult to find a middle ground between countries who differ in overall traffic philosophy as seems to be the case in the division between Scandinavian and Mediterranean countries. In this case, it may be difficult to find a compromise between these countries since their fundamental assumptions about the responsibility and the duty of the state and the individual citizen for traffic safety may differ far too much. It may be worthwhile for European countries to have a more general discussion about these assumptions before embarking upon the negotiation of specific issues or measures.

On the other hand, differences between countries may reflect very concrete, specific interests without too much ideological subcurrents. Such a concrete, business-like interest seems to be the concern of Hungary and Czechoslovakia for road improvement or the concern of Germany/west for restricted speeds in residential areas. These specific, concrete interests may prove to be a good starting point for initial negotiations.

Finally, it may be asked how the close correspondence between official legislation and public attitudes and opinions has come about. Did public opinion or social climate lead to the political acceptance and implementation of specific measures? Or did public experience with the law and its results lead to endorsement of its underlying message. Following the lead of several authors (e.g. Andenaes, 1988; Snortum, 1988) we surmise that both these processes have been at play. In the words of Snortum: 'law is both a cause and an effect of 'moral climate'' (Snortum 1988; p. 206). Generally, there will be a base of social support for a measure before its actual enactment; after the implementation of the measure, the social support for it may grow even stronger as the result of experiences with its enforcement.

The law may even create a new social norm. The creation of such a new norm is certainly not an automatic process, but depends in part on the degree to which the law is perceived as reasonable, is promulgated by legitimate authority and is impartially administered (Andenaes, 1977).

For some measures, e.g. the obligation to run light during daytime or a common limit of 30 km/h in residential areas, the base of support is strong in some specific countries, but very weak in many others. Obviously, an initial broad base of support for a particular measure would have to exist before a discussion about its acceptance and implementation can be useful. However, a broad base of support does not necessarily mean majority support. It is conceivable that moderate or low support for a certain measure can be enhanced by persuasive communication or by experiences with or feedback about the positive results as a consequence of the new measure.

The other side of the medaillon is that measures for which a majority support exists, may loose their appeal if they are not strictly and consistently enforced. If road users observe that many other road users violate a certain regulation without any consequences as a result of this violation, they may come to doubt

the necessity or the reasonableness of the new regulation. As one researcher puts it: 'Normative behaviour becomes attractive, if road users perceive that most road users comply to it, and that those who do not comply get confronted with the negative consequences.' (Rothengatter, 1991; p. 93.)

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Appendices

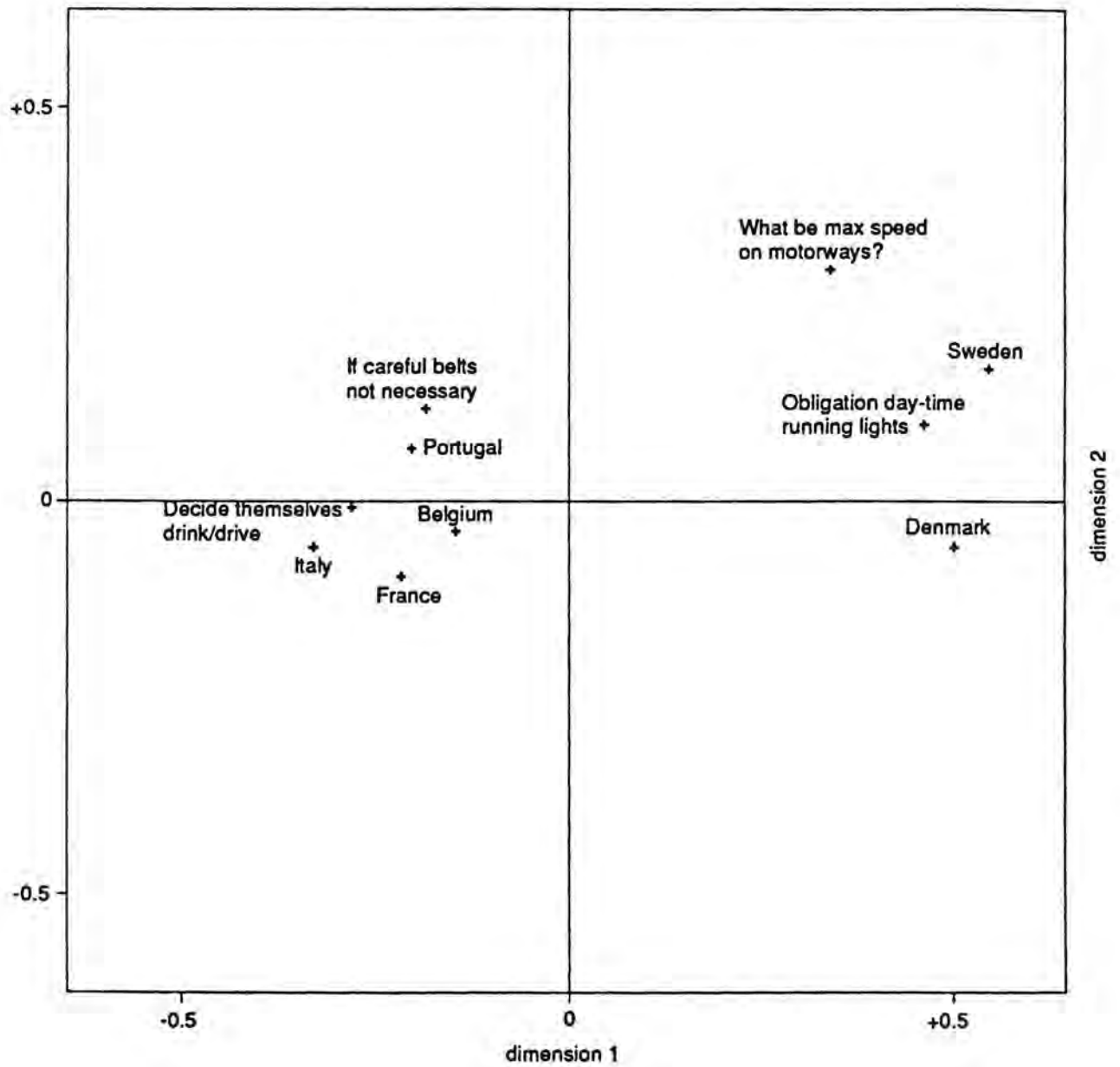
Appendix 1. *An overview of countries, research institutes, sample sizes and surveys dates involved in the SARTRE-project.(Source: INRETS, 1993).*

<i>Country</i>	<i>Research Institute</i>	<i>Survey starting</i>	<i>Survey ending</i>	<i>Sample size</i>
1 Germany/east	BAST	12-06-91	1-03-92	1067
Germany/west	BAST	12-06-91	1-03-92	1021
2 Austria	KfV	10-31-91	11-20-91	1086
3 Belgium	IBSR	11-02-91	11-28-91	1104
4 Denmark	RfT	3-10-92	4-03-92	1260
5 Spain	Udv-Fdp	10-27-91	12-30-91	1207
6 France	INRETS	11-05-91	11-28-91	1008
7 United Kingdom	TRL	11-18-91	12-06-91	1449
8 Ireland	ERU	1-06-92	2-21-92	835
9 Italy	CENSIS	2-05-92	2-25-92	1000
10 Netherlands	SWOV	10-01-91	11-09-91	1009
11 Portugal	PRP	2-10-92	3-25-92	1048
12 Sweden	VTI	11-15-91	2-13-92	1266
13 Switzerland	BPA/BFU	11-01-91	1-01-92	1000
14 Hungary	KTI	9-15-92	11-05-92	999
15 Czechoslovakia	USMD	9-25-91	10-30-91	1071
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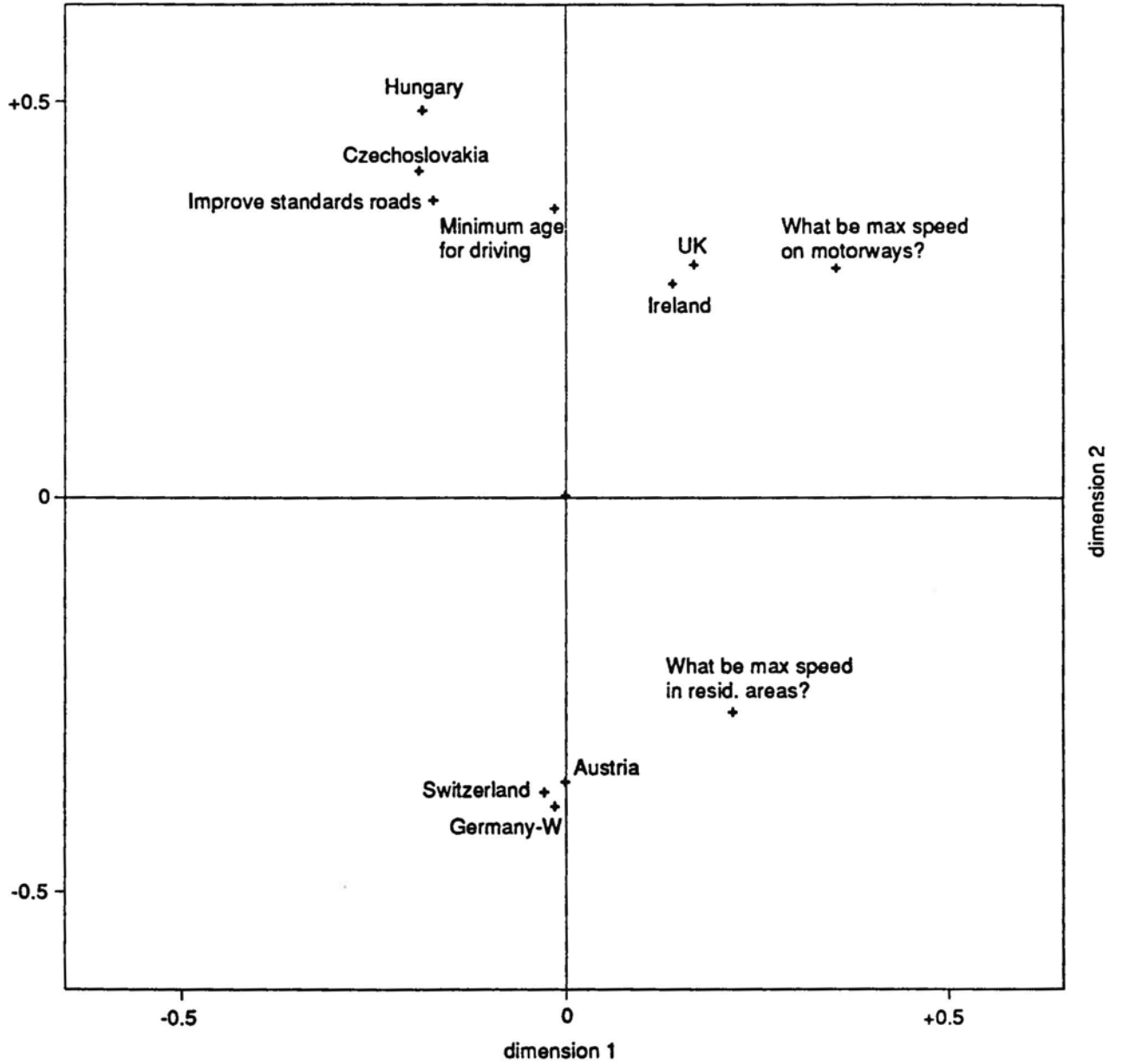
Appendix 2. *The 34 questions concerning traffic measures selected for analysis (the numbering of questions is identical to the numbering in the survey).*

2. Would you be in favour, or against, the Government devoting more effort to the following road safety measures? (Strongly in favour 1 2 3 4 5 Strongly against, 7 Don't know)
- a. Improving driver training b. Have more enforcement of traffic laws c. Have more road safety publicity campaigns d. Test the road worthiness of more vehicles e. Improve the standards of the roads
3. Do you agree or disagree with the following statements (Strongly agree 1 2 3 4 5 strongly disagree 6 don't know)
- a. Penalties for driving offences should be much more severe b. There are too many traffic regulations c. People should be allowed to decide for themselves how much they can drink and drive d. Car manufacturers should not be allowed to stress the speed of cars in their advertisement e. More consideration should be given to pedestrians and cyclists when planning towns and roads
11. Devices are now available to control speed of cars. This could be made either compulsory or for use optionally on the part of the driver. Would you be in favour of such a device?
(1 = Yes, 2 = No, 3 = Don't know)
- a. When you are free to put it on and off? b. When you are able to exceed the speed limit of motorways, only for short periods? c. Making it impossible (for all cars) to exceed a certain limit?
13. What do you think the speed limit should be ..? (30 .. 160 km/h, no limit at all, don't know) a. ...in towns b. ... in residential areas c. ... on main roads between towns d. ... on motorways
20. I'll read some statements to you concerning seat belts. Please tell me in each case whether you agree or disagree (1 = Agree, 2 = Disagree 3 = Don't know). a. if you drive carefully seat belts aren't really necessary
29. People have different opinions about what the legal limit should be. Which of the following statements best matches your opinion. Do you think that drivers should be allowed to drink ..?
1. no alcohol at all 2. less alcohol than at present 3. as much alcohol as at present 4. more alcohol than at present 5. as much as they want 6. don't know
30. I'm going to read out a list of measures that have been proposed to reduce drinking and driving. How much are you in favour or against the introduction of each of these measures?
(1 = In favour, 2 = Against, 3 = Don't know)
- a. More breath test by the police b. Harsher penalties for drivers found to be over the limit c. There should be a lower limit of alcohol for inexperienced drivers d. Hosts should be encouraged to limit the amount of alcohol their driver guest drink
38. There is a possibility of having similar laws and regulations applied to driving throughout Europe. In order to achieve this 'harmonisation' would you be in favour or against the introduction of the following measures throughout European countries? ((1 = In favour, 2 = Against, 3 = Don't know)
- a. A minimum age for driving cars of 17 years b. A tougher standard driving test c. A penalty points system for traffic offences which results in loss of licence when exceeded d. A common speed limit of 30 Mph (50 Km/h) in towns e. A common speed limit of 70 Mph (120 Km/h) on motorways f. A requirement that manufacturers modify their vehicles to restrict their maximum speed g. There should be a uniform low limit h. Regular technical check-ups for all types of vehicle for safety reasons i. Regular technical check-ups for all types of vehicle to protect the environment j. An obligation to use motor vehicle lighting during day-time k. Installation of a third braking light l. An obligation to use seat belts on front to use seat belts on front and rear seats.
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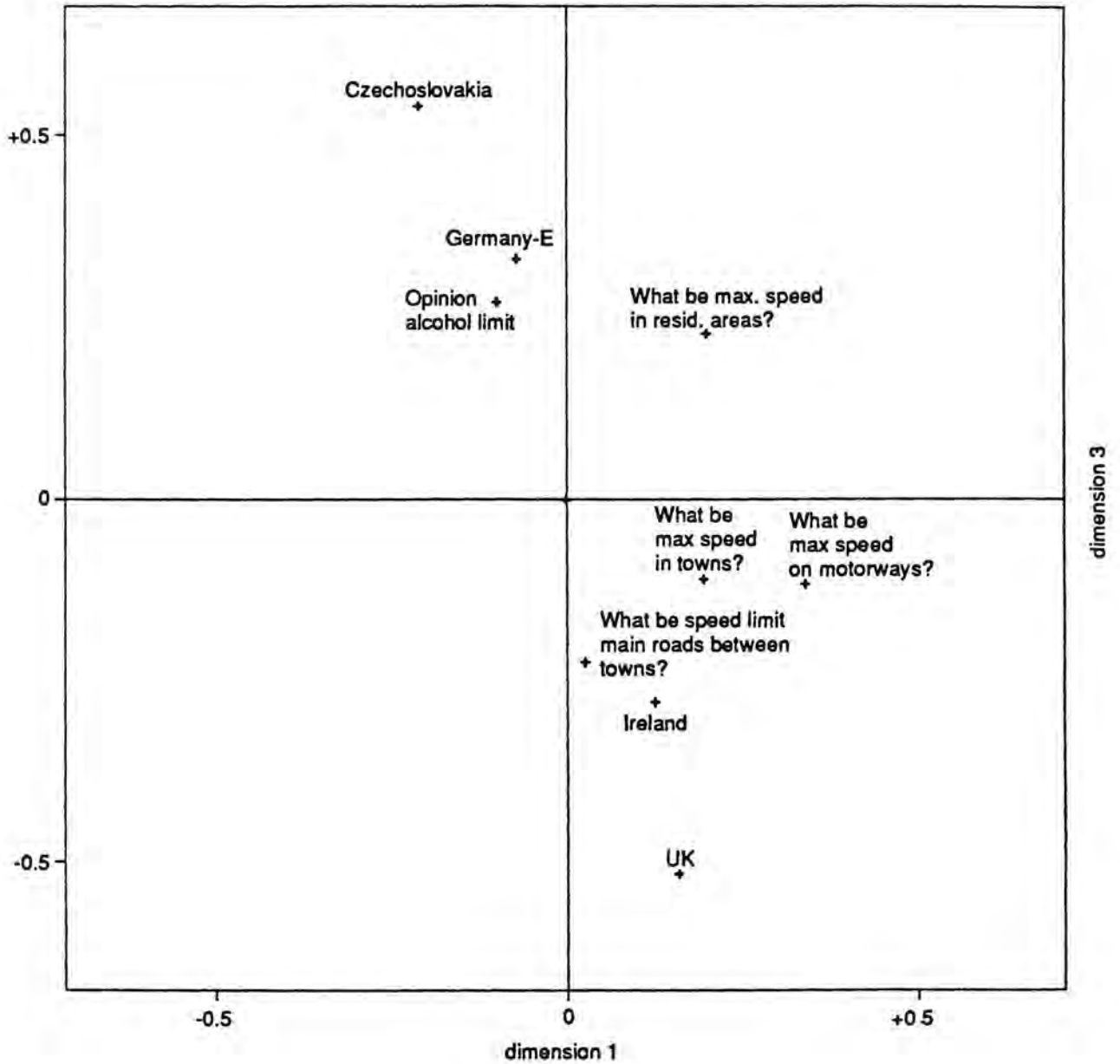
Appendix 3. *International differences in opinions about traffic measures: a plot of the countries and questions along the first dimension.*



Appendix 4. *International differences in opinion about traffic measures: a plot of the countries and questions along the second dimension.*



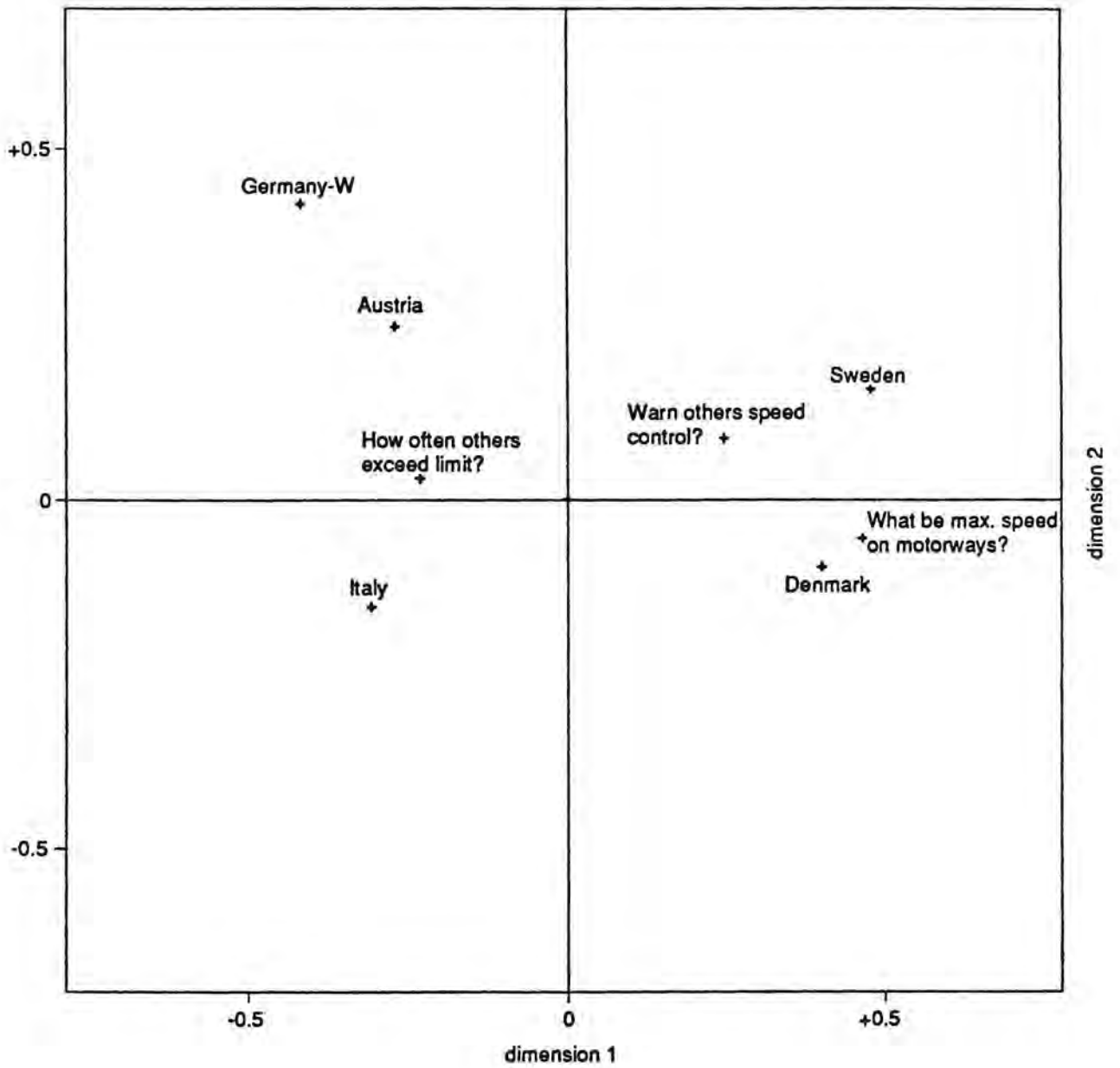
Appendix 5. *International differences in opinion about traffic measures: a plot of the countries and questions along the third dimension.*



Appendix 6. *The 28 questions concerning speed and speeding selected for analysis (the numbering of questions is identical to the numbering in the survey).*

4. How often do you each of the following factors - relating to drivers - are the cause of road accidents? (Never 1 2 3 4 5 6 Always , 7 Don't know)
 d. Following too closely to vehicle in front e. Driving too fast f. Driving too slow
6. How often do you think each of the following factors - relating to vehicles - are the cause of road accidents (Never 1 2 3 4 5 6 Always , 7 Don't know) e. Vehicle too fast
9. How often do you think other drivers break speed limits (Never 1 2 3 4 5 6 Always, 7 Don't know)
10. Compared with other drivers do you generally drive ..? Much faster 1 2 3 4 5 Much slower, 6 Don't know
11. Devices are now available to control speed of cars. This could be made either compulsory or for use optionally on the part of the driver. Would you be in favour of such a device?
 (1 = Yes, 2 = No, 3 = Don't know) a. When you are free to put it on and off? b. When you are able to exceed the speed limit of motorways, only for short periods? c. Making it impossible (for all cars) to exceed a certain limit?
12. In general how often do you drive faster than the speed limit on the following types of road when traffic conditions allow you to set your own speed? (Never 1 2 3 4 5 6 Always , 7 Don't know) a. Motorways b. Main roads between towns c. Country roads d. Main roads in towns e. In residential areas .
13. What do you think the speed limit should be ..? (30 .. 160 km/h, no limit at all, don't know) a. ...in towns b. ... in residential areas c. ... on main roads between towns d. ... on motorways
14. Have you ever been stopped by the police for exceeding the speed limit? (Yes 1 No 2)
- 17i. How often do you signal other drivers to warn them of a police speed trap ahead? (Never 1 2 3 4 5 6 Always, 7 Don't know)
38. In order to achieve this 'harmonisation' would you be in favour or against the introduction of the following measures throughout European countries? ((1 = In favour, 2 = Against, 3 = Don't know)
 d. A common speed limit of 30 Mph (50 Km/h) in towns e. A common speed limit of 70 Mph (120 Km/h) on motorways f. A requirement that manufacturers modify their vehicles to restrict their maximum speed
40. How important do you think each of the following qualities are in a car? (very important 1 2 3 4 not at all important 5 don't know) d. Performance
41. Could you answer yes or no to the following statements? (1 = Yes, 2 = No, 3 = Don't know)
 b. I enjoy driving fast f. I sometimes get involved in unofficial races with other drivers
- 58b. And when you drive a car is it ..?
 1 a car with engine size less than 1000cc 2 a car with engine size from 1000 to 1999cc
 3 a car with engine size of 2000cc or more 4 a car (but really don't know engine size)
62. In total about how many thousand miles (kilometres) have you driven in the last 12 months?
-

Appendix 7. *International differences concerning speed and speeding: a plot of the countries and questions along the first dimension.*



Appendix 8. *International differences concerning speed and speeding: a plot of the countries and questions along the second dimension.*

