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The Social Representation of the Use of Seat Belts: a Facet Theory Approach.

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Abstract

In this article, Facet Theory is applied to research on driver safety, in particular the use of seat belts by French university student drivers. A theory is proposed concerning disputes between rules of conduct on the roads and drivers' behaviors. With increased driving experience, violations are justified by drivers, particularly young men who perceive themselves to be good drivers, and who drive often. A mapping sentence is developed, outlining the factors relevant to driving behavior and perception of traffic rules, with emphasis on use of seat belts. Empirical data collected through a survey of 160 French drivers, all of them university students, is analyzed using the multi-dimensional technique Smallest Space Analysis. Five facets have designed: nature of judgment, time of day, type of road, type of travelers, and place of travelers in the car. Four of the five facets of the mapping sentence are confirmed by the data analysis. One facet, type of road, was found to be problematic. These findings provide guidance for future research in this area.

A preliminary version of this study was presented at the 8th Facet Theory international conference at Ljubljana (Cohen, Pianelli and Abric 2003).

Introduction

Theoretical problem

The primary objectives of research on road safety, a worldwide community problem, are to determine the principal factors leading to accidents and to identify the types of drivers whose accident risk would be the highest. The researchers working in this field agree that for given drivers, behaviors, which violate traffic rules (i.e. speeding, running red lights, and not wearing seat belts), are relatively stable over time. Moget-Monseur and Biecheler-Fretel (1985) proposed the concept of "basic behavior of the driver" which is a system of rules of driving, both legal and conceptual, to which the driver strives to uphold. According to the authors of this article, this system refers to the social representation (Moscovici, 1961/1976) of the traffic laws.

A social representation, according to the field of social psychology, is knowledge compiled from experiments and information received and transmitted. The elements of the representation are treated on a hierarchical basis. "Any representation is organized around a central core, consisting of one or more elements which give significance to the representation" (Abric, 1997). Thus, social representations are governed by both a central system and a peripheral system (Abric, 1993; Flament, 1997).

The core determines the significance and organization of the representation. It is the most stable element of the representation, that which ensures continuity within changing and evolving contexts. Any modification of the core involves a complete transformation of the representation. The peripheral elements constitute most accessible and concrete parts of the social representation. The peripheral system allows the representation to adapt to varied social contexts. Social representations have great capacities to resist change.

However, the balance of a representation can be broken by external factors, such as modifications of the environment or social practices. "Any contradiction between social representations and practices brings, necessarily, the transformation of one or other" (Abric, 1997).

In the case of a *resistant transformation*, the type, which interests us here,[1] whose practices are contradictory with the social representation, are made compatible by the installation of defense mechanisms. These are referred to as "strange designs", from the French term *schèmes étranges* (Flament, 1997). These strange designs attempt to rationalize and explain the contradiction between social representation and practice. The permanence of the behavior and the multiplication of these strange designs lead, gradually, to the transformation of the core. In this article, we examine the strange designs and rationalizations used by drivers who violate traffic rules. The resistant transformation of the core of the social representation concerned with driving conduct and traffic rules, particularly in the case of seat belt use, is considered.

Previous research on driving

In research on driving, the principal methodology used rests on self-reported behavior (Reason & al., 1990; Parker & al., 1995; Manstead & al., 1992; Moget-Monseur & Biecheler-Fretel, 1985). Drivers are asked to indicate the frequency with which they exhibited various behaviors during the past year. The Driver Behavior Questionnaire (DBQ) (Reason & al., 1990; Parker & al., 1995) consists of fifty driving behaviors, errors and violations. Subjects are requested to estimate the frequency of their engaging in these behaviors. The authors emphasized that declared violations can be largely predicted by age, gender, driving skill and kilometers traveled. Larger numbers of declared violations are associated with young men who regarding themselves as better drivers than others and who drive many kilometers every year. Moreover, there is a clear link between self-reported violations and implication in accidents.

Many studies on driving have shown that the 15-24 year old age bracket is particularly likely to violate traffic rules, and that excess speeds constitute the most important violation and the primary cause of mortality on the roads in France. In addition, research has shown that while nighttime driving represents less than 10% of the traffic, it accounts for 47% of mortality on road. The number of young people among victims of fatal accidents at night is disproportionately high in comparison with their percentage in the population at large, since they account for 57% of nighttime fatalities.

Use of safety seat belts, has been respected much more during the last years, particularly thanks to the risk of sanction. In 2000, 70% of the French interviewees between the ages of 18 to 25 years said they regard not putting on a seat belt as very serious, whereas 62% of the same age group said they considered this a serious violation in a 1999 survey.

[1] Other types of irreversible transformation are the progressive transformation and the brutal transformation. See Abric 1996, 1997.

In a study carried out by the SOFRES market information group in June 2000, drivers were asked to answer the following question: "For each of the following behaviors, would you say that you consider it: unacceptable, condemnable or acceptable?" The results show that if "not putting on a seat belt in the front seat" is unacceptable for 64%, "not putting on a seat belt in the back seat" is considered to be unacceptable by only 31% of the questioned drivers, thus, this violation is largely tolerated and normalized by the drivers. Currently in France, seat belt use in the front seat is 96% on the motorways and approximately 75% on residential roadways. With regard to seat belt use in the back seat, the percentages are 51% and 48%, respectively.

Moget-Monseur and Biecheler-Fretel (1985) tried to analyze the nature of legal or abstract norms in driving with a study on basic behavior of drivers. These authors also used a questionnaire of self-reported behavior. They found that classically identified tendencies, such as the use of the vehicle in an aggressive way and driving at night are significant criteria for risk levels. Moreover, these authors showed that violations made in residential areas, which would seem relatively benign for experienced drivers, were considered unacceptable by recently-qualified drivers, i.e. those who have been driving for less than one year. These authors also established the statute of rules of circulation. According to Moget, rules of driving would be considered useless because "the driver would trust only the feeling of immediate danger to satisfy his need for security". In the same way, Saad (1988) highlighted that risk-taking would depend on the importance of the perception and the assessment of the danger by the drivers.

Purpose and hypothesis of the current study

A previous study by Pianelli & Javoise (2002) had explained the stability of the violated behavior by highlighting the existence of a social representation of traffic rules and the resistant transformation of this representation with the practice of driving. According to the road network, there is a modification of the social representation of the rules of circulation.

In this article we chose to center on the social representation of the use of the seat belt. In the previous study of Pianelli & Javoise (2002), evidence was provided by ANOVA that the use of the seat belt was more or less respected, not using it was considered dangerous and the rule mandating its use was disputed according to: gender, traveler's place in the vehicle, the time of the day and the type of road. The current study will show that the Guttman approach is applicable to this type of material and that, more specifically, it allows the exposure of the structure of the data.

Method

Population

Our population is taken from the study of the master's dissertation of Pianelli & Javoise (2002). It comprises 160 drivers from 18 to 25 years, all students. These drivers differ

according to gender (80 men, 80 women), driving experience (80 subjects have been licensed for less than one year, 80 for more than one year) and their frequency of driving (80 drive often, 80 seldom drive). The building of the questionnaire was done individually in the universities of Law and Letters and Social Sciences of Aix-en-Provence and Paris. However, the variable "place of residence" was not taken into account because no significant difference according to the place of residence was noted during the pretest.

Construction of the questionnaire

The questionnaire was built within the framework of the master's dissertation of Pianelli & Javoise (2002). It was constructed from the items of the Driver Behavior Questionnaires of Reason (1990; 1995), those of Moget-Monseur (1985) and the oral arguments from relevant lawsuits in France in the year 2000. These items were completed by adding certain recent violations like those related to the use of a seat belt in the back seat.

The questionnaire is composed of three parts. The first part relates to the self-declared frequency of various driving behaviors. The second part deals with the contestable or non-contestable nature of certain rules of the highway. The third part addresses the perceived level of danger of these behaviors by the subjects. These three parts are organized around the same logic. The subjects must successively fill them out while thinking about driving in town, on trunk roads and on the motorway.

Facet Theory

In the present article, we analyze the data using Facet Theory and its various procedures. Facet theory was developed by Louis Guttman (1959; 1968; 1982) as a way to organize analyses of multi-dimensional, multi-faceted systems. In explaining facet theory, Guttman first addresses the concept of "theory". A theory, according to Guttman, is a hypothesis of a "…correspondence between a definitional system for a universe of observations and an aspect of the empirical structure of those observations, together with a rationale for such a hypothesis," (Guttman quoted in Gratch, 1973: 35). The facet analysis of the social representation of seat belt use and norms shows the structural organization of the representation.

Mapping sentence

A theoretical basis is outlined using a tool called a mapping sentence (Guttman, 1959, 1965; Levy, 1976, 1985). Each facet in the mapping sentence represents a way of classifying the research variables and each plays a role in interpreting the empirical data. Though the mapping sentence introduces formality, it is a flexible device as it can easily, but systematically, be enlarged or condensed by adding or reducing facets or elements within the facets.
The mapping sentence for this research is presented in figure 1.

The driver X states the degree of $\begin{Bmatrix} A \\ 1\ frequency \\ 2\ contestability \\ 3\ dangerousness \end{Bmatrix}$ in the use/non use of seat belt during $\begin{Bmatrix} B \\ 1\ day \\ 2\ night \\ 3\ unspecified \end{Bmatrix}$ time in the framework of $\begin{Bmatrix} C \\ 1\ town \\ 2\ trunk \\ 3\ motorway \end{Bmatrix}$ road, in relation to recipients $\begin{Bmatrix} D \\ 1\ driver\ him/herself \\ 2\ other\ travelers \\ 3\ unspecified \end{Bmatrix}$ who are sitting at the $\begin{Bmatrix} E \\ 1\ front \\ 2\ back \\ 3\ unspecified \end{Bmatrix}$ of the car → $\begin{Bmatrix} R \\ low \\ \downarrow \\ high \end{Bmatrix}$ statement of facet A.

The Facet A corresponds with the structure of the questionnaire, which is composed of three parts: the self-declared frequency of various driving behaviors; the contestable or non-contestable nature of certain rules of the highway; and the perceived level of danger of these behaviors by the subjects. In fact, Facet A functions as a regular facet and as a range facet, in fact a multi-range. The Facet B distinguishes between various periods of time and hypothesizes that respondents behave and perceive the use of seat belt in different ways, accordingly. Facet C refers to the various types of roads and verifies the accuracy of this classic distinction in the literature. Somebody may insist on the use of a seat belt for the driver, but not necessarily for the other travelers, or inversely. Facet D deals with this issue.

Lastly, as a consequence of the new law in France, the use of seat belts also in the back of the car is now compulsory. Yet it is not certain whether or not the new law is obeyed. Facet E addresses this question.

In the Table 1 (see in page 6), each of the 26 items is indicated and defined in accordance with the five facets of the mapping sentence. The numbers 1, 2 and 3 in the table indicate the element of each facet which corresponds to the questionnaire statement. For example, the first line in the table, in text read as "Frequently at night in town the driver him/herself sitting in the front seat does not use a seat belt". This statement corresponds to facet A (1), facet B (2), facet C (1), facet D (1) and facet E (1). In this way, using the mapping sentence, each possible statement can be represented as a five-numbered profile.

Smallest Space Analysis

The data were analyzed using a technique, also developed by Guttman, called a Smallest Space Analysis (SSA).[2] The first step in conducting the SSA is the calculation of a matrix

[2] The analysis was performed with the help of a statistical analysis package, the Hebrew University Data Analysis Package (Canter, 1985; Guttman, 1968, 1982; Levy, 1994, Amar and Toledano, 2001).

of the correlation between the chosen variables. The Monotonicity Coefficient, a regression-free coefficient of correlation (Guttman, 1986), was used.[3] The program calculates the correlations between each pair of items.

The Smallest Space Analysis (SSA) plots the information from the correlation matrix in a Euclidean space called the 'smallest space'. The points are plotted according to the principle: the higher the correlation between two items, the closer they are on the map and, conversely, the lower the correlation, the further apart they are (Guttman 1968; Levy 1985, 1994). The map graphically represents the relationships between the items by revealing distinct regions of correlated data (Guttman, 1968, 1982; Canter, 1985; Levy, 1994; and Shye, 1978).

This methodology was applied because it has proven successful in a number of previous studies analyzing attitudes (Ben-Sira and Guttman 1971; Canter, 1985; Cohen, E.H. forthcoming; Cohen, Clifton and Roberts 2001; Levy, 1994; Schwartz and Bilsky 1987, 1990). The purpose here is not to champion one particular technique of multi-dimensional analysis, but to attempt to understand the data using an appropriate analytic tool.

The researcher then looks for a structure in the SSA map, guided by the theoretical basis of the study, as outlined in the mapping sentence. The location of the items in the space is objective, based on their inter-correlation, but the interpretation of the relationship between them is subjective. There are a number of different structures which can be recognized in SSA maps; polar (regions emanating from a central point), concentric circles, consecutive slices, etc. Each of these structures itself tells much about the nature of the system under investigation (Levy 1994).

Table 1: List of the 26 questions and their Facet profile

Items	Questions	Facets' elements				
		A	B	C	D	E
Indicate if during the past year you produced this behavior: always, often, sometimes, never.						
TOWN						
VF4	You don't use the seat belt during the night.	1	2	1	1	1
VF12	You leave your passengers free not to use the seat belt.	1	3	1	2	3
VF20	You don't use the seat belt during the day.	1	1	1	1	1
TRUNK ROAD						
RF1	You don't use the seat belt during the night.	1	2	2	1	1
RF10	You leave your passengers free not to use the seat belt.	1	3	2	2	3
RF16	You don't use the seat belt during the day.	1	1	2	1	1
MOTORWAY						
AF5	You don't use the seat belt during the day.	1	1	3	1	1
AF12	You don't use the seat belt during the night.	1	2	3	1	1

[3] Readers should be aware that the non-linear MONCO correlations are always higher than the more traditional, linear, Pearson correlations. This is because MONCO measures whether or not two items increase or decrease in the same direction. It is more sensitive (though less useful as a predictor), and recognizes a wider variety of correlations as "perfect."

AF20	You leave your passengers free not to use the seat belt.	1	1	3	1	1
Do you consider these rules as contestable or non-contestable?						
TOWN						
VC6	Use of the seat belt obligatory in the front of the car, during the night.	2	2	1	3	1
VC11	Use of the seat belt obligatory in the front of the car, during the day.	2	1	1	3	1
VC15	Use of the seat belt obligatory at the back of the car.	2	3	1	3	2
TRUNK ROAD						
RC2	Use of the seat belt obligatory in the front of the car, during the day.	2	1	2	3	1
RC7	Use of the seat belt obligatory at the back of the car.	2	3	2	3	2
RC15	Use of the seat belt obligatory in the front of the car, during the night.	2	2	2	3	1
MOTORWAY						
AC2	Use of the seat belt obligatory in the front of the car, during the day.	2	1	3	3	1
AC9	Use of the seat belt obligatory in the front of the car, during the night.	2	2	3	3	1
AC13	Use of the seat belt obligatory at the back of the car.	2	3	3	3	2
Do you consider this behavior as: little dangerous, dangerous, or very dangerous?						
TOWN						
VD4	Not to use the seat belt.	3	3	1	3	3
VD9	Leave passengers free not to use the seat belt.	3	3	1	2	3
TRUNK ROAD						
RD2	Not to use the seat belt in the front of the car, during the day.	3	1	2	3	1
RD14	Not to use the seat belt in the front of the car, during the night.	3	2	2	3	1
RD19	Leave passengers free not to use the seat belt.	3	3	2	2	3
MOTORWAY						
AD3	Not to use the seat belt in the front of the car, during the day.	3	1	3	3	1
AD11	Not to use the seat belt in the front of the car, during the night.	3	2	3	3	1
AD19	Leave passengers free not to use the seat belt.	3	3	3	2	3

RESULTS

The multi-dimensional analysis

The large amount of data and large number of variables (gender, type of road, time of day, driving experience) makes it difficult to get a cohesive, overall picture of attitudes towards seat belts use from the tables alone. The following multi-dimensional analysis portrays, graphically, the correlation between the variables.

The correlation matrix shown in table 5 shows that all the correlations between the 26 items are positive. This result is in line with Guttman's "First Law of Attitude" (Gratch 1973): "If any two items are selected from the universe of attitude items towards a given object, and if the population observed is not selected artificially, then the population regressions between these two items will be monotone and with a positive or zero sign" (Guttman 1981).

Table 5: MONCO correlations between the 26 variables

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
VF4	1	100	69	99	100	64	99	98	98	39	66	87	51	82	54	66	66	69	58	36	47	62	66	61	71	35	46
VF12	2	69	100	64	61	95	94	85	85	90	22	22	42	67	53	58	58	66	71	24	63	63	41	72	50	26	77
VF20	3	99	64	100	98	76	98	99	98	35	64	77	66	68	60	64	64	67	54	48	43	59	42	45	47	55	57
RF1	4	100	61	98	100	72	97	98	98	17	71	71	63	75	57	85	39	62	51	56	26	34	39	54	75	29	40
RF10	5	64	95	76	72	100	86	75	83	96	41	41	45	77	68	70	70	76	70	36	55	64	41	75	77	58	86
RF16	6	99	94	98	97	86	100	99	100	54	56	56	58	60	58	56	74	76	70	64	72	71	74	73	60	67	59
AF5	7	98	85	99	98	75	99	100	98	44	77	77	65	80	64	77	77	78	64	55	52	84	77	67	64	71	63
AF12	8	98	85	98	98	83	100	98	100	60	22	22	52	28	51	59	59	48	64	55	66	55	59	77	64	51	63
AF20	9	39	90	35	17	96	54	44	60	100	30	30	48	71	69	76	65	64	79	39	66	60	50	85	71	54	79
VC6	10	66	22	64	71	41	56	77	22	30	100	99	93	99	95	96	96	100	87	73	71	96	96	81	95	95	79
VC11	11	87	22	77	71	41	56	77	22	30	99	100	93	99	95	93	96	99	87	73	71	92	93	81	95	91	79
VC15	12	51	42	66	63	45	58	65	52	48	93	93	100	100	98	84	84	100	91	71	80	77	73	68	81	79	67
RC2	13	82	67	68	75	77	60	80	28	71	99	99	100	100	100	97	99	100	96	78	76	97	97	86	98	96	90
RC7	14	54	53	60	57	68	58	64	51	69	95	95	98	100	100	81	89	100	95	53	77	75	81	79	87	78	72
RC15	15	66	58	64	85	70	56	77	59	76	96	93	84	97	81	100	93	99	79	82	88	92	93	88	95	91	92
AC2	16	66	58	64	39	70	74	77	59	65	96	96	84	99	89	93	100	100	93	82	80	96	96	88	97	97	92
AC9	17	69	66	67	62	76	76	78	48	64	100	99	100	100	100	99	100	100	100	94	94	100	100	94	99	100	95
AC13	18	58	71	54	51	70	70	64	64	79	87	87	91	96	95	79	93	100	100	63	80	75	79	82	91	79	72
VD4	19	36	24	48	56	36	64	55	55	39	73	73	71	78	53	82	82	94	63	100	85	91	89	86	97	92	82
VD9	20	47	63	43	26	55	72	52	66	66	71	71	80	76	77	88	80	94	80	85	100	94	93	92	96	86	93
RD2	21	62	63	59	34	64	71	84	55	60	96	92	77	97	75	92	96	100	75	91	94	100	100	94	98	98	96
RD14	22	66	41	42	39	41	74	77	59	50	96	93	73	97	81	93	96	100	79	89	93	100	100	93	99	99	92
RD19	23	61	72	45	54	75	73	67	77	85	81	81	68	86	79	88	88	94	82	86	92	94	93	100	100	92	97
AD3	24	71	50	47	75	77	60	64	64	71	95	95	81	98	87	95	97	99	91	97	96	98	99	100	100	98	100
AD11	25	35	26	55	29	58	67	71	51	54	95	91	79	96	78	91	97	100	79	92	86	98	99	92	98	100	91
AD19	26	46	77	57	40	86	59	63	63	79	79	79	67	90	72	92	92	95	72	82	93	96	92	97	100	91	100

The original coefficients were multiplied by 100 and rounded into integer numbers.

Figures 1 shows the SSA map of the data from Table 1. As will be discussed in more detail below, four of the five facets are simultaneously verified in two-dimensional SSA (Figure 1), giving the result a strong structural character. Figures 2-6 show the same graphic representation of the data, but with the profile for one facet shown in each figure. The numbers 1, 2 and 3 represent the element in the respective facet, as shown in table 1. For example, in figure 2, all questionnaire items related to frequency are represented as 1, all items related to contestability as 2 and all items related to dangerousness as 3. The applicability of the facet is verified if contiguous regions for each element may be recognized in the SSA. In general, the mapping sentence is empirically verified. Some of the facets are perfectly verified, other a little less so. One facet, C, was not verified.

Facets A, D and E are excellent (respectively Figures 2, 5 and 6). They are perfectly confirmed by the data analysis ($\nu = 1.00$)[4] (Amar, 2001).

Facet B (Figure 3) is good but not perfect. Four variables are not located where expected ($\nu = 0.95$).

Facet C (Figure 4) is the most problematic of the facets, as the automatic regionalization of the map is poor.

Nevertheless, using the old methods of regionalization by hand, the three various expected regions are recognizable even if the shape of the regions is not as well clear-cut as in the case of the other facets. It thus appears that three variables among the 26 variables are badly "localized". As the regionalization has been applied by hand, we cannot supply the coefficient of regionality ν .

In Facet Theory, we do not only distinguish between elements of a Facet (an aim that other methods such as Factor Analysis may deal with), but also uncover the structure of this distinction, through the various shapes of the regions (Maraun, 1997). Interestingly, all three basic shapes of SSA are represented in our case: polar (Facets A and D), modular (Facets B and C) and axial (Facet E). Each facet is expected to play a lawful role (Levy, 1985).

In the polar structure, the elements have a partial range format. The life areas appear in such a way (Levy & Guttman, 1975; Cohen, 2000). Facet A, which considers the various items from three points of view (or ranges), was expected to play a polar role. The case of the Facet D is less evident, as we may have expected for a modular structure with the "him/herself" element at the core.

In the modular structure, the elements have a different role or status, from a core to the periphery. The intelligence tests analysis shows such a structure, from the core to the

[4] ν is the coefficient of regionality.

periphery: inference, application, learning (Guttman & Levy, 1991). Facet B corresponds perfectly to this structure, with the "day time" in the very center, the "night time" at the next level, and the "unspecified" at the outer periphery. In Facet C, the "town" element is in the far periphery, indicating a low consensus for this framework of road.

In the axial structure, the elements are ranged: for instance, from simple to complex as in the Bloom taxonomy (Cohen, Clifton & Roberts 2001).

Figure 1: Geometric representation of the Table 1 (alienation = .185)

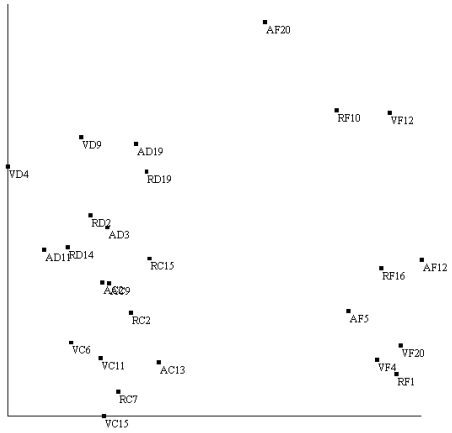


Figure 2: Data according to the Facet A ($\mathcal{V}$ = 1.00; $\mathcal{V}_0$ = .369).

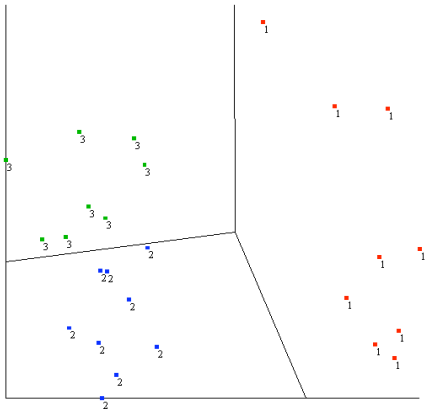


Figure 3: Data according to the Facet B ($\mathcal{V}$ = .956; $\mathcal{V}_0$ = .495).

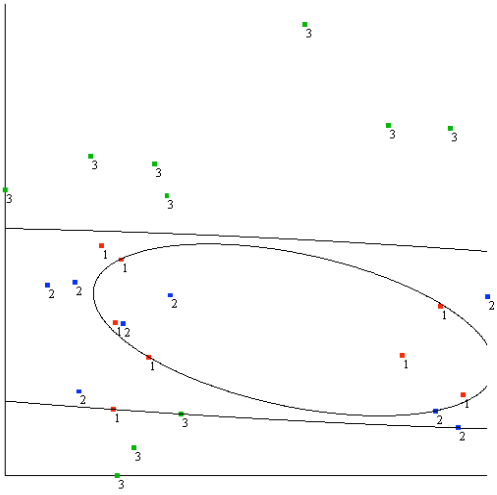


Figure 4: Data according to the Facet C

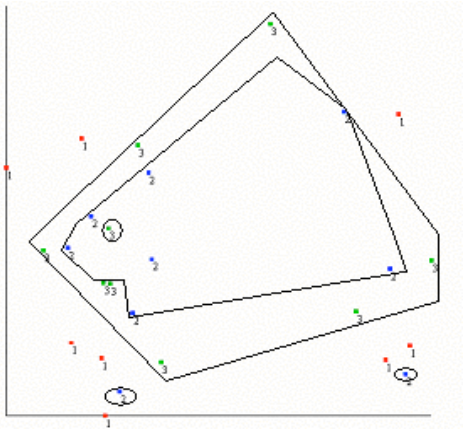
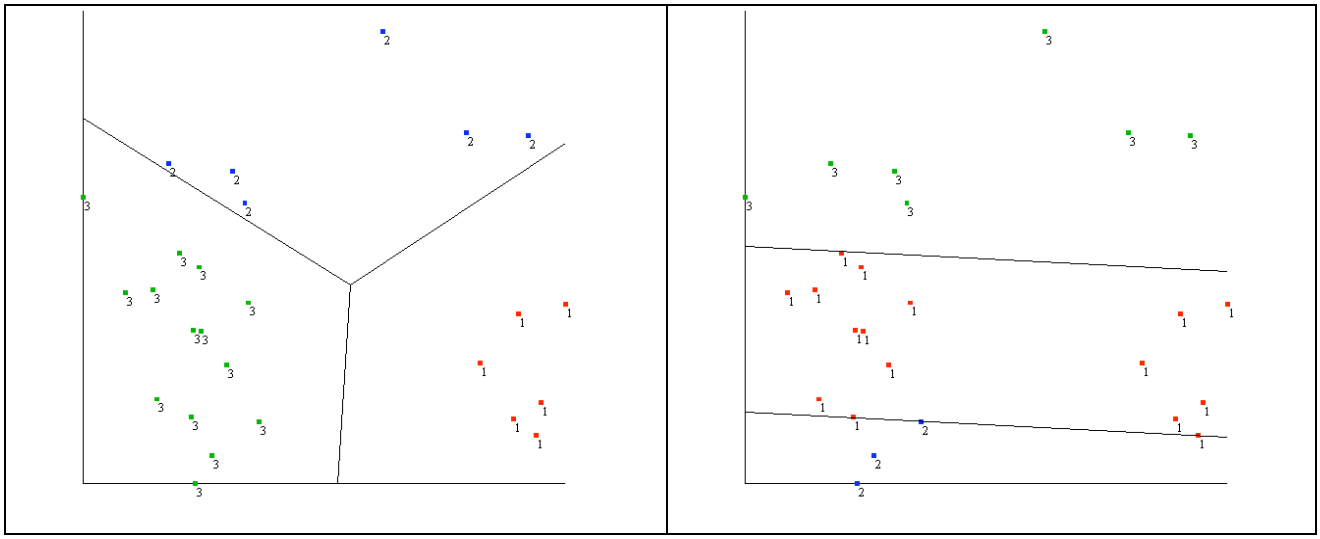


Figure 5: Data according to the Facet D ($\mathcal{V}$ = 1.00; $\mathcal{V}_0$ = .487).

Figure 6: Data according to the Facet E ($\mathcal{V}$ = 1.00; $\mathcal{V}_0$ = .378).



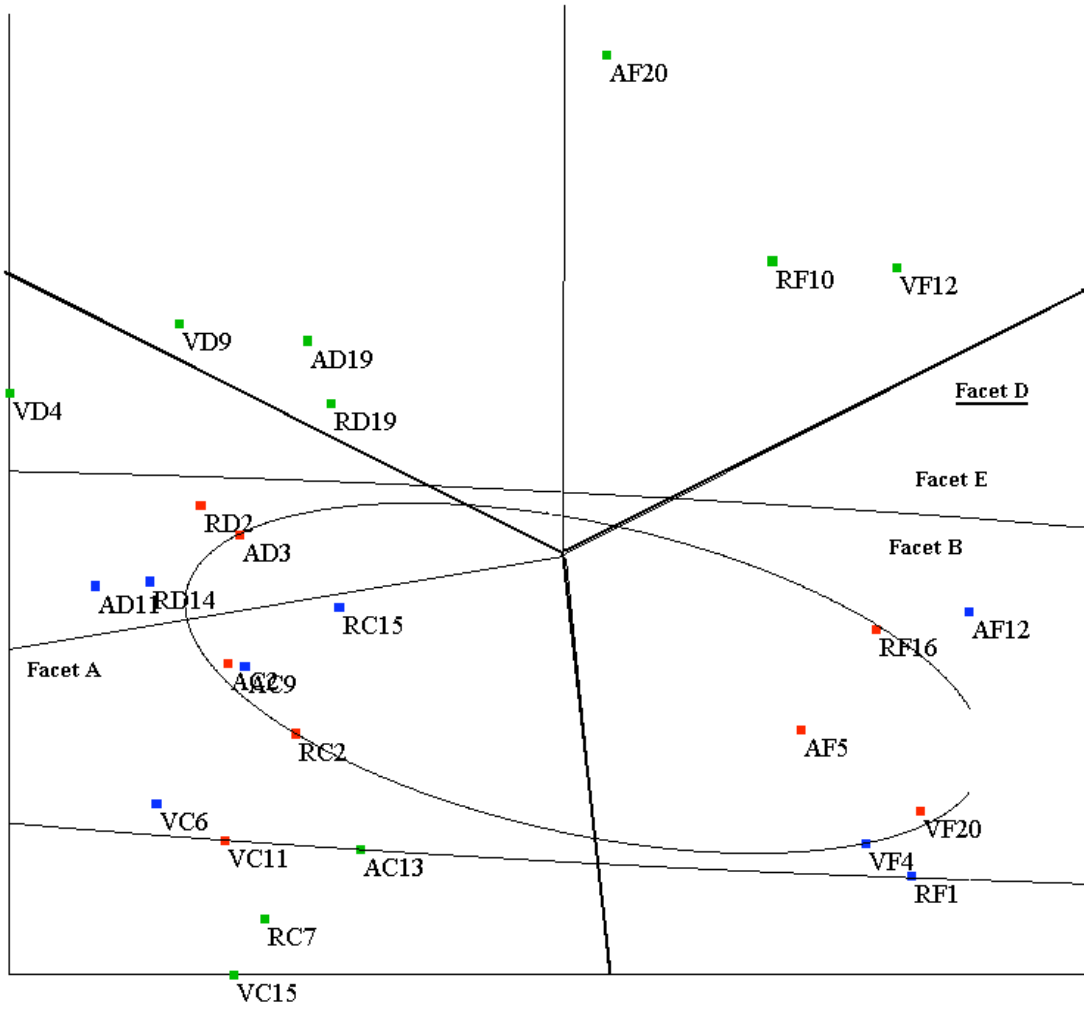
DISCUSSION

Based on the results of this analysis, we suggest that facet C, related to the type of road, not be retained in the final mapping sentence and SSA map. This facet was the most problematic and not well verified empirically. As mentioned, facet C has a core-periphery modular structure. Pianelli & Javoise (2002) found that drivers use their seat belt on trunk roads and motorways more than in town and that they consider not using seat belts on trunk roads and motorways, where speeds are often higher, to be more dangerous than not using them in town, where speeds are lower and trips may be of shorter duration. Based on these results, it was expected that attitudes towards seat belt use would be related to type of road traveled. However, this was not upheld by the empirical data.

Figure 7 shows the graphic representation of the data with the compilation of the borders of four of the five facets as shown individually in figures 2, 3, 5 and 6. Facet C (figure 4) is not included due to its lack of verification.

The ability of the SSA approach to simultaneously represent multiple facets is one of its important strengths. Representation of several facets at the same time has proven to be difficult in Factor Analysis, as shown in Maraun (1997).

Figure 7: Integrative SSA with Facets A, B, D and E represented



CONCLUSION

These results indicate that the Guttman approach is applicable to this type of material and it allows the exposure of the structure of the data, simultaneously representing the various facets.

The polar structure of the facet A is particularly interesting. In fact, this Facet deals with three types of range, and shows their structure of interrelation. The element 1 (Frequency) is the less consensual, and therefore constitutes a large region. Conversely, the elements 2 and 3 (respectively Contestability and Dangerousness) appear as consensual.

Facet C, type of road, was found to be the most problematic. It may be that due to the traffic layout of Marseilles and its suburbs the drivers interviewed could not easily distinguish between town roads, trunk roads and motorways. This result itself may be crucial in understanding attitudes towards road safety in the emerging megalopolis where driving on high speed motorways is part of a short trip to the local store.

It appears that the Guttman approach could enrich and complete classic methods of studying social representations, notably by providing a visual representation of the structure of the social representation.

Further research on the basis of the Guttman theory should be applied to other objects of representation, particularly those related to driving speed. Other issues for further research may relate to age of the passenger (children versus adults) and driving after drinking.

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