

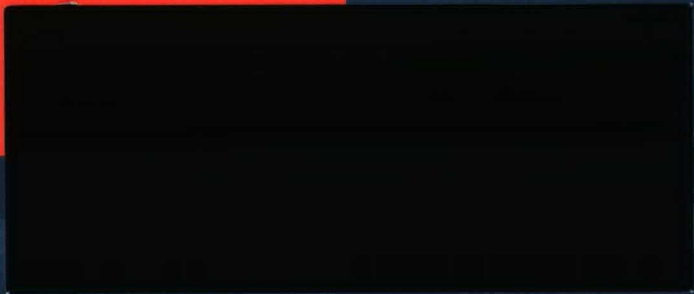
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**RATING VERSUS RANKING OF VALUES IN  
CROSS-NATIONAL RESEARCH**

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# RATING VERSUS RANKING OF VALUES IN CROSS-NATIONAL RESEARCH

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## Abstract

Rating scales are frequently used to measure constructs in the social sciences, both in domestic as well as in cross-national research. Unfortunately, ratings are susceptible to response style. Rankings might be an alternative to ratings if measures are obtained that have a hierarchical structure such as preferences or values. However, whether rankings are an alternative to rating and are used in an equivalent way by subjects from different countries has not been investigated. Our study focuses on rating and ranking procedures by the same subjects in five different countries in the European Union. Typical response patterns in ratings as well as socio-demographic information turns out to affect the correlation between ratings and rankings and hence the interchangeability of the two response formats. Results show that the predictive validity of ratings is higher, especially for subjects with a certain typical response pattern in ratings. We advocate the use of ratings over rankings in cross-national research on values.

Keywords: cross-national; response patterns; rating; ranking; values

JEL codes: M30, C80

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# **RATING VERSUS RANKING OF VALUES IN CROSS-NATIONAL RESEARCH**

## **Abstract**

Rating scales are frequently used to measure constructs in the social sciences, both in domestic as well as in cross-national research. Unfortunately, ratings are susceptible to response style. Rankings might be an alternative to ratings if measures are obtained that have a hierarchical structure such as preferences or values. However, whether rankings are an alternative to rating and are used in an equivalent way by subjects from different countries has not been investigated. Our study focuses on rating and ranking procedures by the same subjects in five different countries in the European Union. Ratings and rankings of the List of Values are available from about 4500 respondents. Response style in ratings as well as socio-demographic information turns out to affect the correlation between ratings and rankings and hence the interchangeability of the two response formats. Results show that the predictive validity of ratings is higher, especially for subjects with a certain typical response pattern in ratings. We recommend the use of ratings over rankings in cross-national research on values. Implications for academics and practitioners in international research are discussed.



## Introduction

Rating scales are frequently used in international research to measure constructs such as attitudes, preferences and values. Product category interest and familiarity (Dawar and Parker, 1994), attitudes toward advertising (Durvasula, Andrews, Lysonski and Netemeyer, 1993), fairness and relationship quality (Kumar, Scheer and Steenkamp, 1995), proficiency, commitment, integration, and differentiation in new product development (Song & Parry, 1997) and exploratory buying behaviour (Baumgartner and Steenkamp, 1996; Steenkamp, Ter Hofstede and Wedel, 1998) were measured by rating scales. Despite the fact that ratings are more susceptible to response styles (Greenleaf, 1992), ratings appear to be used more frequently than rankings.

Ratings and rankings are both used to measure values (e.g., Kahle, 1983). Rankings can be used to measure values, because they show the hierarchical nature of values as reflected in Rokeach's (1973) conception of values, in which one value is the most important, another the second most important until the last value that is considered the least important. Rokeach requires that no two values are considered equally important. An example of an international study using values is Kamakura and Mazzon (1991), where the 36 Rokeach values were ranked by subjects in the US and Brazil. Other values scales, such as the List Of Values (LOV, Kahle, 1983), have been ranked (Kamakura and Novak, 1992) as well as rated (Homer and Kahle, 1988; Grunert, Grunert and Beatty, 1989). In the Schwartz value survey, a combination of rating and ranking (Schwartz and Bilsky, 1987, 1990) or only rating scales are used (Schwartz, 1992).

There is no consensus about what method should be preferred for studying values in a cross-national context. Bias in ratings is a major issue in cross-national research on values, as it is known that subjects from different cultures vary in the way they respond to rating scales (Hui and Triandis, 1989; Van Herk and Verhallen, 1995; Smith and Schwartz, 1997). Hence, some argue that ranking is the most appropriate (Kamakura and Mazzon, 1991). Others, however, argue that rating should be preferred (Ng, 1982; Schwartz, 1992). In rankings, it is assumed that all respondents in the sample have an almost or fully hierarchized value system and that every single value has a unique rank. Ng (1982) states that this might be too strong an assumption in cross-national research. Two or more values can be equally important for a person, and by using a ranking procedure this person is wrongly forced to hierarchically order these values. In rating, ties are allowed and subjects are free to consider several values as equally important guiding principles in their lives.

[Insert Table 1 about here]

The true structure of values can be reflected in either the ratings or the rankings of those values or in both. An overview of all alternatives, given that the true structure for a subject is hierarchical or contains ties, is given in Table 1. If the true structure is hierarchical, a ranking of values and an unbiased rating of values will both provide correct results. However, if the ratings are affected by response bias such as yea-saying or extremity avoidance response behaviour (Hui and Triandis, 1985; Greenleaf, 1992), the rating-based value structure contains an error component. If the true structure has one or more ties, the ranking provides erroneous results as no ties are allowed in a ranking procedure. In the rating situation, results are not

unequivocal. If the true structure contains ties, an unbiased rating reflects the true structure. However, if there is response bias in ratings, the structure of items contains a true as well as an error component.

The issue of response behaviour towards ratings and rankings is not only relevant for marketing theory, but also for marketing practice. For example, if the observed scores on a preference scale contain bias, then decisions based on this information are likely to be ambiguous if not erroneous. If on the basis of positive rating scale scores, it is decided to go ahead with distribution and promotion, the sales can be below expectations. This appears to have happened to the French conglomerate BSN, when they entered the Japanese market with yoghurt in 1991 (Hibbert, 1993). Also in segmentation research, where rating scales as well rankings are used, it is found that the membership of segments changes if bias in mean and/or standard deviation is removed from the observed rating scale scores (Greenleaf, 1992). Bias thus affects the validity of inferences in cross-national research. This was also noticed in a review of advances in international marketing, where research on the key determinants of similarity in response patterns of consumers in different countries is mentioned as an area for further research in cross-national consumer behaviour (Douglas and Craig, 1992).

This paper provides insight into the relative appropriateness of ratings and rankings to measure values in cross-national research. The contribution of the paper is fourfold. First, we investigate whether response behaviour towards ratings and rankings of values is the same across five countries in the European Union. Second, we investigate whether specific prototypical response patterns, i.e. patterns based on differences in response style in ratings, occur and whether these can be explained by differences in socio-demographic characteristics.

Third, we assess whether these response patterns and socio-demographic characteristics affect the correlation between ratings and rankings of the nine List of Values (LOV) items. Finally, we investigate whether the predictive validity of ratings or rankings of the LOV is higher and whether this result is related to the response patterns that subjects have displayed. Each of these issues has hardly, or not at all, been addressed in previous cross-national research.

In this paper, we first describe the theoretical background on response styles and prototypical response patterns based on rating scales measuring values. In the next sections, rating and ranking measurement procedures and their characteristics are discussed. We formulate research questions that will be tested. Next, the method as applied in our cross-national study is described. Finally, results of the study are discussed and implications for practical and academic marketing research are put forward.

## **Response style and prototypical response patterns**

Rating scales, such as the Likert scale, are frequently used in marketing research and other social-economic research. Rating scales are used for measuring values and attributes, because they: (1) allow for ties between items; (2) are easy to administer; (3) are less time-consuming; and (4) are less difficult for respondents than rankings (Munson and McIntyre, 1979).

However, ratings have two potential drawbacks (Alwin and Krosnick, 1985): (1) they may reduce respondents' willingness to make precise distinctions, and (2) they are susceptible to problems of response style.

Response style is a systematic tendency of a respondent to react to research measures in the same way, independent of the questions that are posed. Response style typically emerges in two forms: (1) yea-saying effects and (2) standard deviation effects (Bachman and O'Malley, 1984; Hui and Triandis, 1985; Greenleaf, 1992). Yea-saying effects refer to the tendency to use the positive side of a rating scale very frequently; it is a tendency to agree independent of an item's content. The opposite of yea-saying is nay-saying, where respondents tend to disagree independent of an item's content. The standard deviation effect refers to a tendency to avoid the extremes of a scale or to choose extremes only, which leads to a small or a large standard deviation, respectively. Both forms of response style affect the data obtained when using rating scales.

In rating items, such as values, a respondent is free to assign a score to each item. If a respondent considers two items equally important, he can give the same score to both items. Thus, in rating it is possible that, in the most extreme case, each item is assigned the same score. Subjects that do not discriminate between items will have a highly peaked response pattern. Other subjects will have a normally distributed response pattern: some items are considered 'important', some 'unimportant', and most items are considered 'neither important nor unimportant'. Due to response style, typical response patterns in ratings may emerge (see e.g., Greenleaf, 1992; Bijmolt, Wedel, Pieters and DeSarbo, 1998). Response patterns can be considered an alternative to representing rating scale use in mean and standard deviation across the rating-scale-based scores. To determine response patterns, answers given on rating scales are counted, without considering the content of the specific items. For example, on a 9-point rating scale, the numbers of ones, twos, threes and so on, are counted to determine the response pattern for each subject.



[Insert Figure 1 about here]

In Figure 1, prototypical response patterns, based on 9-point scales, are given. In Frames A through D, prototypical patterns while rating are provided. In Frame A, a prototypical pattern of a person avoiding extremes is provided. The score of '5', which is 'neither important nor unimportant', is most frequently chosen here, whereas the extreme scores '1' and '9' ('very important' and 'very unimportant') are avoided. Frame B presents a prototypical pattern of a person who typically avoids the middle values of the rating scale and considers items either 'very important' or 'very unimportant'. This Frame can be considered the counterpart of Frame A. In Frames C and D, prototypical response patterns of subjects showing yea-saying (C) and nay-saying (D) are shown. Yea-sayers mainly use the positive side of the scale. For example, subjects in Frame C give the score of '1' very frequently. They consider most or all items 'very important'. Frame D is the counterpart of Frame C. Subjects having this prototypical response pattern, consider most or all items 'unimportant'. In Frame E a prototypical response pattern while ranking is provided. A similar rating pattern might emerge if a subject fully discriminates between the items. To explore the occurrence of these patterns, we formulate the following research question:

**Question 1** Do the following response patterns emerge if consumers provide ratings of values: a) a yea-saying pattern, b) a nay-saying pattern, c) an extremity avoidance pattern, d) an extremity tendency pattern, or e) a full-discrimination pattern?

## Response patterns and background characteristics

Response style in rating-scale-based data is known to be different within as well as across countries. Within countries, differences in response style are known to exist, which can be explained by demographic characteristics such as age, household income, and education level (e.g., Greenleaf, 1992; Narayan and Krosnick, 1996). In the last few decades, research has been published on response style differences between ethnic groups such as black and white (Bachman and O'Malley, 1984), Hispanics and non-Hispanic whites (Marín, Gamba and Marín, 1992), and Hispanic and white Americans (Hui and Triandis, 1989). Response style differences between respondents in different countries have also been reported, such as between the US and Korea (Lee and Green, 1991) and between Greece and Italy (Van Herk and Verhallen, 1995). These differences are reported as differences in the mean and standard deviation of scores between subjects. Response patterns are an alternative way to report differences in response style; therefore, to examine differences in response patterns within and across countries, we explore the following research question:

**Question 2**      The response pattern in ratings is affected by (a) age, (b) household income, (c) education level, and (d) the country of residence of respondents.

## Rating versus ranking

The patterns A through D are prototypical response patterns in rating items, and they differ

from a ranking response pattern as shown in pattern E. In ranking, a subject is allowed to use each scale score only once. In Figure 1, Frame E, a prototypical response pattern associated with ranking is shown. Such a pattern can also emerge in ratings if a subject perceives clear differences between the items and thus gives each item a unique score. However, in general prototypical response patterns for rating and ranking differ. In the following sections, this distinction will be further elaborated.

From a psychometric point of view, ratings and rankings are different. Ratings are considered independent, since respondents are free to give an answer for each item (e.g., DeCasper and Tittle, 1988). Rankings are mutually dependent if ties are not allowed, because different scores are assigned to all measured items.

Rankings may provide a valid structure of items if subjects have a hierarchically ordered picture of the items in their minds. In that case, the ratings provide invalid results if subjects display extreme response behaviour or yea-nay-saying. On the other hand, rankings do not provide valid results if ratings reflect the subjects' true incomplete structure of items. For example, if subjects consider all or most rated items to be important, as shown in Frames C in Figure 1, a forced unique score to each item increases measurement error in the data (e.g., Barnard and Ehrenberg, 1990). Forcing may also occur if subjects in an international context consider some of the items irrelevant to their own situation. Then the forced discrimination between items by definition decreases the validity of the ranking, as irrelevant items have to be judged as (somewhat) important.

The majority of studies on rating and ranking are between-subject designs, in which a subject



either rated or ranked the items (Barnard and Ehrenberg, 1990; Alwin and Krosnick, 1985; Krosnick and Alwin, 1988; Braithwaite and Law, 1985). In these studies, a direct within-subject comparison between ratings and rankings is impossible. There are some studies where the same subjects do ratings and rankings (Rankin and Grube, 1980; Russell and Gray, 1994; Maio, Roese, Seligman and Katz, 1996). Unfortunately, the results are not consistent regarding which measuring method should be preferred if ratings and rankings of the same items are compared. Rankin and Grube (1980) found that reliabilities for rankings were somewhat higher than for the ratings in a test - re-test situation. Maio, Roese, Seligman and Katz (1996) tend to prefer ratings to rankings in value research, because they found that subjects rated about 32% of their values equally. Subjects thus consider several values to be equally important and do not consider finer distinctions, which are required for ranking. Finally, Russell and Gray (1994) state that rankings have advantages over ratings if the items are highly discriminable. If respondents are instructed to compare the items with one another while rating, however, results of rating and ranking become more alike. Hence, the literature does not provide unambiguous results on which measuring procedure should be preferred.

### ***Rating versus ranking and background characteristics***

In studies on rating versus ranking various kinds of samples have been used, such as students (Moore, 1975; Rankin and Grube, 1980; Maio, Roese, Seligman and Katz, 1996), housewives (Barnard and Ehrenberg, 1990), and random samples of citizens throughout a country (Alwin and Krosnick, 1985; Krosnick and Alwin, 1988; Russell and Gray, 1994). In these studies, hardly any attempt has been made to explain the correlation between rating and ranking in

terms of these background characteristics. An exception is the study by Krosnick and Alwin (1988). They found a monotone increasing relationship between education level and variance of ratings and a monotone decreasing relationship between education level and rating scale mean. So, the higher the education level, the more subjects differentiate between rating scale scores and the higher the correlation between ratings and rankings becomes.

Krosnick and Alwin (1988) found that the fewer the subjects that differentiate between rating scale scores, the lower the correlation between ratings and rankings. Within the context of different response styles, non-differentiation is directly related to two prototypical response patterns, namely yea-saying and nay-saying. Thus, response patterns in ratings may have an effect on the correlation between ratings and rankings. For subjects showing a pattern resembling pattern E, the highest correspondence between ratings and rankings is expected, whereas for patterns resembling C or D, the lowest correspondence is expected (see Figure 1).

Response pattern and level of education affect the correlation between ratings and rankings (Krosnick and Alwin, 1988). In addition, other background characteristics such as age and household income (e.g., Greenleaf, 1992) and country of residence (Van Herk and Verhallen, 1995) affect rating scale use and hence potentially the correlation. Therefore we explore the following research question:

**Question 3**            To what extent is the magnitude of the correlation between ratings and rankings at the individual level affected by a) response pattern, b) country of residence, c) age, d) education level, and e) household income?

### ***Predictive validity***

In many research projects, values are employed as antecedents to other measures such as attitudes and behaviours (Homer and Kahle, 1988). Also in cross-national research values, are related to measures such as domain-specific psychographics and product benefits (Kamakura, Novak, Steenkamp and Verhallen, 1994), product involvement scores (Grunert and Muller, 1996) and ethnocentrism and attitudes towards the past (Steenkamp, Ter Hofstede and Wedel, 1998). Hence, predictive validity of the measurement of values is important.

In the literature, few papers assess the predictive validity of ratings and rankings. An exception is the paper by Rankin and Grube (1980), which compared ratings and ranking of the Rokeach Value Survey (RVS, Rokeach, 1973). They found that ratings are a better predictor of attitudes than rankings; however, the differences are only slight. A recent study by Maio, Roese, Seligman, and Katz (1996) also indicated that ratings of the RVS tend to have a greater predictive validity than rankings. They found that ratings of values correlated higher with measures of attitude and with measures of judgements about the acceptability of various behaviours than rankings of those values.

There is also some evidence regarding the predictive validity of ratings and rankings in relation to response patterns. Maio, Roese, Seligman, and Katz (1996) found that for low and moderate differentiating subjects, ratings have a higher predictive validity than rankings. For

low differentiators (i.e. subjects having many ties in their true structure), the forced discrimination induced by rankings provides no valid results. For high differentiating subjects, for whom the true structure of items is hierarchical, the correlation between rating and ranking is expected to be high. Consequently, for those subjects the predictive validity of both measures is expected to be comparable. In this study, we investigate the predictive validity of rating and ranking for subjects with different response patterns.

**Question 4** Are there differences in predictive validity of ratings and rankings of values and do these differences depend on the response pattern of a subject?

### **Method**

In the summer of 1996, a cross-national study on 'Men's Personal Care' was conducted in five countries simultaneously. The study comprised a mail survey using self-completion questionnaires.

### **Subjects**

The subjects were men, aged 15 through 90, in five European countries, namely Britain, France, Germany, Italy, and Spain. The samples were part of a large European panel. In each country the samples were representative with respect to age. Respondents with missing values on either ranking or rating were excluded. Final sample sizes were 973, 1083, 943, 860, and 668 for France, Italy, Germany, Britain, and Spain, respectively.

## **Measures**

The questionnaires were drafted in English and subsequently translated. Bilinguals translated the questionnaires from English into the other four languages. After translation, a discussion was held within a group of experts, partially overlapping with the translators, to verify the appropriateness of the translation of the various languages. The measures include the List of Values or LOV (Kahle, 1983), items on personal care, items on buying behaviour and demographic characteristics.

The LOV consists of nine values that can be either rated or ranked in order to determine their overall ranking of least to most important personal value. The fact that LOV can be either rated or ranked gives us the opportunity to investigate whether subjects react equivalently to ratings and rankings. The nine LOV statements were assessed using nine-point rating scales followed by a ranking of the same nine statements. In the rating task, the scales were labelled 1='very important' to 9 = 'very unimportant', while middle values were not labelled. Each subject rated and subsequently ranked the nine value statements. In addition, demographic information was collected. In each country, age was measured in years, education was measured on a 4-point rating scale (1 = 'left full time education at 15/16 years old', 2 = 'left full time education at 17/18 years old', 3 = 'obtained advanced level/HND Diploma', and 4 = 'University studies / Degree'). Monthly household income was measured on a 5-point rating scale in the local currencies, e.g., in British pounds: 1 = 'Less than GBP 550, 2 = 'GBP 551 - 1000', 3 = 'GBP 1001 - 1500', 4 = 'GBP 1501 - 2000', 5 = 'Over GBP 2000'. We calculated the income rating scale to equivalents in ECU, so these scales were equivalent across

countries. To determine predictive validity of the ratings and rankings, five variables were included that measured attitudes towards buying personal care products. These variables were measured on 2-point rating scales, labelled '1' = 'agree' and '2' = 'disagree'.

## Results

### *The LOV rated and ranked*

This paper emphasises methodological aspects in rating and ranking. So we focus on how subjects rate and rank the List Of Values items. The structure of the LOV items is different across countries (see Table 2). For example, a value like 'sense of belonging' is the most important value in Germany, whereas this value is considered the least important value in Italy.

[Insert Table 2 about here]

From a psychometric point of view, there are significant differences between countries in their level of the ratings of the LOV. The mean rating across all LOV items is significantly different across countries ( $F_{(4,4521)} = 13.67, p < .001$ ). Spanish and British subjects have the lowest average rating score of 2.7, and French and German subjects have the highest average of 3.0. This implies, that if no response style effects are present, Spanish and British subjects consider these values more important than French and German subjects. The standard deviation across rating scores per subject is also significantly different across countries ( $F_{(4,4521)} = 73.38, p <$



.001). The highest standard deviation is 1.9 (France and Germany), and the lowest is 1.3 (Britain). French and German subjects differentiate more among the nine values than British subjects.

In general, the subjects in each country tie two or more values when rating the LOV. In no country is the mean score is equal to or even close to 5.0, which would be the case if subjects had had a hierarchically ordered picture of the values in their minds and thus would have given each value its own unique score as is done while ranking the items.

### ***Response patterns***

To determine the response pattern based on rating scale use, the number of times a subject chooses a '1', a '2' and so on was calculated. The resulting score profile per subject is called his response pattern. To determine whether there are groups of subjects that display the same response behaviour, a clustering was made based on each respondent's response pattern on the ratings of the LOV. We first performed a hierarchical clustering analysis (Ward method). Then we used the emerging cluster centres as input for a K-means clustering. Such two-stage clustering is a common procedure for clustering large datasets (e.g., Punj and Stewart, 1983). We examined solutions ranging from 2 to 8 clusters and selected 5 clusters, as this yielded the best interpretation and the clusters differed significantly from one another with respect to each of the active variables. The five resulting clusters, henceforth called groups, have the following sizes: group 1 (N=651; 14%), group 2 (N=1446; 32%), group 3 (N=1351; 30%), group 4 (N=952; 21%), and group 5 (N=127; 3%).

[Insert Figure 2 about here]

The average response pattern as observed in each group is presented in Figure 2. Subjects in group 1 spread their scores across all numbers most evenly. Their rating pattern most closely resembles that of a ranking, where each number from '1' to '9' is used only once. Subjects in group 2 have a moderate yea-saying tendency. They consider 4 out of 9 values 'very important' and the resulting values are almost all given a unique score ranging from '2' through '9'. Subjects in group 3 typically avoid yea-saying, and the categories most frequently used by them are '2' and '3', indicating that they consider the underlying values 'important', but not 'very important'. Group 4 represents the extreme yea-sayers. About 7 out of 9 times, they use the score '1', indicating that they consider 7 values 'very important'. Subjects in group 5 use number '9' (= 'not important at all') very frequently, so they are nay-sayers. Hence, we do observe yea-saying (groups 2 and 4, a total of 53 %), nay-saying (group 5, 3%), moderate extremity avoidance (group 3, 30%), and full discriminating (group 1, 14%) response patterns. However, the extremity tendency pattern, in which a subject uses both extremes of a scale, is absent.



### ***Background characteristics and the effects on response patterns***

Background characteristics might affect the response pattern. For example, education level, income, and age could affect whether subjects do use extremes of a scale or not, or whether subjects discriminate between values or not. Our results reveal that the empirical groups, based on response patterns, differ in background characteristics (see Table 3). The groups are significantly different regarding their country of residence ( $\chi^2_{(16)} = 193.22, p < .001$ ). In group 4, the yea-sayers, subjects from Italy and Spain are over-represented, whereas in group 3, the moderate extremity avoiders, subjects from Germany are over-represented. Age is also significantly different ( $F_{(4,4522)} = 6.32, p < .001$ ): especially in group 5, more old subjects are present, whereas groups 3 and 4 are relatively young. Education is significantly different across the groups ( $\chi^2_{(12)} = 84.72, p < .001$ ). Higher educated subjects are more frequently in groups 1 and 3, whereas subjects who left school at an early age are more frequently in group 4. Finally, income is significantly different across the groups ( $\chi^2_{(16)} = 78.52, p < .001$ ). There is a tendency for subjects with the lowest incomes to be in group 4 and subjects with the highest incomes in group 3.

[Insert Table 3 about here]

Summarising groups 1 and 2 are about average. Group 3, the moderate extremity avoiders, includes relatively men from Germany that are young, or have a higher education, or a higher income. Group 4, the yea-sayers, mainly includes men from Italy and Spain, that are young, have a lower education or have a lower income. Finally, men in group 5, the nay-sayers, are from Britain or mainly older.

### ***Correlations between ratings and rankings***

To calculate the correlations between ratings and rankings, the Spearman rank-order correlation was used. This was done at the level of individual subjects, where the correlation between the ratings and the rankings was calculated for each subject. The individual response pattern in ratings as well as background characteristics may have an effect on the magnitude of the correlation between ratings and rankings of this subject. Table 4 presents the results of an analysis of covariance, assessing the effect of response pattern and various socio-demographic variables on the correlation between ratings and rankings.

[Insert Table 4 about here]

The response pattern, country, education, income, and age all significantly affect the correlation between rating and ranking. The most important main effect is due to the response pattern ( $F_{(4,4201)}=178.33$ ,  $p<.001$ ). The correlation is lowest in group 5 (.04), the group with the nay-saying pattern, and highest in groups 2 (.75) and 3 (.74), the groups with moderate yea-saying and moderate extremity avoidance, respectively (see also Table 3). This is contrary to expectation as we expected the highest correlation in group 1, the group with the full-discrimination pattern. Here the correlation is .68. The correlation in group 4, the group with yea-saying, is .48. The next important main effect is country ( $F_{(4,4201)} = 51.71$ ,  $p < .001$ ). The correlation is highest in France and Germany (.74 and .76 respectively) and lowest in Britain (.59). Another significant main effect is education ( $F_{(3,4201)}=12.07$ ,  $p < .001$ ), where university

educated subjects have an average correlation of .74, whereas the lower educated have an average correlation of about .65. Income also significantly affects the correlation between ratings and rankings ( $F_{(4,4201)} = 3.93$ ,  $p < .01$ ). There is a monotone increasing relationship between the correlation and income. Subjects with a higher income have a higher correlation. Finally, age also affects the correlation: the older subjects, the higher the correlation. The regression coefficient is only .001, but this means that a difference in age of 50 years increases the correlation by .05, which is a non-negligible difference.

Two significant interaction effects are present. The first is group by country ( $F_{(16,4201)} = 10.11$ ,  $p < .001$ ), which can be explained by the fact that there are great differences in group 5. For German and French subjects, the correlations between ratings and rankings in group 5 are .61 and .50, respectively. This is below average for these countries, but these correlations are positive and significant. In Britain and Spain, the average correlations in group 5 are much lower, -.51 and -.31, respectively. An explanation for this result might be that these subjects did not read the instruction in the questionnaire properly and gave the highest ranked value a '9' instead of a '1'. The interaction between response pattern and income ( $F_{(16,4201)} = 3.39$ ,  $p < .001$ ) also originates in group 5. In the category 'ECU 1246-1660' the average correlation is positive (.49), whereas it is about zero or negative in the other income categories in group 5.

On the basis of these results, we conclude that rankings and ratings are more comparable if subjects have an extremity avoidance response pattern, are younger, higher educated, have a higher income or live in Germany or France. However, on the basis of these results, we cannot decide whether rating or ranking is better. This can only be done if the predictive validity of both measures is assessed.

### ***Predictive validity***

In the previous sections, an explanation has been given for response patterns in ratings and for the effects these have on the correlation between rating and ranking in addition to subjects' background characteristics. In this section, the predictive validity of ratings and rankings is assessed. The dependent variables are dichotomous items on buying personal care products. These variables are on trying and choosing new products and listening to advice from friends and professionals for buying personal care products. We assume that 'sense of belonging' is related to 'listening to advice from friends' and that 'excitement' is related to 'trying new products', 'liking to be invited to try new products in a shop' and 'liking to have a wide choice of different brands'. Finally, we assume that 'fun and enjoyment' is related to 'listen to advice from friends'.

[Insert Table 5 about here]

In total across all items, the Spearman correlation is higher for ratings than for rankings. The average correlation across all items is .141 for ratings versus .073 for rankings (see Table 5). This difference is significant ( $Z=4.64$ ,  $p < .01$ ). In groups 1 to 4 predictive validity of ratings is higher than that of rankings, whereas it is about equal in group 5. However, only in groups 1 and 2 do differences between ratings and rankings reach significance (group 1:  $Z=1.81$ ,  $p < .10$ ; group 2:  $Z=2.04$ ,  $p < .05$ ).

## Conclusion and discussion

Our study is the first study in which representative samples, covering subjects from different countries, were included to investigate response behaviour towards ratings and rankings. Other studies in this area covered homogeneous samples of students (Rankin and Grube, 1980; Maio, Roese, Seligman and Katz, 1996) or representative samples (Russell and Gray, 1994) in one country only. We provide insight into response behaviour across different countries and across different socio-demographic sections of the populations.

In the study, we recover groups of subjects, based on LOV response patterns in line with Bijmolt, Wedel, Pieters and DeSarbo (1998). We distinguish five groups with the following patterns (see also Figure 2): a full-discrimination pattern (group 1); a moderate yea-saying pattern with several ties (group 2); an extremity avoidance pattern (group 3); a yea-saying (group 4) and a nay-saying pattern (group 5).

Our results reveal that the subjects' country of residence, household income, level of education, and age can explain the differences between these response-pattern-based groups. Yea-saying (group 4), which is reflected here in considering all or most values very important, is predominantly found for subjects in Italy and Spain who are lower educated, young, or have a low household income. Extremity avoidance (group 3), which is reflected in using rating scores in the middle of the scale more often, is more often found for higher educated subjects living in Germany. These results are consistent with findings in the literature (Greenleaf, 1992), which show that higher educated subjects tend to discriminate more among rating scale scores and that lower educated subjects typically display yea-saying response behaviour. The

influence of country of residence in geographically close countries on response style has not been investigated before. We conclude that the response pattern is affected by subjects' country of residence. This effect is non-negligible.

In general, ratings are affected by response style, whereas rankings are not. However, this does not mean that rankings are free from bias. Rankings are valid if a subject has a hierarchical structure of items in his mind; but if his true structure contains a few ties, the ranking will be erroneous. If the subject's true structure approximates a hierarchical one, the structures of ratings and rankings are expected to be more alike if the ratings are not affected by response style. The results show that the ratings and rankings are more comparable for subjects having a moderate yea-saying pattern with several ties (group 2) or an extremity avoidance response pattern (group 3), who are younger, are higher educated, have a higher income, or live in Germany or France. Rating and ranking are less comparable if subjects have yea-saying or nay-saying response behaviour, are less educated and live in Italy, Spain, and the UK (groups 4 and 5).

Our results imply that ratings and rankings of values can be considered alternatives if subjects do not display yea-saying or nay-saying response styles and if the true value structure does not contain ties. If they display yea- or nay-saying, rating will provide erroneous results, whereas if the true structure contains ties, ranking will provide erroneous results. To find out which method provides more valid results, the predictive validity of both procedures has been assessed. In the group having a moderate yea-saying pattern with several ties (group 2), the predictive validity of ratings is higher than that of rankings. We conclude that for this group the true structure of the LOV items has at least two or more ties and that the ranking provides



erroneous results. The group in which ratings have a significantly higher predictive validity than rankings is the group having a full-discrimination response pattern (group 1) resembling that of a ranking. This is an interesting finding, as due to the similar patterns, an equal result was expected. It can be assumed that those subjects have a hierarchical structure of the LOV items in their minds. However, the possibility to assign the same importance score to two or three items, leads to a significantly higher predictive validity of the ratings. It must be noted, however, that also in the groups having the yea-saying pattern and the moderate extremity avoidance pattern, correlations are higher for ratings than for rankings. This might imply that, also in these groups, the ratings reflect the true structure of the items more than the rankings. These results confirm earlier results by Maio, Roese, Seligman, and Katz (1996), who also found that the predictive validity of rating is higher than or equal to that of ranking.

### ***Limitation and future research***

A limitation of our study can be found in the sample, which included men only. Future research covering women as well as men might provide additional insight into the problem. Moreover, other countries should be studied, not only within Europe, but also in other continents. Another limitation concerns the variables used to determine predictive validity. Future research might include scales on various attitudes and behaviours. This might give one the opportunity to establish whether predictive validity of ratings is higher than that of rankings independent of the response pattern subjects have.

## ***Implications***

Our results imply that the true structure of the LOV items for all subjects contains one or more ties in all 5 countries studied. This conclusion confirms the assumption by Ng (1982) that a fully hierarchized value system can be a too strong an assumption in cross-national research. Rating allows ties and should therefore be the preferred measurement procedure in cross-national research.

The results are relevant for academic research as value research is currently done using rating and ranking procedures, and there is no consensus about which method should be preferred. Our results reveal that ratings are most or at least equally valid across all 5 EU countries and across the five groups of subjects we distinguished on the basis of their response pattern in ratings. For the samples most studied in academics, namely high educated younger subjects (students), the rating and ranking results are comparable and the predictive validity is higher for ratings. As ratings are easier to administer and the predictive validity is higher for rating than for ranking, we advocate the use of ratings in future value studies.

The results are also relevant for practice, as ratings are less cumbersome than rankings in data collection as well as in data analysis. Performing a ranking of, say, more than 10 items is a difficult task, and subjects have to see the items to be able to make the structure. Therefore, telephone interviewing and ranking of items is not possible, but rating can be done. The results of this study are therefore very promising, as telephone interviewing is used more and more nowadays (ESOMAR, 1997). Also in the analysis phase, ratings have advantages, as the scores are independent. Rankings pose additional problems in analyses as these measures are mutually dependent, and common techniques such as factor analysis cannot be performed. The use of ratings overcomes this drawback.



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**Table 1. Do ratings or rankings reflect the ‘true’ structure of values ?**

Response format			True structure	
			hierarchical	ties
Ranking			<b>correct</b>	error
Rating	response bias	yes	error	correct + error
		no	<b>correct</b>	<b>correct</b>

**Table 2. Mean scores of ranking and rating in five countries on the List of Values (LOV)**

	France		Italy		Germany		Britain		Spain		France		Italy		Germany		Britain		Spain	
	Rating	Ranking	Rating	Ranking	Rating	Ranking	Rating	Ranking	Rating	Ranking	Rating	Ranking	Rating	Ranking	Rating	Ranking	Rating	Ranking	Rating	Ranking
Sense of belonging	5.1	4.1	4.1	1.8	2.9	4.6	7.4	6.7	3.0	5.2	7.6	6.5	7.2	5.2	7.6	6.5	7.3	7.2	5.2	7.6
Excitement	4.6	4.0	4.0	5.2	4.0	3.6	6.8	6.5	6.8	6.5	6.5	6.8	6.5	7.3	6.5	7.3	7.3	7.2	5.2	7.6
Warm relationships with others	2.4	2.8	2.7	2.5	2.1	2.1	3.9	4.8	4.4	3.8	3.4	4.8	4.4	4.4	3.8	4.4	4.4	3.8	3.8	3.4
Self-fulfilment	3.9	2.2	3.5	2.6	2.4	2.4	6.5	3.8	5.6	5.2	4.6	6.5	3.8	5.6	5.2	4.6	5.6	5.2	4.6	4.6
Being well respected	2.3	2.0	4.9	2.9	1.9	1.9	3.8	3.9	7.5	5.4	3.6	3.8	3.9	7.5	5.4	3.6	3.7	4.9	4.7	4.7
Fun and enjoyment in life	1.8	3.3	2.0	2.6	2.4	2.4	2.8	5.9	3.7	4.9	4.7	2.8	5.9	3.7	4.9	4.7	3.7	4.9	4.7	4.7
Security	2.3	2.1	2.0	2.4	2.0	2.0	4.4	4.4	4.4	4.2	3.9	4.4	4.4	4.4	4.2	3.9	4.4	4.2	3.9	3.9
Self-respect	1.9	1.9	2.0	2.1	2.2	3.5	4.0	4.2	4.2	3.7	4.4	3.5	4.0	4.2	3.7	4.4	4.2	3.7	4.4	4.4
A sense of accomplishment	3.1	2.4	2.5	2.5	2.5	2.8	5.8	5.0	5.4	5.4	6.3	5.8	5.0	5.4	5.4	6.3	5.4	5.4	5.4	6.3
Mean	3.0	2.8	3.0	2.7	2.7	2.7	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Standard deviation	1.9	1.6	1.9	1.3	1.5	1.5	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7

1 = most important value, 9 = least important value



**Table 3. Groups based on response style in LOV ratings and their background characteristics**

	Total	Group 1	Group 2	Group 3	Group 4	Group 5
N (%)	4527 (100%)	651 (14%)	1446 (32%)	1351 (30%)	952 (21%)	127 (3%)
<b>Country*</b>						
France	22%	26%	24%	21%	14%	22%
Italy	24%	26%	23%	19%	31%	26%
Germany	21%	19%	21%	28%	13%	11%
Britain	19%	16%	17%	20%	21%	31%
Spain	15%	13%	14%	12%	21%	10%
<b>Age **</b>						
	43.1	44.4	43.8	42.0	42.0	47.3
<b>Education*</b>						
15/16	27%	27%	27%	25%	32%	27%
17/18	32%	31%	33%	28%	35%	25%
Advanced	18%	17%	18%	19%	18%	30%
University	23%	25%	22%	29%	15%	18%
<b>Income*</b>						
< 415 ECU	7%	7%	7%	6%	11%	10%
416 - 830 ECU	18%	15%	19%	15%	21%	14%
831 - 1245 ECU	29%	29%	30%	27%	28%	32%
1246 - 1660 ECU	23%	23%	24%	23%	23%	18%
> 1660 ECU	23%	26%	20%	29%	18%	26%

\*  $\chi^2$  significant,  $p < .001$ , \*\* F-value,  $p < .001$

**Table 4. Explaining correlations between ratings and rankings of the LOV**

	F-value	df	p
<b>COVARIATE</b>			
Age; b = 0.001	5.95	1	.015
<b>FACTORS</b>			
Income	3.93	4	.003
Education	12.07	3	<.001
Country	51.71	4	<.001
Group	178.33	4	<.001
Group by country	10.11	16	<.001
Group by income	3.39	16	<.001
Group by education	1.47	12	.128
Income by country	1.25	16	.222
Income by education	.83	12	.619
Country by education	1.66	12	.068
<hr/>			
R <sup>2</sup>	.18		

**Table 8. Predictive validity of rating and ranking of the List of Values**

Value	Attitude	GROUP											
		Total		1		2		3		4		5	
		rating	ranking	rating	ranking	rating	ranking	rating	ranking	rating	ranking	rating	ranking
sense of belonging -	listen advice friends	.077***	.037*	-.107**	.018	.047	.027	.071*	.062*	.042	.030	-.038	-.045
excitement -	like to try/buy new products	.167***	.071***	-.134**	-.115**	.158***	.083**	.117***	.062*	.130***	.061	.061	.018
excitement -	like to be invited to try in shop	.148***	.065***	-.078*	.032	.143***	.100***	.087**	.023	.147***	.092**	.030	.084
excitement -	wide choice of different brands	.191***	.090***	-.175***	.050	.226***	.120***	.162***	.082**	.103**	.105**	.121	.043
fun and enjoyment -	listen advice friends	.123***	.100***	-.089**	.123**	.130***	.106***	.093**	.110***	.100**	.080*	-.081	.046
Average Spearman correlation		.141	.073	.138	.068	.141	.087	.106	.068	.104	.074	.019	.033

\*\*\* p<.001; \*\* p<.01; \* p<.05

Figure 1. Prototypical response patterns

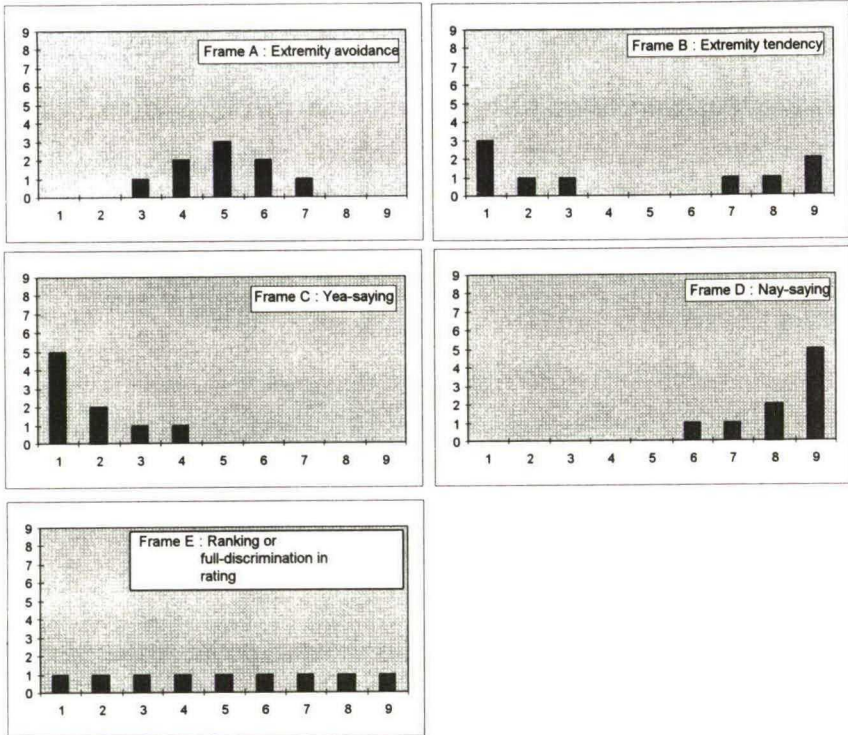
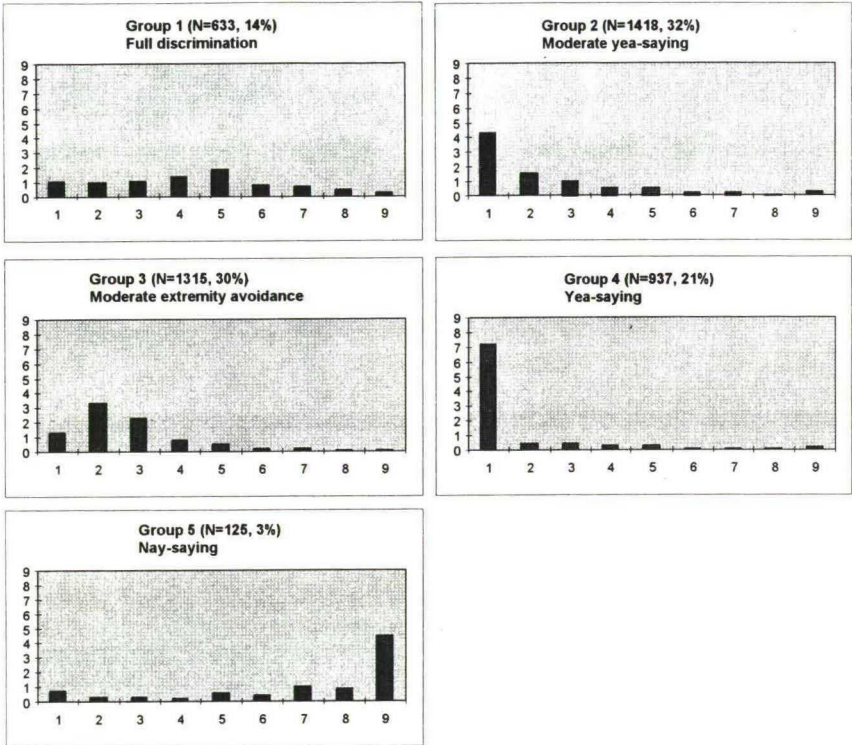


Figure 2. Empirical response patterns based on List of Values rating scores



No.	Author(s)	Title
9876	J. Timmer, P. Borm and J. Suijs	Linear transformation of products: games and economies
9877	T. Lensberg and E. van der Heijden	A cross-cultural study of reciprocity, trust and altruism in a gift exchange experiment
9878	S.R. Mohan and A.J.J. Talman	Refinement of solutions to the linear complementarity problem
9879	J.J. Inman and M. Zeelenberg	“Wow, I could’ve had a V8!”: The role of regret in consumer choice
9880	A. Konovalov	Core equivalence in economies with satiation
9881	R.M.W.J. Beetsma and A.L. Bovenberg	The optimality of a monetary union without a fiscal union
9882	A. de Jong and R. van Dijk	Determinants of leverage and agency problems
9883	A. de Jong and C. Veld	An empirical analysis of incremental capital structure decisions under managerial entrenchment
9884	S. Schalk	A model distinguishing production and consumption bundles
9885	S. Eijffinger, E. Schaling and W. Verhagen	The term structure of interest rates and inflation forecast targeting
9886	E. Droste and J. Tuinstra	Evolutionary selection of behavioral rules in a cournot model: A local bifurcation analysis
9887	U. Glunk and C.P.M. Wilderom	High performance on multiple domains: Operationalizing the stakeholder approach to evaluate organizations
9888	B. van der Genugten	A weakened form of fictitious play in two-person zero-sum games
9889	A.S. Kalwij	Household wealth, female labor force participation and fertility decisions
9890	T. Leers, L. Meijdam and H. Verbon	Ageing and Pension reform in a small open economy: The role of savings incentives
9891	R.T. Frambach, J. Prabhu and T.M.M. Verhallen	The influence of business strategy on market orientation and new product activity
9892	H. Houba and G. van Lomwel	Counter intuitive results in a simple model of wage negotiations
9893	T.H.A. Bijmolt and R.G.M. Pieters	Generalizations in marketing using meta-analysis with Multiple measurements
9894	E. van Damme and J.W. Weibull	Evolution with mutations driven by control costs
9895	A. Prat and A. Rustichini	Sequential common agency

No.	Author(s)	Title
9896	J.H. Abbring, G.J. van den Berg P.A. Gautier, A.G.C. van Lomwel and J.C. van Ours	Displaced workers in the United States and the Netherlands
9897	G.J. van den Berg, A.G.C. van Lomwel and J.C. van Ours	Unemployment dynamics and age
9898	J. Fidrmuc	Political support for reforms: economics of voting in transition countries
9899	R. Pieters, H. Baumgartner, J. Vermunt and T. Bijmolt	Importance, cohesion, and structural equivalence in the evolving citation network of the international journal of research in marketing
98100	A.L. Bovenberg and B.J. Heijdra	Environmental abatement and intergenerational distribution
98101	F. Verboven	Gasoline or diesel? Inferring implicit interest rates from aggregate automobile purchasing data
98102	O.J. Boxma, J.W. Cohen and Q. Deng	Heavy-traffic analysis of the $M/G/1$ queue with priority classes
98103	S.C.W. Eijffinger, M. Hoeberichts and E. Schaling	A theory of central bank accountability
98104	G.J. van den Berg, P.A. Gautier, J.C. van Ours and G. Ridder	Worker turnover at the firm level and crowding out of lower educated workers
98105	Th. ten Raa and P. Mohnen	Sources of productivity growth: technology, terms of trade, and preference shifts
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98107	F. Palomino and A. Prat	Dynamic incentives in the money management tournament
98108	F. Palomino and A. Prat	Risk taking and optimal contracts for money managers
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98110	A. Rustichini	Sophisticated Players and Sophisticated Agents
98111	E. Droste, M. Kosfeld and M. Voorneveld	A Myopic adjustment process leading to best-reply matching
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No.	Author(s)	Title
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98133	A.C. Meijdam	Taxes, growth and welfare in an endogenous growth model with overlapping generations

No.	Author(s)	Title
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