

The construction of attitude scales covering the main value domains on the basis of Values surveys

Olivier Galland & Yannick Lemel¹

The range of questions asked in the Values surveys is very wide – the questionnaire is composed of more than 100 questions and requires spending more than an hour to be filled in.

In order to organise these resources and before undertaking any statistical analysis, we have followed a previous work achieved on the basis of values surveys conducted in 1981 and 1990 by Loek Halman and Astrid Vloet². Thus we chose to build a series of attitude scales valid for the three dates of observation and aiming at coherently render a general trend of the values in a particular domain. We took up a great part of the cutouts and the methodology suggested by Halman and Vloet. Yet the scales thus created do not all correspond to the scales they proposed since some of the items they had used were missing in the last edition of the survey³. Some scales, of minor significance, were excluded. In certain cases, our analyses led us to findings different from theirs.

On the questionnaire variables selected for each domain, we first created a principal component factor analysis in order to determine the dimensions underlying the domain and find how to build scales measuring the attitude that corresponds to it. Then we carried out reliability analyses to check the coherence of the scales thus created.

We shall give details of these analyses later. The countries chosen for the following analyses are Belgium, Denmark, France, Germany, Great Britain, Iceland, Ireland, Italy, Spain, Sweden and The Netherlands.

¹ ogalland@msh-paris.fr and lemel@ensae.fr

² Loek Halman and Astrid Vloet, *Measuring and Comparing Values in 16 Countries of the Western World*, Work and Organization Centre, Tilburg University, November 1994.

³ The questionnaire went through some changes from one date to the other. Obviously only the questions common to all dates were retained for the construction of the scales.

The domains are:

- Religious values
- Moral values
- Socio-political values
- Values in the domain of primary relations
- Socio-economic values
- Other values

After examination of the latters, we were led to the construction of the 18 following scales:

- “Degree of religiosity”*
- “Importance of God”*
- “Church Involvement”*
- “Moral rules in private matters”*
- “Moral rules in public matters”*
- “Support to authority values”*
- “Confidence in institutions”*
- “Rejection of neighbours”*
- “Post-materialism”*
- “Politicisation”*
- “Protest political participation”*
- “Left-Right scale”*
- “Preference for personal development”*
- “Localism”*
- “Attachment to traditional family”*
- “Importance of work”*
- “Instrumental orientation towards work”*
- “Local community action”*

Generally and unless explicitly stated otherwise, each country will be included in the following overall analyses according to the distribution of its population. This way of proceeding leads to giving more weight for instance to the Germans while establishing the final result than to the Swedish insofar as the formers are much more numerous than the latters. One may of course question that rule.

1. Religious values

1.1 Domain

The questions available at the three dates on this domain are:

Do you believe in life after death?

Do you believe in hell?

Do you believe in heaven?

Do you believe in sin?

Do you believe in reincarnation?

Do you believe in a personal God?

Do you believe in God?

How important is God in your life?

Do you find that you get comfort and strength from religion?

Are you a religious person?

Do you take some moments of prayer, meditation or contemplation?

Do you belong to a religious organisation?

Do you do unpaid voluntary work for a religious organisation?

Do you belong to a religious denomination?

Like Halman and Vloet (H&V), we will make a distinction between what regards participation in community life (the last three questions) and what has to do with beliefs and personal observances (first questions).

1.2 Beliefs and personal observances

H&V concluded their analyses with the construction of two scales of *religiosity* and “*religious orthodoxy*”. Some basic items composing the *religious orthodoxy* scale were missing in the 1999 edition of the survey: belief in the devil, in a soul and in resurrection. Therefore we cannot use H&V’s survey just as it is.

Moreover, their distinction between the degree of belief (measured for instance with the degree of God’s importance in a person’s life, etc) and the nature of the beliefs (the belief in God) seems a little contrived.

The principal component analysis on all the items related to “beliefs” shows that they are highly correlated to the first factor.

Table 1. Principal component analysis (PCA)

	F1	F2
Belief in life after death	,675	,405
Belief in hell	,628	,346
Belief in heaven	,737	,271
Belief in sin	,670	,050
Belief in reincarnation	,305	,721
Belief in a personal God	,642	-,157
Belief in God	,724	-,193
Importance of God in life	,843	-,209
Religion brings comfort & strength	,782	-,218
Religious observance	,720	-,266
Take time to pray	,660	-,248
% of the variance explained	47	11

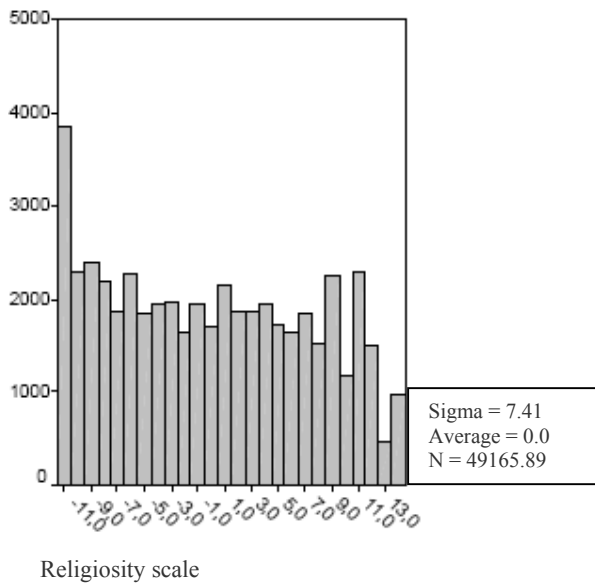
There is indeed a global dimension of religiosity that gathers these items and it seems indeed well justified to build a scale in that sense. The second dimension of that overall analysis reveals a contrast: some items are positively correlated to the second factor whereas others are negatively correlated to it. There seems to be an opposition between the persons who maintain a direct contact with God through religious observance and prayer and for whom this contact is a source of comfort in life, and the ones for whom religion is essentially associated with beliefs concerning the after-death and the beyond. The same analysis repeatedly carried out on three distinct populations according to their global level of religiosity (i.e. according to the level of the first factor) generally confirms that opposition. It is just a little less clear for the least religious Europeans.

Therefore we first keep a *religiosity scale* equal to the sum of all the items in Table 1. The reliability analysis effectively confirms its strength (see Table 2). The histogram of that scale values is given in Graph 1.

Table 2. Reliability analysis (Cronbach α) of the items composing the religiosity scale

France	0,75
Great Britain	0,73
Germany	0,74
Italy	0,75
Spain	0,74
The Netherlands	0,74
Belgium	0,73
Denmark	0,7
Sweden	0,72
Iceland	0,66
Ireland	0,69

Graph 1. Distribution histogram of the religiosity scale values

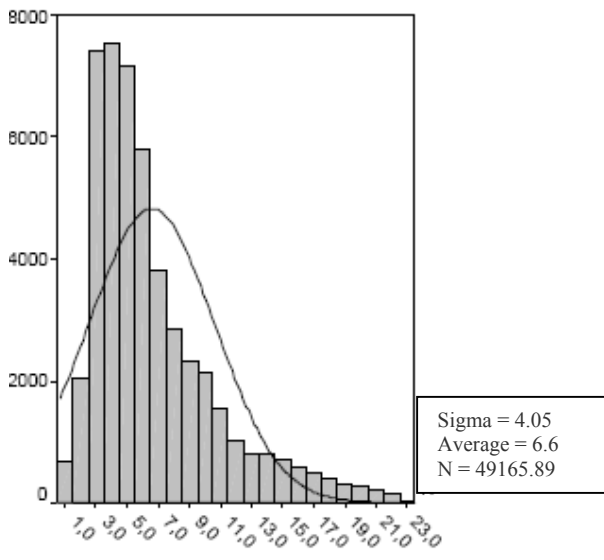


Besides, we retain an indicator of religiosity orientation, either towards the importance of God in life or towards beliefs in the beyond. That indicator, which we shall subsequently call **importance of God**, is calculated as follows:

$$\frac{(\sum \text{items « importance of God »}) + 1}{(\sum \text{items « beliefs in the beyond »}) + 1}$$

The histogram of the corresponding scale is given in Graph 2.

Graph 2. Distribution histogram of God's importance



1.3 Church involvement

This set includes three variables: membership in a religious organisation, voluntary work for a religious organisation and membership in a religious denomination. The first factor is positively correlated to all items. The second factor contrasts the voluntary work with the membership in religious organisations. It seems preferable to keep only one scale on the basis of the three variables for we are mainly interested in having one indicator on the degree of general commitment in religious institutions.

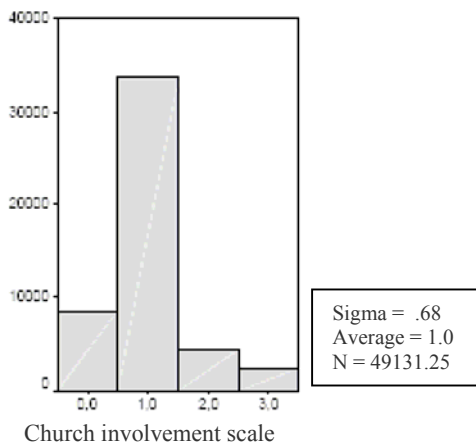
Table 3. PCA of church involvement

	F1	F2
Membership in a religious organisation	,756	-,424
Voluntary work for a religious organisation	,71	-,518
Membership in a religious denomination	,583	,668

Table 4. Reliability analysis (Cronbach α) of the “church involvement” scale

France	0,41
Great Britain	0.49
Germany	0.53
Italy	0.55
Spain	0.47
The Netherlands	0.71
Belgium	0.53
Denmark	0.37
Sweden	0.55
Iceland	0.0355
Ireland	0.50

Graph 3. Distribution histogram of the “church involvement” scale values



2. *Moral values*

2.1 The domain

The questions gathered here aim at measuring the permissiveness towards behaviours deviating from the commonly admitted norms in private and public life. In fact these questions have themselves the shape of primary scales on which the respondents were invited to take a stand and judge if certain behaviours were “never justified” (1) or “always justified” (10).

All the items used by H&V cannot be taken up for several were missing in the 1999 survey or were not steadily taken up in all countries that year. The usable list at the three dates includes 11 items:

Claiming state benefits which you are not entitled to
Cheating on tax
Taking a car that is not yours
Taking soft drugs like marijuana or hash
Lying in your own interest
Having an affair with a married man/woman
Accepting a bribe
Homosexuality
Divorce
Terminating life of incurable sick
Suicide

Each item is thus an elementary scale varying from 1 (never justified) to 10 (always justified), with non-responses recoded to 1 (1 always being a modal value).

2.2 Structuring the domain

Halman built two scales called *permissiveness* and *civil morality*.

In fact, all the correlations between all 11 items are clearly positive and the principal component analysis highlights components of explanatory power decreasing from 31% to 14%, 9%, 7%, etc. with a last component at 4%. The first factor is thus very significant. It is positively correlated to all the items, which is not the case of the second factor that is positively correlated to some variables and negatively to others. As for the “drug use”, it appears relatively independent from both factors.

Table 5. PCA of the “moral values” items

	F1	F2
Illegal benefits	,480	,458
Tax cheating	,588	,399
Joy-riding	,394	,424
Soft drugs	,114	,065
Lying	,659	,250
Adultery	,674	-,002
Bribe	,505	,472
Homosexuality	,595	-,467
Divorce	,655	-,460
Euthanasia	,599	-,401
Suicide	,630	-,336

Overall, we will retain no “size factor” for it seems more important to be able to highlight the possible behavioural differences in private and public domains. We will build two scales called “moral rules in private matters” and “moral rules in public matters”, each one being the sum of the following items (the more the scale increases, the more it indicates a condemnation of targeted behaviours):

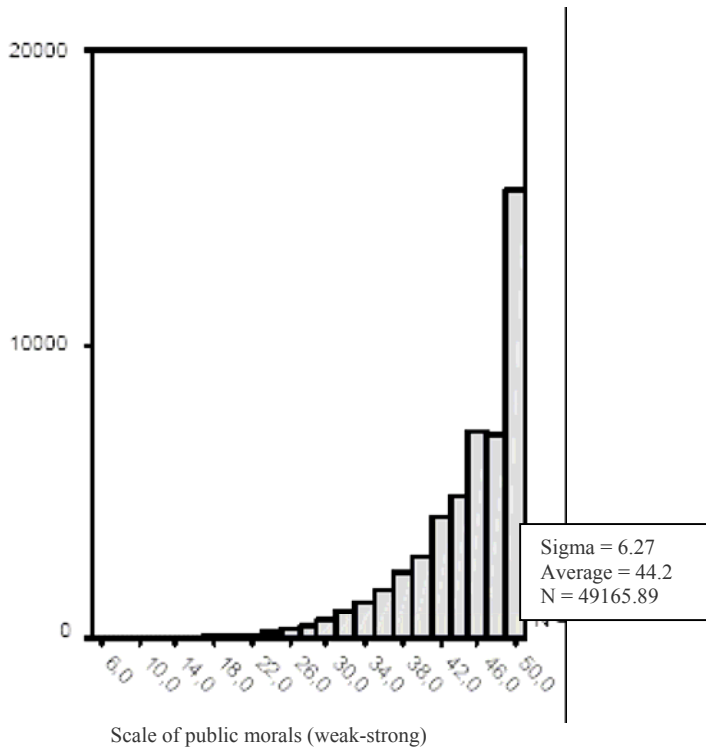
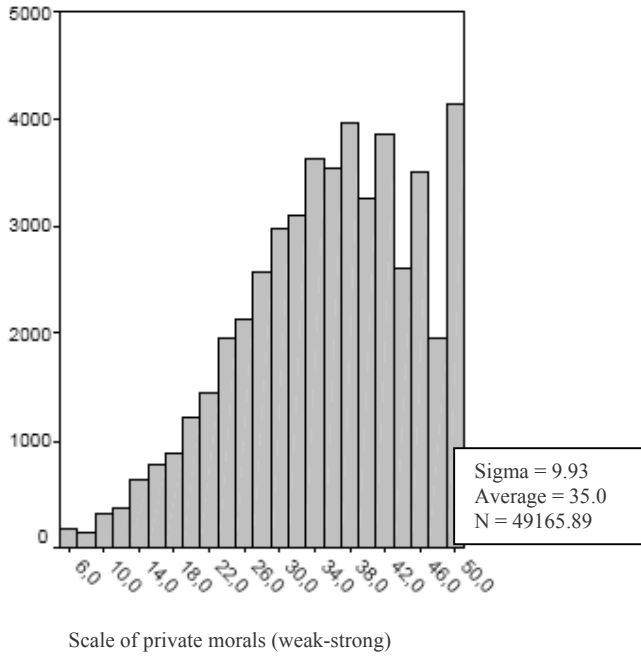
<i>Private moral</i>	<i>Public Moral</i>
Adultery	Illegal benefits
Homosexuality	Tax cheating
Divorce	Joy-riding
Euthanasia	Lying
Suicide	Bribe

Both scales turn out to be of excellent quality (see Table 6).

Table 6. Reliability analysis on the items composing the scales of moral rules in public and private matters

	Private moral	Public Moral
France	0.75	0.68
Great Britain	0.72	0.68
Germany	0.72	0.72
Italy	0.73	0.63
Spain	0.78	0.66
The Netherlands	0.82	0.63
Belgium	0.76	0.60
Denmark	0.68	0.54
Sweden	0.68	0.60
Iceland	0.64	0.60
Ireland	0.73	0.68

Graph 4. Distribution histograms of the “moral rules” scale values



3. Socio-political values

The socio political domain is very wide. H&V had distinguished the following measures:

- Conservatism and progressiveness (in the economic and cultural domain)*
- Confidence in institutions*
- Tolerance towards neighbours*
- Materialism and post-materialism*
- Political involvement*
- Position on the left/right scale*
- Preference for a natural lifestyle*
- Orientation as regards territorial identification (localism vs. cosmopolitanism)*

3.1 Conservatism and progressiveness

H&V's proposal regarding conservative or progressive orientation relies on economic questions and questions regarding authority. Unfortunately, in economics, no question – except one – was asked in all three surveys. The only question available at the three dates is the one on merit pay (“a secretary who works better has to be paid better”). We will keep that question in our analyses.

At all events, we cannot do exactly as H&V. Furthermore, on all the questions regarding authority, we have at our disposal Etienne Schweisguth's proposition validated in his article entitled «*L'éventail des normes sociales*» (“*The Range of Social Norms*”) ⁴ which was based on 5 questions:

- “Greater respect for authority”*
- “Maintaining order in the nation”*
- “Instructions at work should be followed”*
- “Confidence in the Army”*
- “Confidence in the Police”*

This proposal appears quite convenient as a starting point to build a synthetic scale of “support to authority values”. However, the item “follow instructions at work” is less correlated to the first factor of a PCA and the reliability analysis confirms that the scale is of better quality without that variable (see Table 7).

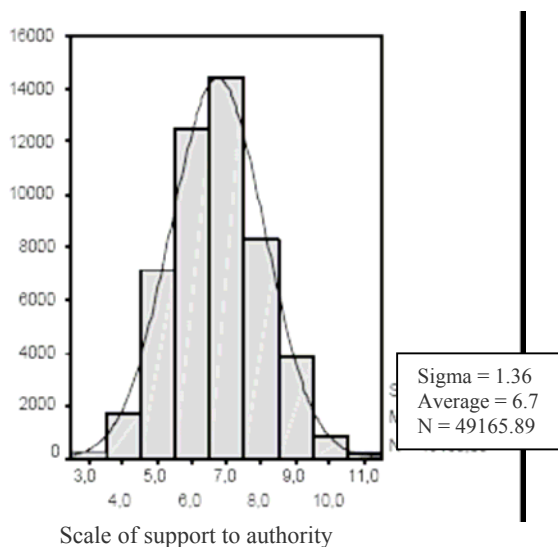
⁴ *The Futuribles journal*, « *Les valeurs des Européens* », special issue #277, August 2002

Table 7. Reliability analysis of the items composing the “support to authority” scale

	With the item "follow instructions at work"	Without the item "follow instructions at work"
France	0.55	0.60
Great Britain	0.46	0.47
Germany	0.51	0.54
Italy	0.53	0.58
Spain	0.59	0.64
The Netherlands	0.42	0.45
Belgium	0.41	0.45
Denmark	0.42	0.45
Sweden	0.36	0.36
Iceland	0.33	0.32
Ireland	0.46	0.51

Thus, we will not retain that item and we will compose the “support to authority” scale by adding up the other ones.

Graph 5. Distribution histogram of the “support to authority” scale



3.2 The confidence in institutions

The list of institutions proposed slightly changed over the surveys. We may retain the following institutions, available at the three dates:

- Church*
- Education system*
- Press*
- Trade union*
- Parliament*
- Administration*
- Army*

Police

For each institution, a scale is suggested: no confidence at all, little confidence, a certain confidence and a large confidence.

The principal component analyses of these 8 variables gives 8 components of which the first one explains 35% of the variance, the second one 16% (then 10%, 9%, down to 6% for the last factor).

Table 8. PCA of the items of “confidence in institutions”

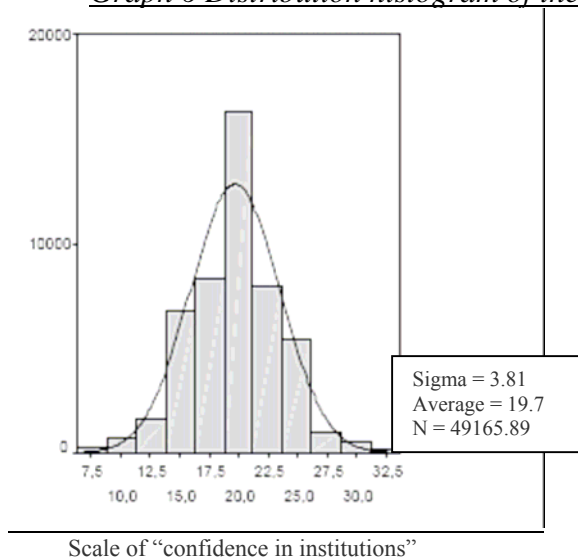
	F1	F2
Church	,477	-,469
Education system	,570	,122
Press	,486	,521
Trade union	,465	,585
Parliament	,700	,134
Administration	,707	,047
Army	,564	-,547
Police	,669	-,284

All these variables are positively correlated to the first factor thus expressing a general feeling of confidence towards institutions. The second component opposes confidence in Church, Army and the Police to confidence in other institutions. That second factor is very close from the support to authority values that has already been synthesised in a previous scale (see 3.1). Therefore we will not retain it but limit ourselves to a general scale of “confidence in institutions” composed by adding up the 8 basic items.

Table 9. Reliability analysis of the “general confidence in institutions” scale

France	0.74
Great Britain	0.68
Germany	0.73
Italy	0.77
Spain	0.80
The Netherlands	0.65
Belgium	0.71
Denmark	0.68
Sweden	0.71
Iceland	0.68
Ireland	0.77

Graph 6 Distribution histogram of the “confidence in institutions” scale values



3.3 Tolerance towards neighbours

This tolerance is measured in the survey through a series of questions on types of people one wouldn't like to have as neighbours. The types available at the three dates are the following:

- Neighbours with criminal record*
- Neighbours of different race*
- Left-wing extremists*
- Heavy drinkers*
- Right-wing extremists*
- Neighbours with large family*
- Neighbours with emotional lability*
- Foreign neighbours*

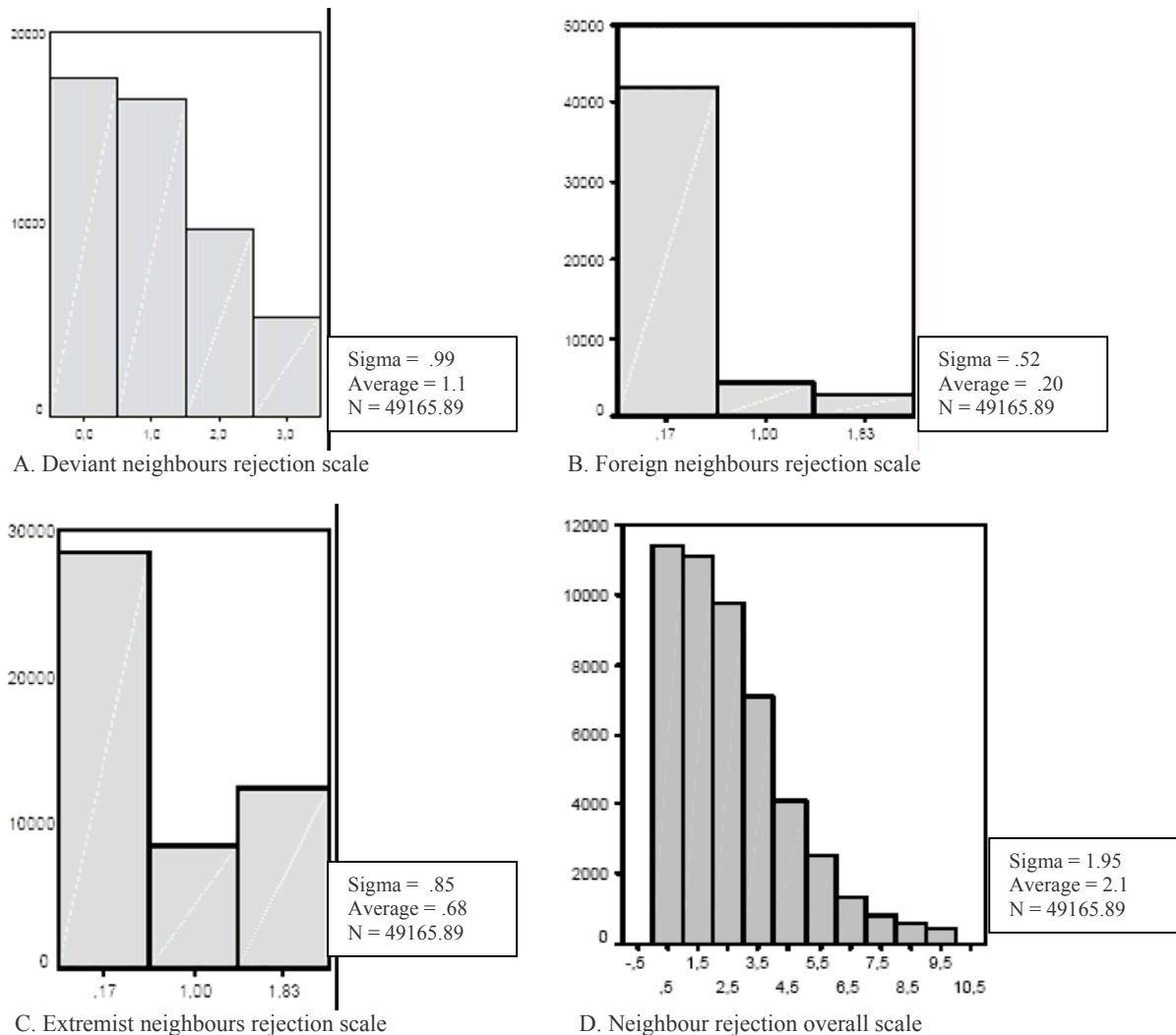
The first factor of the PCA explains 32% of the variance, the second one 17%, the third one 13% (the eighth and last one 5%). All the items are positively correlated to the first factor. The second factor is negatively correlated to ethnic characteristics (as well as large family's characteristics) and positively to extremist behaviours. The third factor is positively correlated to deviant behaviours.

Table 10. PCA of the items of the domain “neighbour rejection”

	F1	F2	F3
Criminal neighbours	,554	-,093	,447
Neighbours of different race	,620	-,425	-,300
Left-wing extremists	,638	,579	-,239
Heavy drinkers	,487	,185	,544
Right-wing extremists	,531	,680	-,287
Neighbours with large family	,513	-,367	-,147
Neighbours with emotional lability	,555	-,080	,427
Foreign neighbours	,629	-,435	-,293

We could thus follow H&V's proposition and build 3 scales corresponding to the suspicion expressed towards neighbours because of ethnic characteristics (neighbours of different race, immigrants, large families), extremist behaviours (leftists and rightists) or because of deviant behaviours (criminal record, alcoholism, emotional lability). However as the scales "foreign neighbours" (see Graph 7B) and "extremist neighbours" (see Graph 7C) include only three points and as the three scales are highly correlated to each other, it seems preferable to build only one scale of "neighbour rejection" (see graph 7D).

Graph 7. Distribution histograms of the values of various "neighbour rejection" scales



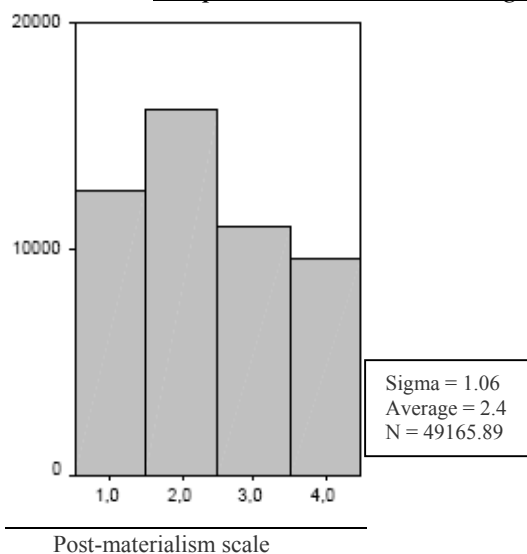
3.4 Post-materialism

The "post-materialism" scale was developed by Inglehart in 1977 in *the Silent Revolution*. The measure retained here has been created from four items related to the aims each country has to achieve in the next ten years. The aims proposed are the following:

- Maintain public order in the country*
- Increase the citizens' participation in government decisions*
- Fight rising prices*
- Guarantee freedom of speech*

The result is presented in Graph 8.

Graph 8. Distribution histogram of the post-materialism scale values



3.5 Political involvement

In 1994, H&V suggested a distinction between conventional and non-conventional political participation. The questions on which the scales relied are:

- *Do you often/ from time to time/ ever discuss political matters with friends?*
- *Do you belong to a political movement or party?*
- *Do you do unpaid voluntary work for a political movement or party?*
- *To what extent are you interested in politics?*
- *Did you /could you/ would you take part in the following forms of political actions:*
 - ✓ *Sign petition*
 - ✓ *Join in boycott*
 - ✓ *Join lawful demonstration*
 - ✓ *Join unofficial strike*
 - ✓ *Occupy buildings or factories*

Insofar as the non-conventional participation corresponds to those last five items, the conventional participation corresponds to the first four ones.

As in the case of “moral values”, all the variables are positively correlated to each other and the first factor of the PCA explains 38% of the variance. The second factor effectively separates the two domains distinguished by H&V: it explains 18% of the variance. An analysis limited to the five items of the “non-conventional” sub-domain offers a first factor at 52%, which is a large factor too, and a second factor opposing “strike” and “sit-in” to “boycott”, “demonstration” and “petition”.

Table 11. PCA of the politicisation items

	F1	F2
Member of a party	,307	,454
Interest in politics	,585	,595
Political discussion	,558	,580
Petition	,619	,030
Boycott	,724	-,177
Demonstration	,759	-,142
Strike	,635	-,481
Sit-in	,635	-,453

We can keep a first solution – that of H&V – and build two separate scales by adding up the first three items with the five following ones (and reducing them by the number of items, i.e. 3 and 5, so as to make the scores comparable). But the two scales thus created are correlated to each other (0.70) and both are correlated to the large factor represented by the factor axis of the overall analysis (respectively 0.64 and 0.94). Clearly, the persons who do not involve themselves in political life do not do so in any way.

Therefore we chose another way of doing by creating a global scale (sum of all the items) and adding to it a scale measuring the propensity to “protest political participation”. After various attempts, the following indicator has been retained:

$$\frac{(\sum \text{common actions}) / 3 - (\sum \text{“new” actions}) / 5}{(\sum \text{common actions}) / 3 + (\sum \text{“new” actions}) / 5}$$

This indicator gets rid of a “size” effect, which implies the propensity would be all the stronger as the number of actions increases. The correlations with the factors of the initial factor analysis are then:

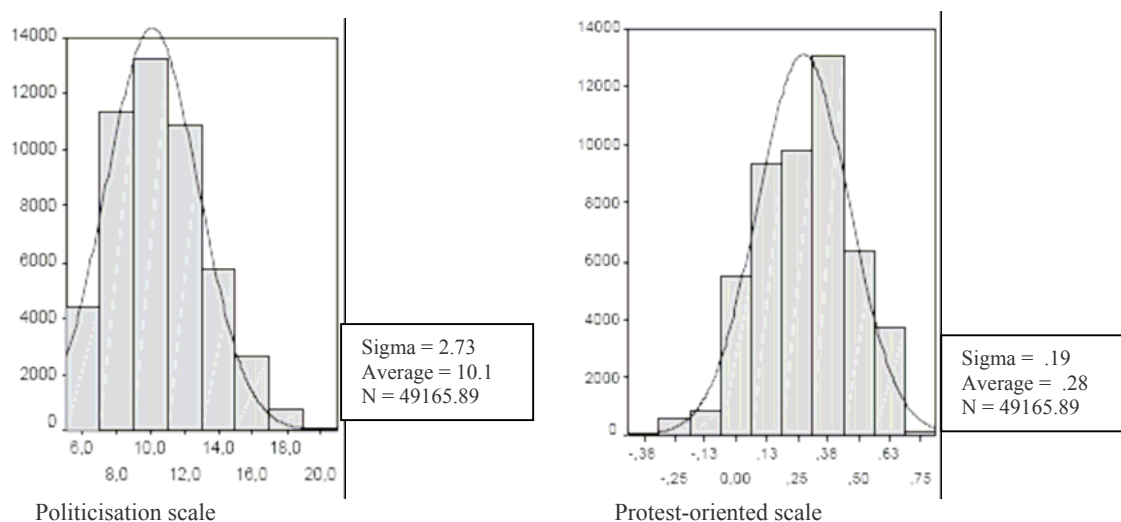
	F1	F2
Sum	.99	.07
Indicator	-0.25	.91

And the correlation between the two scales is –0.18, which is much weaker than what we would observe if we built H&V’s scales. A problem occurs however for Sweden where – we do not know why – the question on the interest in politics was missing. So in order to keep Sweden, we built scales without that question.

Table 12. Reliability analysis of the politicisation scale

France	0.79
Great Britain	0.67
Germany	0.70
Italy	0.75
Spain	0.80
The Netherlands	0.75
Belgium	0.75
Denmark	0.70
Sweden	0.68
Iceland	0.70
Ireland	0.69

Graph 9. Distribution histograms of the “political implication” scales values



3.6 Left-right scale

It is a common issue. In the *Values* surveys, the respondents are invited to position themselves on a ten-point scale. 17.5% of them do not position themselves on that scale, either because they explicitly refuse to, or because they have no opinion on the matter. To be able to use the left-right scale, each non-respondent has to be reassigned to a position.

To do so, the following solution has been chosen. The basic idea is that the position on the L-R scale also conveys a specific positioning in terms of values. A PCA of six scales – religiosity, attachment to private moral, attachment to public moral, attachment to traditional family, attachment to authority and materialism – shows that the six dimensions are highly correlated to the first factor (40% of the variance). The shape of the curve representing the average values of the factor score of this first factor according to the position on the L-R scale resembles an S-shaped logistic curve (see Graph 10). Each of the persons who did not respond to the question is thus reassigned a position on the L-R scale according to the function of the interval class corresponding to the average scores achieved by the respondents to which their score belongs (resulting of the PCA first factor). For

instance, a non-respondent whose average score is included between $-0,6466$ and $-0,6222$ is assigned position 2 on the L-R scale (see Table 13).

Graph 10. Average values of the factor score of the PCA first “tradition” factor according to the position on the L-R scale

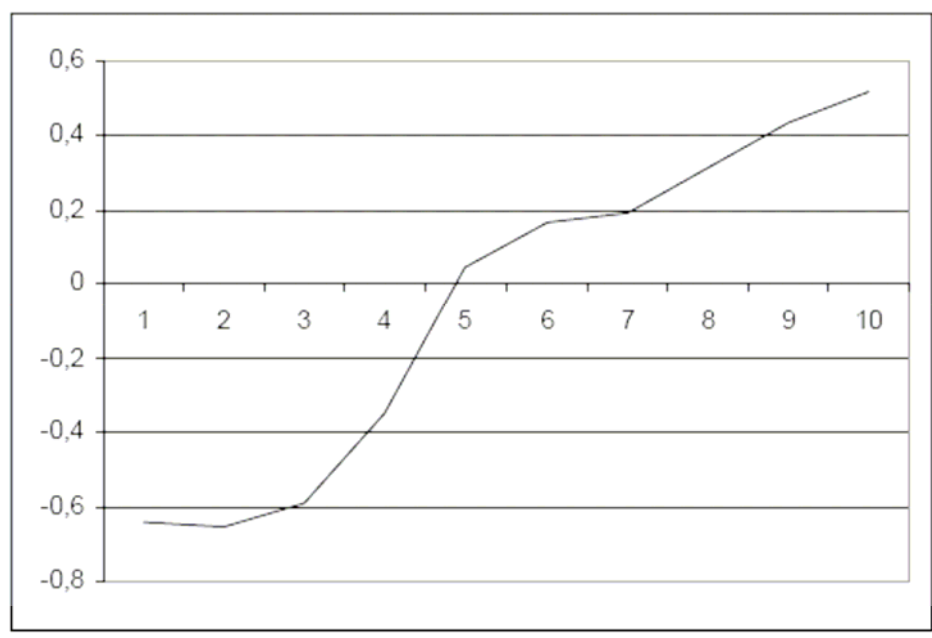


Table 13. Assignment of a position on the L-R scale to the non-respondents according to their factor score resulting from the “tradition” factor

Position on the scale	Average scores - respondents' first factor	Intervals classes of non-respondents' score X^1	Assignment of position on the scale
1	-0,6397	$x < -0,6466$	1
2	-0,6535		