

A highlight of the relationship between *thêmata* and social representations using a hierarchical clustering method

JIMMY BORDARIE

Research reports the use of many tools in order to study social representations within the structural approach. In this study, we focus on the questionnaire of characterization. It constitutes an interesting way to determine central elements of a representation by inducing a selection of the most and least characteristic words related to an object. The innovative approach of our research is based on the application of a hierarchical clustering method in order to analyse data coming from the questionnaire of characterization. We are interested in differences existing in drivers' representations of speed limits, more specifically considering the 30 km/h. This new and growing public policy of urban mobility in Europe insures many aspects related to safety and quality of life. Results confirm the existence of different representations of the 30 km/h. The clustering method shows that these representations seem to be linked to a higher level of social thinking construction: *thêmata*. In the population, we highlight the existence of a representation oriented towards prosocial aspects of the public policy and a representation oriented towards the disadvantages of the measure. The discussion puts in relationship these representations with the *thêmata* of the Alter and the Ego, explaining the orientation of each representation.

Key words: social representations, clustering method, questionnaire of characterization, *thêmata*, 30 km/h

This research fits into the social representations theory. Social representations have constituted a wide field of research in social psychology since Moscovici's works in 1961 (Farr, 1987; Moscovici, 1961, 1984, 1989, 1992; Moscovici & Hewstone, 1983; Wagner, 1996). They are one step in the construction of social thinking, just like opinions, attitudes, ideology, and *thêmata* (Rouquette, 1973, 1996). The paradigm of the social thinking hierarchy illustrates the influence of its different components on each other. For instance, *thêmata* (Holton, 1973; Marková, 2003; Moscovici, 1992) are the most global level of social thoughts and they exercise an influence on social representations through the prism of the ideology. More specifically, this paradigm suggests that *thêmata* consist of two opposed poles (for instance, the good vs. the bad, the fair vs. the unfair, etc.). Social representations are built and located in between these two poles and the individuals' focus towards one of

the poles influences them. Social representations appear as "common sense knowledge of the reality" (Jodelet, 1989, 1991; Moscovici, 1961) and they constitute a reading-grid of the reality (Moliner, 1988). Among others, social representations provide a function of knowledge, and a function of orientation and justifications of practices (Abric, 1994, 2003; Jodelet, 1989). Social representations are thus an interesting framework for analysing individuals' practices and behaviours.

Within the structural approach of social representations, the theory of central core (Abric, 1976, 1994, 2001; Flament, 1984, 1987; Gaymard, 2003, 2006, 2014; Guimelli, 1993) defends the existence of two components in the structure of social representations. The central core is consensual; it organizes and gives its sense to the representation (Abric, 1976). The central core defines the object. It is composed of central elements, which are "non-negotiable" and "absolute", even though recent researches demonstrate they contain a conditional dimension and it could be more acceptable to say that they are "more" absolute than other elements (Bordarie, 2015; Gaymard, 2014). The second component is the periphery. This system is an interface between the cognitive dimension of social representations and individual practices. The periphery is highly prescriptive and conditional. It is the place of norms and social practices (Flament, 1987, 1994a, 1994b, 1999; Gaymard, 2003, 2014).

Jimmy Bordarie, Université Sorbonne Nouvelle Paris 3, Institut de la Communication et des Médias; Communication, Information, Médias; EA 1484, 13 rue Santeuil, 75005 Paris Cedex 05, France.
E-mail: jimmy.bordarie@hotmail.fr (the address for correspondence).

Acknowledgments:

The author wants to thank the City Hall of Angers (France), the University of Angers (Laboratoire de Psychologie des Pays de la Loire), and Pr. S. Gaymard and A. Laurent for supporting this research. The author also wants to thank the reviewers for their relevant remarks.

We specifically apply this theoretical framework to urban mobility and road safety. Driving is a highly regulated action, and the Highway Code gathers together the different rules. These rules constitute dictates that people must respect. However, dictates are above all conditional (Flament, 1994a, 2001; Gaymard, 2009, 2014; Gaymard & Tiplica, 2012). It is socially acceptable and legitimate to break some rules of Highway Code (Verkuyten, Rood-Pijpers, Elffers, & Helsing, 1994). For instance, the respect of the 30 km/h depends on the environment (Bordarie & Gaymard, 2015a). Moreover, young drivers are more likely to disregard the speed limit (Barjonet & Saad, 1986). Confirming these results, Gaymard (2007) showed that speed limits are the most conditional rule. In other words, it's largely and socially accepted not to comply with speed limits. Drivers use many reasons to explain this transgression. These legitimate transgressions confirm the role of social norms and normative models in constructing representations. Norms directly answer to the necessary adaptation of behaviours according to the context. Depending on the object, young people can refer to different models: parents and peers, for example, or teachers (Flament, 1999; Gaymard & Andrès, 2009). For instance, the adolescents' representation of the moped is strongly affected by their relationship with peers (Gaymard & Bessin, 2014). But the influence of normative models is mostly related to the object of representation and they also can refer to different models for a same object according to the circumstances (Bordarie & Gaymard, 2014). Young drivers seem to be more influenced by the model of their parents for the representation of the 30 km/h (Bordarie & Gaymard, 2014).

The public policy of the 30 km/h is linked to different social stakes (road safety, quality of life, environmental issues, etc.). Social stakes are a necessary condition for representations to emerge and individuals' focusing generate groups' identity and social cohesion (Moliner, 1996). Clémence (2003, p. 394, our translation from French) says "a social representation appears when the object is becoming a stake, when different points of view exist, and the development of this representation occurs when these points of view meet and grow". Scandinavian and North Europe countries started to implement the 30 km/h around the 1970's. Countries like Netherlands, Denmark, or Sweden reduced speed limits to 30 km/h in residential areas several decades ago. In 1992, Graz in Austria became one of the first big European cities almost entirely limited at 30 km/h. In 2002, Belgium decided to extend these areas to all school areas. The 30 km/h is one of the forty road safety measures that Germany plans to implement before 2020. Many small cities in France, Netherlands, and Switzerland have been limited at this speed since 2000's. And since 2010's, lots of bigger cities have implemented the 30 km/h limit, sometimes extending it to almost their entire territory, like, for example, Angers in France since 2013.

This particular speed is most often used to treat road mortality issues (Davis, 2001; Richards, 2010; Rosén &

Sander, 2009; Rosén, Stigson, & Sander, 2011). By reducing the speed from 50 km/h to 30 km/h, the risk of pedestrians' mortality in an accident is more or less divided by 4. And this speed limit also decreases accidents numbers in town. Indeed, authors reveal that accidents decrease from 11% (Bunn et al., 2003) to 25% (Elvik, 2001), and up to 42% in some cases (Grundy et al., 2009). And they also argue that not only pedestrians are concerned. At 30 km/h in urban areas, there is a reduction of accidents: 17% for cyclists, 32% for pedestrians, 33% for motorcycles users, and up to 53% for car drivers (Grundy et al., 2009). Some studies have shown that reducing speed limits has other effects as well. It appears to be a good way to improve quality of life (Gaymard & Bordarie, 2014a, 2014b). In particular, we could mention the effect on noise from cars (Spessert, Kühn, Leisker, & Stiebritz, 2010) and on social and commercial activities (Appleyard & Lintell, 1972; Certu, 2010; Rogers & Gumuchdian, 2008). These aspects are important because they are directly related to the representation of an ideal neighbourhood (Bordarie, 2015; Gaymard & Bordarie, 2014a).

So, there are many social stakes in the implementation of the 30 km/h. In order to confront individuals with those different social stakes, a questionnaire of characterization is a relevant tool to propose a wide range of items related to these stakes. Flament (1981) actualised and integrated the questionnaire of characterization in the field of social representations. In the literature, lots of studies use it (Ajcardi & Therme, 2007; Bordarie, 2015; Fontaine, 2007; Gaymard, 2003; Gaymard & Joly, 2013; Guimelli, 1998; Lo Monaco, Piermatteo, Guimelli, & Abric, 2012; Mamontoff, 2008; Vergès, 2001). This method is already used in the field of social representations applied to mobility and road safety (Abric & Pianelli, 2006; Andrès & Gaymard, 2010; Gaymard, Andrès, & Nzobounsana, 2011).

The questionnaire of characterization rests on a list of words related to the object. Between these words, individuals choose the words they consider the most and the least characteristic of the object. Thus, within a structural perspective, we can appreciate elements according to their potential nature: central or peripheral. Indeed, "we can consider a central element has the property of being more characteristic than any other element in the representation" (Abric, 2003, p. 66, our translation from French). It makes sense because in representations, central elements generate a broader consensus than peripheral elements. Consensus is one essential criterion to evaluate the centrality of an element in the structure of a social representation. However, this method is principally indicative for helping the identification of central elements. It's just an index of "the link between the items and the represented object" (Vergès, 2001, pp. 540-543) because instructions are constraining. Individuals choose between a limited number of items that they did not choose. Nevertheless, this method is an interesting way for identifying different profiles according to the nature of social stakes that individuals are focusing on. Indeed,

groups' identity and their cohesion depend on the stakes that individuals use to define the object.

Aim of the research and hypotheses

The aim of this research is to study the drivers' social representation of the 30 km/h. By using the questionnaire of characterization, we can identify central elements of their representation. The clustering method is interesting because we can then analyse any differences within our sample and the potential existence of different subgroups according to the aspects they are focusing on. Considering the different contributions arguing the impact of 30 km/h on different social life aspects, we put forward the following hypotheses:

- There exists a social representation of the 30 km/h. We assume that we can determine which elements are central in the representation, confirming the existence of a representational structure (Abric, 1994, 2003).
- Given that the main argument to explain the relevance of the 30 km/h concerns the safety and its impact on accidents and mortality, we think that the safety should appear central in the representation of the 30 km/h.
- We also assume that using a clustering method should contribute to reveal the existence of different profiles of drivers depending on their focus on different stakes related to the 30 km/h.

METHOD

Participants

One hundred and six motorists living in Angers compose the sample of this study. All participants declare that they use the car as principal transport mode. They all are drivers and they own their driving license. The average age is 48 years ($SD = 12.6$). It includes 42% men. This sample is not exactly representative of Angers' inhabitants as it is constituted of voluntary respondents, but we can see that proportions of male and female are not far from the distribution in Angers. Indeed, with regards to Angers' inhabitants, 54.2% are women and 45.8% are men (INSEE, 2015). Participants were recruited by being drawn from an electoral list. We sent them, by post, the questionnaire and a covering letter explaining the topic of the study and insuring the confidentiality and anonymity of their answers. We attached a stamped envelope to encourage the return of questionnaires. Finally, the return rate was 37.1% and generally, in this type of studies, the return rate is around 3-10% (Vandercammen & Jospin-Pernet, 2010).

Instrument

The questionnaire of characterization is constituted by a list of 15 words. Words come from an exploratory study in

which 153 participants were asked to quote the five words or expressions that came to mind when they heard "zones at 30 km/h"; then they were asked to select the two most important words of these five. For this exploratory study, the sample was also composed from Angers' inhabitants. They all were drivers and they owned their driving license. The average age was 50.2 years ($SD = 16.4$), including 37% men. They were also drawn from an electoral list and we contacted them by sending them a mail by post in which they were asked to fill out the questionnaire. We finally selected the most recurrent items in their discourse. So, we created the list of 15 words of our instrument with these most recurrent items: *calm/tranquility, constraint, safety, cyclists, ecology, respect of law/rules, schools/children, useless, slowness, respect of others, difficult, pedestrians, prudence/vigilance, fines, cohabitation*. This exploratory study had the limit of supplying words related to drivers' representations. The characteristics of this sample can have an impact on the quoted items. This is why we decided to focus on drivers in this research. Indeed, it is possible that cyclists or pedestrians or public transportation users could quote different words while talking about the 30 km/h. Without a previous study confirming the lexical universe of these groups with regards to the 30 km/h, we can not exactly compare drivers with cyclists or pedestrians seeing as they might use different words in order to define the 30 km/h. But the questionnaire of characterization constrains participants to choose between several pre-established words, and the words we used are coming from drivers' lexical universe.

Instructions

Participants had to tick the five most characteristic words of the 30 km/h zones. Then, they had to cross out the five least characteristic words. The exact instruction was: "Among these words, tick the 5 most characteristic words (only 5) of the 30 km/h for you. Among the other words, cross out the 5 least characteristic words (only 5) of the 30 km/h for you. After making it, you should have 5 words neither quoted nor crossed out". Generally, instructions for questionnaires of characterization can be more complex, with the creation of five pads. Here, we simplified the instructions because questionnaires were filled out at home.

Analysis strategies

To our knowledge, no study based on a questionnaire of characterization uses clustering methods. However, this type of statistical analysis is particularly adapted to highlight structural differences in representations. Clusters illustrate group subdivisions in a sample. So, we used the software R and we proposed a hierarchical ascending classification. This method is based on the function *agnes* of the R cluster package. This function allows determining classes of par-

ticipants by merging the closest classes coming from their classification of different items. In this case, items are considered as variables, and they can be used for discriminating different groups in the sample. The technique of classification leans on the calculation of dissimilarities and Euclidean distances using the Ward method. Euclidean distances are root sum-of-squares of differences.

RESULTS

Presentation

We first present the overall results. In the Table 1 is the percentage of each item chosen as participants' answers. We consider the absolute majority as an indicator of the consensual and central aspect of the element (Abric, 2003). Thus, an element is central when more than 50% of the population considers it as one of the most characteristic of the 30 km/h.

Specifically, our results confirm the central nature of the elements *schools* (65%), *safety* (61%), and *prudence* (52%). These elements are opposite to *useless* (63%), *finest* (60%), and *ecology* (50%), which are considered the least characteristic by more than 50% of our sample. We note that the item *constraint* clearly divides our population in three almost equal groups. So, it confirms an important variation and a contradiction between what people think of *constraint* as a representative item of the 30 km/h zones.

Table 1

Percent of motorists living in Angers choosing different characterizations of 30 km/h zones

Items	Less characteristic	Not chosen	More characteristic
Schools	3	32	65
Safety	9	30	61
Prudence	12	36	52
Ecology	50	36	14
Fines	60	25	15
Useless	63	27	10
Respect of others	19	51	30
Respect of law/rules	22	49	29
Slowness	33	45	22
Pedestrians	7	44	49
Difficult	31	43	26
Cyclists	20	43	37
Cohabitation	34	42	24
Constraint	35	32	33
Calm/tranquility	37	36	27

Clustering

We want to study the existence of different potential groups of participants within our sample. So, the aim is to create clusters of participants by measuring items' similarities or dissimilarities depending on if participants chose the item as one of the most or one of the least characteristic of the 30 km/h. The Dunn's index ($d = 0.41$) measures the quality of the clustering. The closer the value of Dunn's index to 1, the higher the quality of the clustering. The analysis reveals the creation of two groups: Group 1 ($n = 67$; 63.2% of the sample) and Group 2 ($n = 39$, 36.8% of the sample). There is no significant difference with regard to the proportions of males (46.2%) and females (53.8%) in the second group. But a Chi-square test ($p = .037$) reveals that there is an over-representation of females (62.7%) in comparison with males (37.3%) in the first group. These groups statistically differ on discriminating variables, from the most discriminating (*useless*) to the least discriminating (*respect of others*). Results on significance are presented in Table 2. Five variables are not discriminating: *calm/tranquility*, *ecology*, *respect of rules/law*, *schools*, and *cohabitation*. In other words, these five variables do not allow dividing our sample into different groups.

Our results reveal that both groups choose different items to be the most and the least characteristic of 30 km/h zones. We rely on the v.test results presented in Table 3 for the Group 1 and Table 4 for the Group 2. Participants in the Group 1 consider *safety*, *prudence*, *pedestrians*, *cyclists*, and *respect of others* ($p < .001$) as the most characteristic notions related to the 30 km/h. We name them "prosocial aspects". The Group 2 considers *useless*, *finest*, *constraint*, *difficult*, and *slowness* ($p < .001$) as the most characteristic notions of the 30 km/h (Table 4). We name them "critical aspects".

Table 2

Significance of variables discriminating the two groups of motorists	
Variables	η^2
Useless	0.55***
Fines	0.53***
Constraint	0.40***
Difficult	0.26***
Safety	0.22***
Slowness	0.22***
Prudence	0.19***
Pedestrians	0.14***
Cyclists	0.13***
Respect of others	0.10***

*** $p < .001$.

Table 3
 Value of discriminant variables for Group 1

Variable	v. test	M		SD	
		Category	Overall	Category	Global
Safety	4.83***	0.76	0.53	0.43	0.65
Prudence	4.45***	0.63	0.40	0.51	0.70
Pedestrians	3.78***	0.60	0.42	0.55	0.61
Cyclists	3.73***	0.37	0.17	0.69	0.73
Respect of others	3.31***	0.28	0.11	0.67	0.69
Slowness	-4.78***	-0.37	-0.11	0.64	0.73
Difficult	-5.25***	-0.34	-0.05	0.66	0.76
Constraint	-6.51***	-0.42	-0.02	0.72	0.82
Fines	-7.48***	-0.87	-0.45	0.38	0.74
Useless	-7.57***	-0.91	-0.54	0.29	0.66

*** $p < .001$.

In the Table 3 and Table 4, we focus on the columns *Category mean* and *Overall mean*. The closer the score to 1, the greater the characterization. The closer the score to -1, the lower the characterization. Finally, a score close to 0 reveal the item was not chosen, either as the most characteristic, or as the least. In the Table 3, scores for the Group 1 (column *Category mean*) are close to 1 for the most characteristic variables of the entire sample and are close to -1 for the least characteristics variables of the entire sample. In the Table 4 we can see differences between answers of Group 2 and answers of the entire sample. The bigger the deviation, the more significant the difference. These differences confirm the division of our sample. We note the results of Group 2

Table 4
 Value of discriminant variables for Group 2

Variable	v. test	M		SD	
		Category	Overall	Category	Global
Useless	7.57***	0.10	-0.54	0.63	0.66
Fines	7.48***	0.26	-0.45	0.67	0.74
Constraint	6.51***	0.67	-0.02	0.47	0.82
Difficult	5.25***	0.46	-0.05	0.63	0.76
Slowness	4.78***	0.33	-0.11	0.65	0.73
Respect of others	-3.31***	-0.18	0.11	0.64	0.69
Cyclists	-3.73***	-0.18	0.17	0.67	0.73
Pedestrians	-3.78***	0.13	0.42	0.61	0.61
Prudence	-4.45***	0.00	0.40	0.78	0.70
Safety	-4.83***	0.13	0.53	0.76	0.65

*** $p < .001$.

for prosocial aspects are close to 0 (and not close to -1). That means that participants of the Group 2 generally leave these items unselected. Thus, these variables are neither the most nor the least characteristic.

DISCUSSION

The two groups clearly focus on different aspects to determine the most characteristic notions of the 30 km/h. So, the Group 1 fosters prosocial aspects (safety, prudence, pedestrians, cyclists, and respect of others). The Group 2 focuses on critical aspects (useless, fines, constraint, difficult, and slowness). On the contrary, Group 1 considers that these critical aspects are the least characteristic notions of the 30 km/h. However, Group 2 does not consider that prosocial aspects are the least characteristic. As a result, we cannot consider these groups symmetrically opposed. They clearly focus on different notions to define the 30 km/h. And we can say that they have two different representations because central elements in both representations are different (Abric, 1994). Nevertheless, these representations are not opposed. Results confirm that Group 2 gives a relative importance to prosocial aspects. Indeed, participants do not think these elements are not characteristic. They just leave them unselected. So, it means they still have some importance, even if they are not the most important elements to define the 30 km/h. If the Group 1 brings the prosocial aspects and critical aspects into opposition, Group 2 does not. Thus, we can summarize our results with the schema presented in Figure 1.

The non-discriminant variables are interesting to consider too. They highlight the complexity of the relationship between drivers and the 30 km/h. For instance, *cohabitation*, *calm*, and *ecology* clearly split our population. Within both groups, there are dissensions and participants disagree. Some of them consider these items are very characteristic, and others think the contrary. With regards to the *respect of law/rules*, this item is not discriminant and both groups are divided into two subgroups: on one hand, participants select it as very characteristic, and on the other hand, participants leave it unselected. Few of participants consider *respect of law/rules* is not characteristic of the 30 km/h. Another interesting point concerns the item *schools*. This

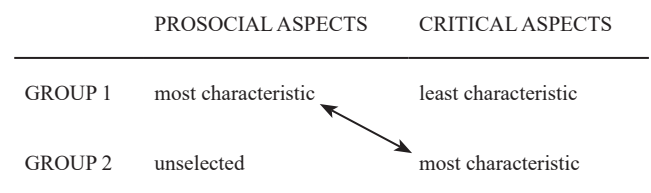


Figure 1. Schema of representations of the 30 km/h for the two groups.

is a very atypical item. It is not discriminant. But this is because this item generates a broad consensus. This consensus, in both groups, consists in considering the item *schools* is very characteristic of 30 km/h. So, we could clearly consider without hesitation that *schools* is a central item in the representation of the 30 km/h. As a result of this consensus, this variable is not discriminating. And yet, not taking into account this information could be a real mistake. So, we can confirm our first hypothesis about the existence of a social representation of the 30 km/h and a representational structure with central elements. *Schools*, *safety*, and *prudence* are central when considering the entire sample. But the clustering method revealed that there exist two kinds of representation with different central elements. We cannot confirm our second hypothesis with regard to safety as a central element. Apparently, the safety is central when considering the results of the entire sample. However, using a clustering method revealed that *safety* is one of the discriminating items dividing our sample. So, safety is central for one part of the sample above all and this part is more important (63.2% of the sample) than the second group. This imbalance affects the results we observe for the entire sample given that there is an over-representation of members from the Group 1 in the sample. More than safety aspects, schools constitute a real consensual condition and a central element to describe the 30 km/h given that it's not an item which contributes to division of our sample.

Using a clustering method constitutes an innovative way to analyse data from a questionnaire of characterization. The significance is based on the possibility to highlight the existence of group subdivisions in a population according to the importance that each group gives to different aspects of the 30 km/h. So, we can confirm our third hypothesis seeing as different profiles of drivers are demonstrated in this study depending on their representation of the 30 km/h. Indeed, items coming from representational elements constitute variables, and they can be used to discriminate group subdivisions. Although some of the items are consensual because more than 50% of the sample chooses them as the more characteristic (*schools*, *safety*, *prudence*), we saw that some of them can discriminate participants. For instance, *safety* and *prudence* are very characteristic of the 30 km/h for the Group 1 but they are unselected by the Group 2. This is because of the over-representation of participants from the Group 1 in the entire sample. Yet, we can define different profiles by studying oppositions and similarities in representations. In this study, participants are split into two groups according to the elements they consider the most characteristic of the 30 km/h. The first group focuses on prosocial aspects and the second group focuses on the critical aspects linked to the 30 km/h. It is also interesting to see that the clustering method highlights an over-representation of women in the group fostering prosocial aspects, while there is no such a difference in the second group. It seems that gender can have a role to play in the construction of

the representation of the 30 km/h. This confirms some results presented in the literature related to road safety, arguing for instance that women are more respectful towards pedestrians than men (Gaymard & Tiplica, 2012). It could also be interesting to apply this clustering method by comparing different groups according to their transportation mode. In this study, we focused on motorists. But it seems relevant to apply this clustering method and compare different groups composed of motorists, bikers, motorcyclists, pedestrians, and public transportation users. Thus, some differences between these groups could appear. The relevance of such analysis is based on the fact that practices influence representations (Bordarie, 2015; Flament, 1994b; Guimelli, 1998). Here, our sample only consists of motorists and we already observed the existence of two groups according to the importance that motorists give to different elements defining the 30 km/h.

The division of our sample into these two groups relies above all on the importance they give to critical aspects. One group considers these aspects are the most characteristic: they define the 30 km/h and they can be considered as central elements for the Group 2. On the contrary, the other group (Group 1) considers these aspects the least characteristic. Thus, these factors are highly discriminant in our population. At the same time, the latter group considers that prosocial aspects are very characteristic of the 30 km/h. The other group just leaves these aspects unselected. So, we argue that the participants in the second group are aware of the importance of these aspects. They know that these items play a role to explain what the 30 km/h is. But they just give a lower weight to these items than participants in the other group. Within the framework of representational dynamics, the weight of elements is an interesting information, which allows examination of the central or peripheral nature of representational elements (Bordarie, 2015). Here, participants in the second group minimize the weight of prosocial aspects by leaving them unselected, without considering them not to be characteristic of the 30 km/h.

Moreover, we can easily see how normative can some items be. This is the case of the item *schools*. The clustering method highlights the general consensus with regards to the link between schools and the 30 km/h. And yet, the clustering method has never been used to highlight social norms in representations dynamics (Flament, 1999; Gaymard, 2003). Our study shows how this technique reveals consensus, normativity, and thereby the conditionality of representations (Bordarie, 2015; Gaymard, 2014). Schools clearly appear like a condition of application of the 30 km/h. It also appears like the most central item in the representation of the 30 km/h. A majority agree with the fact that they are very characteristic of the 30 km/h. And this variable cannot discriminate the different participants of our sample in order to create different profiles. However, the respect of the 30 km/h around schools is conditional (Bordarie, 2015; Bordarie & Gaymard, 2015a). On one hand, these results

confirm the role of norms in social representations and how individuals express them. On the other hand, we observe the transgression of these norms can be acceptable and legitimate (Flament, 2012). Generally, safety is a central item in the representation of speed limits (Pianelli, Abric, & Saad, 2010) and it's also observable with regards to the 30 km/h (Bordarie, 2015). But we can clearly observe that a part of our sample does not consider the safety as one of the most characteristic element to define the 30 km/h. The first group considers the safety is very characteristic of the 30 km/h, but the second group does not. This confirms the existence of different profiles of motorists in the population encountered in previous research (Pianelli, Abric, & Saad, 2010). The authors showed that, in general, "defiant" and "prudent" motorists agree more with the relationships between safety and speed limits than "pragmatists-motorists". The representation of speed for defiant motorists is based on the contradiction between danger and pleasure linked to speed. Prudent motorists establish a link between speed and danger. The representation of pragmatist motorists is focused on functional aspects (rapidity, time gain). In our study, we confirm that a part of the population does not agree with the link between safety and the speed limit of 30 km/h, similar to the pragmatists-motorists. But we also supply some gradations in this study. The division does not seem to be only linked to the impact of the 30 km/h on motorists. Indeed, the representation of the first group is focused on prosocial aspect and individuals seem to express an important interest for the others in public space. They give an importance to the presence of others (pedestrians, cyclists, respect of others) and to the necessity of vigilance and safety. The representation of the second group is more focused on the disadvantages of the 30 km/h (fines, useless, difficulty, constraint, slowness). So, the differences between both groups seem to be linked to the reading of the object (Moliner, 1988). We can conclude that some drivers favour a perspective focused on the impact of the 30 km/h on life and cohesion on public space and some others favour a perspective focused on the impact of the 30 km/h on their driving and feelings. We could refer to the concept of *thémata* within the social thinking hierarchy (Rouquette, 1973, 1996) in order to explain the existence of two representations related to two opposite perspectives. On one hand, the first representation is focused on an allocentric perspective; it means that others are at the heart of the concerns. On the other hand, the second group seems to be focused on an egocentric perspective; it means that they are more centred on themselves when they are talking about the 30 km/h. The allocentric perspective seems to be more characteristic of women given that women are over-represented in this group. We assume these results can be analysed through the paradigm of *thémata* (Marková, 2003; Moscovici, 1992; Moscovici & Vignaux, 1994). Holton (1973, 1975, 1978) also emphasized the existence of *thémata* in scientific thinking. *Thémata* are structuring social thinking and they explain the creation and the existence of

different representations of a same object in the population. These representations are located on a continuum whose poles correspond to the *thémata*. The most famous *thémata* are the good - the bad, the fair - the unfair, and the normal - the pathological (Seca, 2002). The most established in our society seems to be the masculine - feminine (Héritier, 1996), that Flament and Rouquette (2003) call the "canonical *thémata*". Marková (2007) also described the *thémata* Alter - Ego. We think that the two representations of the 30 km/h that we revealed in this study are the consequence of this *thémata*. Indeed, by focusing on the Alter or on the Ego, drivers develop different representations of the 30 km/h. In the first case, they express a representation where the Alter (other road-users) is a reason of the legitimization of the 30 km/h: this is what we named prosocial aspects. In the second case, drivers express a representation where their feelings and the disadvantages they feel by driving at 30 km/h are the most important elements. We can consider that their representation is egocentric because they mainly focus on themselves and the Ego influences their representation of this public policy.

The relevance of this research is multiple. Firstly, we showed how some statistical analysis (like clustering methods) could be applied to the characterization technique in social representations studies. We determined profiles by taking into account representational differences of the 30 km/h. Secondly, we applied this research to a new social object, which constitute an important measure in the actual European urban landscape. We demonstrated how the analysis of social representations constitutes a relevant framework in order to understand how drivers can accept, respect, or transgress new speed limits. Finally, despite the consensus of central elements in the social representation, we established a link between their normativity (like schools) and their conditionality. It seems normal to drive at 30 km/h around schools and also normal to think that drivers have to respect it in these areas. But at the same time, driving around schools depends on certain conditions (Bordarie & Gaymard, 2015a). Our results leave out the role of the attitudes on the representational dynamics. Attitudes are one of the dimensions of social representations that include emotional aspects and information (Moscovici, 1961). Thus, it might be interesting to analyse our results with regards to the attitudes of participants. By taking into account the existence of *thémata* in social thinking, we could explain why some drivers can be in favour of and other against such a public policy. Their way of thinking depends on a schema; considering the promotion of the Alter or the Ego in the elaboration of their thoughts, we can understand why some people focus on the aspirations of the 30 km/h, while other focus on their own feelings.

We can then understand the impact of social representations on the real life drivers' behaviours related to the 30 km/h. Social representations and social practices are influencing each other in a dialectic relationship (Abric, 2003).

So, drivers' behaviours depend on their representation of the 30 km/h. The ones who are focusing on prosocial aspects, in other words drivers whose representation is more allocentric, should better accept the implementation of the 30 km/h. It's expected that drivers will be more respectful of this speed limit if they accept it. On the contrary, other drivers focusing on critical aspects of the measure are more reluctant to implement it. But at the same time, they leave the prosocial aspects unquoted. So, at some point, they can consider driving at 30 km/h for the sake of safety, prudence, pedestrians, cyclists, and respect of others. This representation confirms the role of the conditionality in drivers' behaviours (Bordarie, 2015; Gaymard, 2014). Concerning the 30 km/h, drivers adapt their behaviour to the situations according to the legitimacy of driving at 30 km/h. We assume behaviours of drivers focusing on critical aspects are more conditional than behaviours of drivers focusing on prosocial aspects. This research first confirms the relevance of studying social representations in order to understand the conditional dimension of drivers' practices linked to the 30 km/h (Bordarie, 2015; Bordarie & Gaymard, 2015a). But it secondly constitutes an interesting framework for traffic regulations and the implementation of the 30 km/h. Before implementing it, urban planners and politicians should perform this kind of study with the population affected by this measure. On one hand, it seems very useful to analyse the acceptance of such a measure through drivers' representation. On the other hand, it is also interesting for determining the streets which could be limited at 30 km/h depending on their configuration (areas with pedestrians, cyclists, and schools; and areas where the safety could be problematic). It's also important to analyse social representations in order to build relevant communication campaigns explaining the benefits of implementing the 30 km/h. Communication constitutes one way of transforming social representations (Aïssani, 1991; Roussiau & Soubiale, 1996a, 1996b).

Some limits can be noted in this study, for example, linked to the population. It could have been relevant to compare drivers' answers with pedestrians, cyclists, or public transportation users. Such a study requires exploratory research in order to determine the words that each road users groups could use to talk about the 30 km/h. With this material, the construction of the questionnaire of characterization would be different and other words should be included. Furthermore, there is great standard deviation in the age of the sample and the analysis of its impact did not highlight anything. However, it seems that by controlling this variable, some specificities could be found. Some researches in the field of road safety have already shown the impact of the age on the respect of speed limits for example (Gaymard, Allain, Osiurak, & Le Gall, 2011). The clustering revealed the existence of two groups in our sample, but these groups are not equal. This imbalance affected the results we observed, especially when analyzing the structure of the representation of the entire sample. The over-representation of

participants focusing on prosocial aspects has an impact on the analysis of the entire sample's representation of the 30 km/h. This research could also be improved by taking into account different variables, such as participants' attitude towards the 30 km/h. Indeed, the attitude is one component of social representations (Moscovici, 1961) and it generally has an impact on the valence of the representation (Bordarie & Gaymard, 2015b). Also, practices have an important impact on the structuration of social representations (Flament, 1994b), so it could also be relevant to compare results of the questionnaire of characterization filled in by drivers who got used to drive and live in 30 km/h areas with answers of drivers who are not used to it.

REFERENCES

- Abric, J.-C. (1976). *Jeux, conflits et représentations sociales* [Games, conflicts, and social representations] (Unpublished doctoral thesis). Université de Provence, Aix en Provence.
- Abric, J.-C. (1994). *Pratiques sociales et représentations* [Social practices and representations]. Paris: PUF.
- Abric, J.-C. (2001). L'approche structurale des représentations sociales: Développements récents [Structural approach of social representations: Recent developments]. *Psychologie et Société*, 4(2), 81-103.
- Abric, J.-C. (2003). *Méthodes d'étude des représentations sociales* [Methods for the study of social representations]. Ramonville Saint-Agne, France: Erès.
- Abric, J.-C., & Pianelli, C. (2006). Représentations sociales de la Vitesse et du LAVIA. In Ehrlich, J. (Ed.), *Carnet de route du LAVIA. Limiteur s'adaptant à la vitesse autorisée* [Log book of the LAVIA. Limiter adapting itself to the authorized speed], (pp. 27-32). Paris: Actes du colloque LAVIA.
- Aïssani, Y. (1991). Etude expérimentale de la transformation d'une représentation sociale dans le champ politique [Experimental study of the transformation of a social representation within the political field]. *Revue Internationale de Psychologie Sociale*, 4(3-4), 279-303.
- Ajcardi, R., & Therme, P. (2007). Représentation sociale d'un sport à risques en fonction de la pratique sportive et de la modalité de pratique: l'exemple du ski extrême [Social representation of a risky sport according to its practice and the practice's modality: The case of extreme ski]. *Papers on Social Representations*, 16, 1-20. Retrieved from <http://www.psr.jku.at/>
- Andrès, S., & Gaymard, S. (2010). The Perception of School Climate in two Secondary Schools during the Implementation of a Peer Support Program. *Electronic Journal of Research in Educational Psychology*, 12(2), 509-540. doi:10.14204/ejrep.33.13052
- Appleyard, D., & Lintell, M. (1972). The environmental quality of city streets: The residents' viewpoint. *Journal*

- of the American Institute of Planners, 38(2), 84-101. Retrieved from http://www.edra.org/sites/default/files/publications/EDRA03-Appleyard-11-2_0.pdf
- Barjonet, P. E., & Saad, F. (1986). La vitesse: Son image et son usage. Le point de vue du psychologue [The speed: Its image and use. The psychologist's point of view]. *Recherche Transport Sécurité*, 9-10, 27-32.
- Bordarie, J. (2015). *Représentations sociales et mobilité urbaine durable* [Social representations and sustainable urban mobility] (Unpublished doctoral thesis). Université d'Angers.
- Bordarie, J., & Gaymard, S. (2014). *Influence of normative models on social representations: the case of 30kph*. In *The IAFOR North American Conference on Psychology & the Behavioral Sciences 2014: Official Conference Proceedings* (pp. 1-8). Providence Marriott Downtown, Providence, RI, USA. Retrieved from http://iafor.org/archives/proceedings/NACP/NACP2014_proceedings.pdf
- Bordarie, J., & Gaymard, S. (2015a). Représentations sociales et comportements à l'égard du 30 km/h: Pratiques rapportées et pratiques effectives. In S. Gaymard & T. Tiplica (Eds.), *Sécurité, éducation et mobilités: Maîtrise des risques et prévention Tome 2* [Safety, education, and mobilities: Risk control and prevention] (pp. 151-164). Paris: L'harmattan.
- Bordarie, J., & Gaymard, S. (2015b). Social representations and public policy: Influence of the distance from the object on representational valence. *Open Journal of Social Sciences*, 3, 300-305. doi:10.4236/jss.2015.39038
- Bunn, F., Collier, T., Frost, C., Ker, K., Roberts, I., & Wentz, R. (2003). Area-wide traffic calming for preventing traffic related injuries. *Cochrane Database of Systematic Reviews*, 1. doi:10.1002/14651858
- CERTU: Centre D'études sur les Réseaux de Transport et L'urbanisme . (2010). *Zones de circulation apaisée* [Zones of slow traffic] (Record n4, August 2010). Retrieved from www.certu.fr
- Clémence, A., (2003). L'analyse des principes organisateurs des représentations sociales. In S. Moscovici & F. Buschini (Eds.), *Méthodes des sciences humaines* [Methods of human sciences] (pp. 393-410). Paris: PUF.
- Davis, G. A. (2001). Relating severity of pedestrian injury to impact speed in vehicle-pedestrian crashes: Simple Threshold Model. *Transportation Research Record*, 1773, 108-113. doi:10.3141/1773-13
- Elvik, R. (2001). Area-wide urban traffic calming schemes: A meta-analysis of safety effects. *Accident Analysis and Prevention*, 33(3), 327-336. doi:10.1016/S0001-4575(00)00046-4
- Farr, R. (1987). Social representations: A French tradition of research. *Journal for the Theory of Social Behavior*, 17(4), 343-365. doi:10.1111/j.1468-5914.1987.tb00103.x
- Flament, C. (1981). L'analyse de similitude: Une technique pour les recherches sur les représentations sociales [Similarity analysis: A technique for the social representations research]. *Cahiers de Psychologie Cognitive*, 1, 375-395.
- Flament, C. (1984). From the bias of structural balance to the representation of the group. In R. Farr & S. Moscovici (Eds.), *Social representations* (pp. 269-285). Cambridge: Cambridge University Press.
- Flament, C. (1987). Pratiques et représentations sociales. In J.-L. Beauvois, R. V. Joule, & J. M. Monteil (Eds.), *Perspectives cognitives et conduites sociales. Tome 1: Théories implicites et conflits cognitifs* [Cognitive perspectives and social behaviours. Volume 1: Implicit theories and cognitive conflicts] (pp. 143-150). Cousset, Delval.
- Flament, C. (1994a). Aspects périphériques des représentations sociales. In C. Guimelli (Ed), *Structures et transformation des représentations sociales* [Structures and transformations of the social representations] (pp. 85-118). Paris: Delachaux et Niestlé.
- Flament, C. (1994b). Structure, dynamique et transformation des représentations sociales. In J.-C. Abric (Ed.), *Pratiques sociales et représentations* [Social practices and representations] (pp. 37-57). Paris: PUF.
- Flament, C. (1999). La représentation sociale comme système normatif [The social representation as a normative system]. *Psychologie et Société*, 1(1), 29-53.
- Flament, C. (2001). Pratiques sociales et dynamique des représentations. In P. Moliner (Ed.), *La dynamique des représentations sociales* [The social representations' dynamics] (pp. 43-58). Grenoble: PUG.
- Flament, C. (2012). Les transgressions légitimes. In S. Gaymard & A. Egado (Eds.), *Sécurité et facteurs humains dans les moyens de transports: Une approche multidisciplinaire* [Safety and human factors in transports: A multidisciplinary approach] (pp. 235-236). Paris: L'Harmattan.
- Flament, C., & Rouquette, M.-L. (2003). *Anatomie des idées ordinaires* [Anatomy of ordinary ideas]. Paris: Dunod.
- Fontaine, S. (2007). *Représentation sociale parents et enseignants, l'école Réunion* [Social representations parents and teachers, the school La Réunion] (Unpublished doctoral thesis). Université de la Réunion.
- Gaymard, S. (2003). *La négociation interculturelle chez les filles franco-maghrébines: Une étude de représentation sociale* [The intercultural negotiation of the French girls native of the Maghreb: A study of social representation]. Paris: L'Harmattan.
- Gaymard, S. (2006). The representation of old people: comparison between the professionals and students. *International Review of Social Psychology*, 19(3-4), 69-91.

- Retrieved from <http://www.cairn.info/revue-internationale-de-psychologie-sociale-2006-3-page-69.htm>
- Gaymard, S. (2007). La représentation de la conduite chez de jeunes conducteurs: Une étude de la conditionnalité routière [The representation of driving to young drivers: A study of the road conditionality]. *Recherche Transport Sécurité*, 97, 339-359. doi:10.3166/rts.97.339-359
- Gaymard, S. (2009). Norms in social representations: Two studies with french young drivers. *The European Journal of Psychology Applied to Legal Context*, 1(2), 165-181. Retrieved from http://okina.univ-angers.fr/publications/ua11988/1/gaymard_2009.pdf
- Gaymard, S. (2014). The theory of conditionality: An illustration of the place of norms in the field of social thinking. *Journal for the Theory of Social Behaviour*, 44(2), 229-247. doi:10.1111/jtsb.12039
- Gaymard, S., Allain, P., Osiurak, F., & Le Gall, D. (2011). The conditions of respect of rules in young and elderly drivers: an exploratory study. *The European Journal of Psychology Applied to Legal Context*, 3(1), 11-28. Retrieved from http://okina.univ-angers.fr/publications/ua11812/1/gaymard_et_al_2011.pdf
- Gaymard, S., & Andrés, S. (2009). Représentations, modèles normatifs et compétences sociales: Une étude exploratoire dans un lycée sensible en Espagne [Representations, normative models and social abilities: An exploratory study in a sensitive high school in Spain]. *Revue Internationale de Psychologie Sociale*, 22(2), 43-69. Retrieved from www.cairn.info/revue-internationale-de-psychologie-sociale-2009-2-page-43.htm
- Gaymard, S., Andrés, S., & Nzobounsana, V. (2011). La representación social y las emociones de los conductores Franceses y Españoles acerca de los peatones [Social representation and emotions in French and Spanish drivers toward pedestrians]. In F. Expósito, M. C. Herrera, G. Buéla-Casal, M. Novo, & F. Farina (Eds.), *Psicología jurídica. Areas de investigación* [Legal Psychology. Research areas] (pp. 435-442). Santiago de Compostela: Conselleria de Presidencia, Xustiza e Administracións Públicas.
- Gaymard, S., & Bessin, M. (2014). The influence of normative models in the social representation of the moped among young teenage boys: A pilot study. *Securitas Vialis*, 17, 21-41.
- Gaymard, S., & Bordarie, J. (2014a). Les zones 30: Un enjeu pour le partage de l'espace. In S. Gaymard & A. Egido (Eds.), *Mobilités et transports durables: Des enjeux sécuritaires et de santé* [Mobilities and sustainable transport: Security and health stakes] (pp.57-63). Paris: L'Harmattan.
- Gaymard, S., & Bordarie, J. (2014b). The perception of the ideal neighbourhood: A preamble to implementation of a "street use code". *Social Indicators Research*, 120(3), 801-816. doi:10.1007/s11205-014-0610-1
- Gaymard, S., & Joly, P. (2013). La représentation sociale du football chez des jeunes adultes issus d'un milieu social défavorisé [The social representation of football of young adults from a disadvantaged social background]. *Loisir et Société/Society and Leisure*, 35(2), 263-292. doi:10.1080/07053436.2012.10707844
- Gaymard, S., & Tiplica, T. (2012). Conditional respect towards the pedestrian: Difference between men and women and risk modeling by the Bayesian approach. *Quality & Quantity*, 46, 91-110. doi:10.1007/s11135-012-9751-y
- Grundy, C., Steinbach R., Edwards, P., Green, J., Armstrong, B., & Wilkinson, P. (2009). Effect of 20 mph traffic speed zones on road injuries in London, 1986-2006: Controlled interrupted time series analysis. *BMJ*, 339, 1-6. doi:10.1136/bmj.b4469
- Guimelli, C. (1993). Concerning the structure of social representations. *Papers on social representations*, 2(2), 85-92. Retrieved from <http://www.psr.jku.at/>
- Guimelli, C. (1998). *Chasse et nature en Languedoc. Étude de la dynamique d'une représentation sociale chez les chasseurs languedociens* [Hunting and nature in Languedoc. Study of the dynamics of a social representation of hunters from Languedoc]. Paris: L'Harmattan.
- Héritier, F. (1996). *Masculin/Féminin I. La pensée de la différence* [Masculine/Feminine I. The thinking of the difference]. Paris: Odile Jacob.
- Holton, G. (1973). *Thematic Origins of Scientific Thought: Kepler to Einstein*. Cambridge, MA: Harvard University Press.
- Holton, G. (1975). On the role of themata in scientific thought. *Science, New Series*, 188 (4186), 328-334. doi:10.1126/science.188.4186.328
- Holton, G. (1978). *The Scientific Imagination: Case Studies*. Cambridge: Cambridge University Press.
- INSEE: Institut national de la statistique et des études économiques. (2015). *Population par sexe et âge regroupé de l'arrondissement d'Angers en 2011* [Population of the district of Angers in 2011 grouped by sex and age]. Retrieved from <http://www.insee.fr>
- Jodelet, D. (1989). *Folies et représentations sociales* [Madnesses and social representations]. Paris: Presses Universitaires de France.
- Jodelet, D. (1991). *Les représentations sociales* [Social representations]. Paris: Presses Universitaires de France.
- Lo Monaco, G., Piermattéo, A., Guimelli, C., & Abric, J. C. (2012). Questionnaire of characterization and correspondence factor analysis: A methodological contribution in the field of social representations. *The Spanish Journal of Psychology*, 15(3), 1233-1243. doi:10.5209/rev_SJOP.2012.v15.n3.39410
- Mamontoff, A. M. (2008). Dynamique de la fonction identitaire des représentations sociales dans le cas d'une ren-

- contre entre deux cultures [Dynamics of the function of identity of social representations in the case of the meeting of two cultures]. *Anuario de Psicología/The UB Journal of psychology*, 39(2), 249-268. Retrieved from <http://revistes.ub.edu/index.php/Anuario-psicologia/issue/view/743/showToc>
- Marková, I. (2003). *Dialogicality and Social Representations*. Cambridge: Cambridge University Press.
- Marková, I. (2007). Persuasion et propagande [Persuasion and propaganda]. *Diogenes*, 217(1), 39-57. doi:10.3917/dio.217.0039
- Moliner, P. (1988). *La représentation sociale comme grille de lecture* [The social representation as a reading-grid] (Unpublished doctoral thesis). Université de Provence, Aix en Provence.
- Moliner, P. (1996). *Images et représentations sociales* [Images and social representations]. Grenoble: PUG.
- Moscovici, S. (1961). *La psychanalyse, son image et son public* [Psychoanalysis, its image and public]. Paris: PUF.
- Moscovici, S. (1984). *Psychologie Sociale* [Social Psychology]. Paris: PUF.
- Moscovici, S. (1989). Des représentations collectives aux représentations sociales. Eléments pour une histoire. In D. Jodelet (Ed.), *Les Représentations Sociales* [Social Representations] (pp. 62-86). Paris: PUF.
- Moscovici, S. (1992). La nouvelle pensée magique [The new magical thought]. *Bulletin de Psychologie*, 45(405), 301-324.
- Moscovici, S., & Hewstone, M. (1983). Social representations and social explanations: From the "naïve" to the "amateur" scientist. In M. Hewstone (Ed.), *Attribution theory: Social and functional extensions* (pp. 98-125). Oxford: Blackwell.
- Moscovici, S., & Vignaux, G. (1994). Le Concept de Thémata. In C. Guimelli (Ed.), *Structures et transformations des représentations sociales* [Structures and transformations of the social representations] (pp. 25-72). Neuchâtel: Delachaux et Niestlé.
- Pianelli, C., Abric, J.-C., & Saad, F. (2010). Rôle des représentations sociales préexistantes dans les processus d'ancrage et de structuration d'une nouvelle représentation [Role of existing social representations in the process of anchoring and within the structuration of a new representation]. *Les Cahiers Internationaux de Psychologie Sociale*, 86(2), 241-274. doi:10.3917/cips.086.0241
- Richards, D. C. (2010). *Relationship between speed and risk of fatal injury: Pedestrians and car occupants*. Road Safety Web publication No. 16. London: Department for Transport. Retrieved from <http://webarchive.nationalarchives.gov.uk/20120606181145/http://assets.dft.gov.uk/publications/pgr-roadsafety-research-rsrr-theme5-researchreport16-pdf/rswp116.pdf>
- Rogers, R. G., & Gumuchdjan, P. (2008). *Des Villes durables pour une petite planète* [Sustainable cities for a small planet]. Paris: Moniteur.
- Rosen, E., & Sander, U. (2009). Pedestrian fatality risk as a function of car impact speed. *Accident Analysis and Prevention*, 41(3), 536-542. doi:10.1016/j.aap.2009.02.002
- Rosen, R., Stigson, H., & Sander, U. (2011). Literature review of pedestrian fatality risk as a function of car impact speed. *Accident Analysis and Prevention*, 43(1), 25-33. doi:10.1016/j.aap.2010.04.003
- Rouquette, M.-L. (1973). La pensée sociale. In S. Moscovici (Ed), *Introduction à la psychologie sociale, Tome 2* [Introduction to social psychology, Volume 2] (pp. 299-327). Paris: Larousse.
- Rouquette, M.-L. (1996). Représentations sociales et idéologie. In J.-C. Deschamps and J.-L. Beauvois (Eds), *Des attitudes aux attributions* [From attitudes to attributions] (pp. 163-173). Grenoble: PUG.
- Roussiau, N., & Soubiale, N. (1996a). Approche expérimentale de la modification d'une représentation sociale sous l'effet de la communication d'un message [Experimental approach of the modification of a social representation under the effect of the communication of a message]. *Bulletin de Psychologie*, 49(1-3), 422, 88-99.
- Roussiau, N., & Soubiale, N. (1996b). Etude de la transformation de la représentation sociale de l'Europe sous impact majoritaire et minoritaire [Study of the transformation of the social representation of Europe under the effect of majority or minority]. *Anuario de Psicología*. 70(3), 19-43. Retrieved from <http://revistes.ub.edu/index.php/Anuario-psicologia/issue/view/824/showToc>
- Seca, J.-M. (2002). *Les représentations sociales* [Social representations]. Paris: Armand Colin.
- Spessert, B., Kühn, B., Leisker, C., & Stiebritz, M. (2010). *Vergleichende messtechnische Untersuchungen zum Einfluss einer nächtlichen Geschwindigkeitsbegrenzung von 50 km/h auf 30 km/h auf die Lärmimmissionen durch den Straßenverkehr* [Comparative measuring-technical examinations of the influence of a nocturnal speed limiting of 50 km/h and 30 km/h on the noise emissions by the traffic]. University of Applied Sciences Jena. Retrieved from www.jena.de/fm/41/Bericht_Tempo_30_W03_101111.pdf
- Vandercammen, M., & Jospin-Pernet, N. (2010). *La distribution* [The distribution]. Louvain-la-Neuve, Belgique: De Boeck Supérieur.
- Vergès, P. (2001). L'analyse des représentations sociales par questionnaires [The analysis of social representations with questionnaires]. *Revue Française de Sociologie*, 42(3), 537-561. Retrieved from <http://www.persee.fr>

Verkuyten, M., Rood-Pijpers, E., Elffers, H., & Hessing, D. J. (1994). Rules for breaking formal rules - social representations and everyday rule-governed behaviour. *Journal of Psychology*, 128(5), 485-497. doi:10.1080/00223980.1994.9914908

Wagner, W. (1996). Queries about social representation and construction. *Journal for the Theory of Social Behavior*, 26(2), 95-120. doi:10.1111/j.1468-5914.1996.tb00524.x