

THE “TRAFFIC” AND “DRIVING” SOCIAL REPRESENTATIONS

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The Social Psychology's contribution to the traffic, and more specifically, to the reduction of the number and accident risks, and also to the improvement of traffic quality (not necessarily in the sense of accident elimination, but also to the guarantee of the well being and mental health in traffic situations) is the object of a great controversy. We can identify at this point two levels of discussion, which result in a reduced (or inexistent) contribution of this scientific area to the traffic; in one side, a growing recognition from traffic researchers, of the “social environment” influence on the conducts in traffic situation; however, this recognition, associated to a vision of the “social” translated into a “natural environment and/or built”; on the other side, the concepts and propositions of the Social Psychology make difficult, in many cases, a more technical approach to concret social problems, of which we can consider the “traffic behavior”, for example, resulting in analysis which might be classified as “generics”, “abstracts”, or even ideological.

By analyzing the first of these two levels, in a recent research, Pereira (1997) confirms the idea that it is not enough to affirm that “traffic, by definition is a social behavior” (Rozenstraten, 1988; Michon, 1989), for the central problem is in the way this “social” is approached: even recognizing the human factor as the principal cause (isolated or associated to other factors) of traffic accidents, in the practical aspect, these approaches end up reducing the intersubjective dimension (social) to a mere context of individual behavior, i.e. although it is said that the “social” is important, in the proposed analysis the so called “social” is treated as environment without considering the typically social processes, denominated in the Social Psychology as social symbolic, influence the way individuals behave themselves, but above all, the own way that these two levels perceive the social reality. Pereira (1997) associates this way to the “tradition” of theoretical individualism from the Social Psychology, which begins with the narrow

notion that considers the psychological individual phenomena vaguely influenced by the “social”.

Rozenstraten (1988), for example, offers a model of Traffic Psychology, which although indicates the existence of social norms and values influencing the traffic behavior, configures itself as a classic mental model of “information treatment”. This author has developed a model of analysis of the psychic processes linked to the traffic behavior (technically, it would be better to say in the circulation) based on the Information Theory and in a cognitive perspective. With this model, Rozenstraten (1982, 1988, and 1990) recognizes the “social values” influence and the existence of social norms as well. However, this influence is seen as a determinant of the personality differences; therefore, if there is *“any factor that differentiates the two groups, it must be searched in our personality factors”* (Rozenstraten, 1990, p. 475).

By adopting such conception, the Social Psychology would invariably have few or none contribution to the study of traffic behavior/conduct, for the variables associated to the mental abilities and personality factors, able to influence of information’s receptions capacity and decision making can already be evaluated in a satisfactory way: medical examinations, psychological evaluations (“psychotechnical”), evaluations of cognitive capacities would be enough to indicate whose individuals are or not capable to make correct decisions and drive accordingly; the contributions of the Personality Psychology and tests would, therefore, be enough.

Another author who we can classify as proceeding as the same way as Michon (1974) proposes four levels of confrontation between man and traffic in which there is a dependency relationship: the psycho-biological (satisfaction of basic needs); the social (social activities, communication and transportation system); the user/consumer (travels, road nets); and finally, the traffic participant (vehicles and traffic signs). Michon (1985) considers man as a live organism with a series of biological and psychological needs, being the “social” a type of “pattern of mobilities”. The same way as the model mentioned before, the notion of “social” is vaguely introduced and the idea of “environment” can be assimilated as a type of factor that influences the cognition in their constitution (mainly in the formation of personality or character traces), but it is not a determinant in their operational functioning.

We can define, in a synthetic way, Social Psychology as an area of the Psychology that studies social interaction and the socio-symbolic processes that result from this interaction. The difficulty of “traditional” Traffic Psychology perspectives, is shown in the following example:

Traffic Psychology can, therefore, be defined as an area of Psychology which studies, through valid scientific methods, human behaviors in the traffic and the external and internal factors and processes, conscious and unconscious that cause or alter them. (Rozenstraten, 1988, p.9).

The problem is the lack of complementary and operational definitions of “social interaction”, social norms and “social values”, etc. We should ask, within this perspective, what type of interaction is there in the traffic?

Still in this level, it is important to mention that many traffic researchers – when they refer to human factors – work, in the majority of the cases, with factors that can be defined as “individuals”, or, at least, vaguely influenced by the social, as in the example of fatigue (Graham, 1995), stress (Gulian, 1990), the “habit of using alcohol or drugs” (Volvo, 1994; Shuman, 1992; Shapiro, 1993), the “individuals style” (Rajalin, 1994; Shibata and Fukuda, 1994), and “bad humor” (Thurber, 1994).

According to the second level, it is important to recognize that some of the most “traditional” concepts of social Psychology, directly imported from Sociology, as culture or ideology, make difficult, and sometimes, impede a more operational, technical approach of the forms through which the so called “social” (the society structure, as we might say) influence the individuals thinking and behavior.

Values, Norms and Representations

As a set, the Traffic Psychology studies refer to the notion of culture or the “social” as a factor which influences traffic behavior. Specially, they commonly refer, vaguely, to the concepts of values, norms and representation, being all of them added to the “social” adjective. The mentioning of these concepts might cause a complex articulation of them within a simple explaining system.

Commonly, the studies on Traffic Psychology refer to the notion of “rules”, without exactly what we mean by this notion. We can say that the “rules” organize, limit and conduct something belonging to the permitted order and to the prohibited. Therefore, within the social reality, we constantly face with the exception figure. From the

happenings that escape, from the stereotypes, to the “already known”, to the pre-established order, we are forced to act within the “preferable” order. Within this order, we are “driven” by social knowledge (socio-symbolic processes) commonly called values, norms, representations and attitudes.

According to Rokeach (1968) we can distinguish three types of beliefs: descriptive or existential, able to distinguish the false and the truth; evaluative beliefs whose object is judged as good and bad; and prescriptive and prospective beliefs where some senses or actions (acts) are judged as desirable or undesirable. A value is a third type belief. *"A value is a belief that characterizes each human act as a preference"*. (Allport, 1961).

When we say that a person has a value, we have in mind both, his or her beliefs related to the ways of desirable conducts and final states of existence (ideals of existences). We will refer to these two types of values as instrumental values and terminal values. (Rokeach, 1968, p. 24).

We can accept a minimal definition of a value as a permanent belief as a specific way of conduct or an “ideal of life” (final state of existence), is personal or socially preferable to another way of conduct or final state. So, the values are inscribed into two different orders: or in the order of searching perfection of to be; therefore, in the area of ethics and moral; or in the order of the utilitary and the need; therefore, in the territory of exchanges, economics and affection. Boudon (1993) understands the values as collective ideas socially shared. A value is, therefore, an expression of a preference, but it does not ever realize itself in a pre-established or indirectly way; by the contrary, it does permit an evaluation that, afterwards, permits a choice, a decision. The latter configures itself so that for a certain organization, for a certain context, the preferable expresses itself under a relative and comparative form.

In respect to social norms, Dubois (1994) presents a frame for norms definition, based on the following principles: a) a norm is always an expression of a collectivity, no matter its size is. Evidently the greater this collective, the less the normative character of a norm; b) a social norm is a learning object and a social transmission; c) a norm is always based under an attribution to value, and it can be said that this attribution provides the basis to the norm existence; d) a norm defines a set of events (happenings) that are judged as good or desirable by the collectivity coming from the own norm; opposing to another set of events judged as bad or not desirable. The consequences to an

individual is that, by realizing the events considered desirable, it will be seen by the collective, while by realizing the not desirable events, it will not be seen as good; e) a social norm is never realized under the effect of institutional obligations; the not conformity (not adhesion) to a norm is never an object of formal sanctions and also as any formal reward will be given to the conformity to the norm; f) a social norm refers to questions of social utility and not to the value of the truth; it is independent of any criteria of truth.

In relation to the so called “social representations”, we can consider a set of minimal definitions: a) they are a type of “Common Sense Theories”, a form of collective thinking through which individuals learn and represent the social reality; b) they are “knowledge” (theories) generated and socially maintained with social interactions; c) they are structured and organized cognitive systems. It is a system of rational and irrational components in which cognitive and affective elements are present; d) they act as “reading guide” of reality, being rationally activated, it both orientates the individuals actions and justifies, a posteriori, the realized actions; and it can be said that they assure a homogeneity of the identity of a determined group which shares the same representation of the object(s) that define this identity. According to the “Social Representation Theory”¹, the previous knowledge of the representations permit an understanding and relatively, the prevision of behavior, conducts a social practices.

The persisting problem is to integrate these different concepts in an appropriate theoretical model to traffic situations analysis, opposing to the individualizing models.

Within this perspective, we doubt that the possibility of explaining the drivers actions only by individual factors of personality and percept-motors aptitudes which reacts to mental level (Resolution 734/89). We do know that driving a car is part of our social reality, with a series of elements linked to the cognitive, affective and social dimensions. Then, we cannot ignore the rich exchange and their influence in the formation of the drivers actions. (Pereira, 1997, p.66).

What we will propose here is an approach of the behaviors in the traffic through the “Social Representation Theory” which can articulates a model of analysis uniting important concepts (attitudes, social norms and social values), and at the same time, permitting an elaboration of quantitative and scientifically validated instruments, able to capture typically social processes that influence the traffic behavior.

Social Representations and Models of Analysis of Relationships between Representations and Social Practices

The current state of the Social Representation Theory is totally accepted as a representation being a cognitive system that acts, at the same time, on the individuals who elaborate it, and also on the social situation in which it is inserted. This system acts upon individuals through meaning relationships. A representation gives meaning to a determined social situation and also to the observed behaviors and conducts. The study of representations permits researchers to understand which attributed meaning by a determined social group, both to the own situation and to the behaviors.

Therefore, we can say that a representation is a set of social meanings, organized in a structure that resists to changes. This structure has a part, a subset of elements, made of “regularities”, “constants”, which resist to small, immediate or situational of the context; and a second part, a second subset of elements which easily adopt themselves to the alterations of the environment, to the non permanent alterations of the immediate contact. Each group builds a shared meaning about a determined situation and the meaning is relatively “adaptable” to the immediate context; but, at the same time “stable” enough to not permit that the given meaning to the situation faces important alterations, facing the smallest context variation. Whatever exists of constants in the conducts, attitudes, opinions, practices and communication are generated by the representation structure shown.

Based on a set of experimental studies on group interaction, Codol (1968, 1969a, 1969b), alerts to the risk of studying separated the representations in the interior of restricted groups, for in every group situation, the situation elements (task, group, the itself and the others) constitute in an indissociable system; therefore, in the interior of group situations, there are systems of representations that interact among themselves, in such way, for example, that a representation that the individuals have of the task to be executed can influence the representation that they maintain about themselves and the other group members.

Within this context, Codol (1969b) offers us a hypothesis that, in the framework of the representation phenomena in group situations, the global representation of the task

would constitute the main determinant on the final configuration of the representation system:

We would like to demonstrate here that the ways individuals perceive themselves and others depend not only of the structure of the task, but the global representation that these individuals elaborate about the task (...) one of the main hypothesis is that two different representations of a same task structure definitely induce the individuals differently perceive their own position within the group. (Codol, 1969b, p.218).

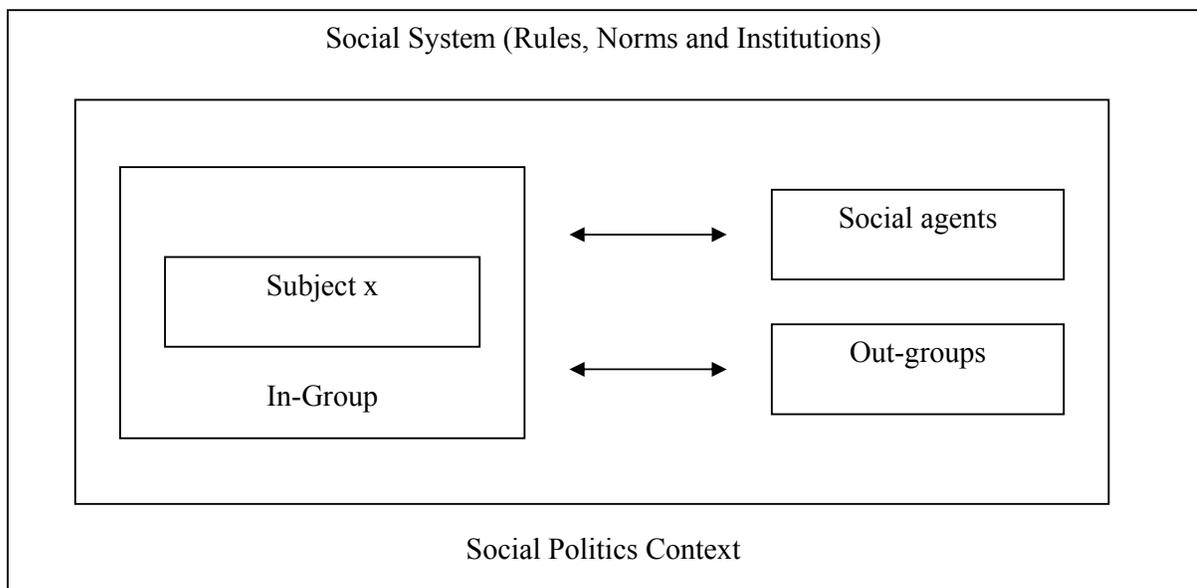
The obtained results in this set of research made Codol (1969b) to affirm that a global representation of the task, as an element of the representation system of the situation, is linked to its own representation and the representation of others. For the first time, within the framework of the work dedicated to the study of social representation, the terminology Situation's Representation System is used, in order to identify and understand a set of social representations, treated before as isolated elements.

In the same direction, Abric (1994) will expand the Codol's (1969b) affirmation, operating one change in the idea of "global representation of the task" into a notion of "global representation of the situation", or simply called the situation representation which includes the sense of the "context representation". Therefore, the new expression becomes the center of a more inciting formulation as a research clue: in the context of a situation that implies in a given set of representation and practices, the global representation of the situation will determine the nature of the relations between social practices and representation. Some authors (Abric, 1996; Abric and Campos, 1996; Mammontoff, 1996; Campos, 1998) will adopt a position, in which according to the structural approach, is a precious instrument in the study of situations of social exclusion, for it permits to treat a perspective of a determinant actor as a cognitive system of interaction between practices and representations; a system determined by the situation representation.

Under our point of view, the Social Representation theory is an important instrument of the study of situations; for example, social exclusion, as it opens the possibility to identify and analyze the symbolic factors that are hidden, factors that are in the same intensity as the objective factors, determinants of the situation.

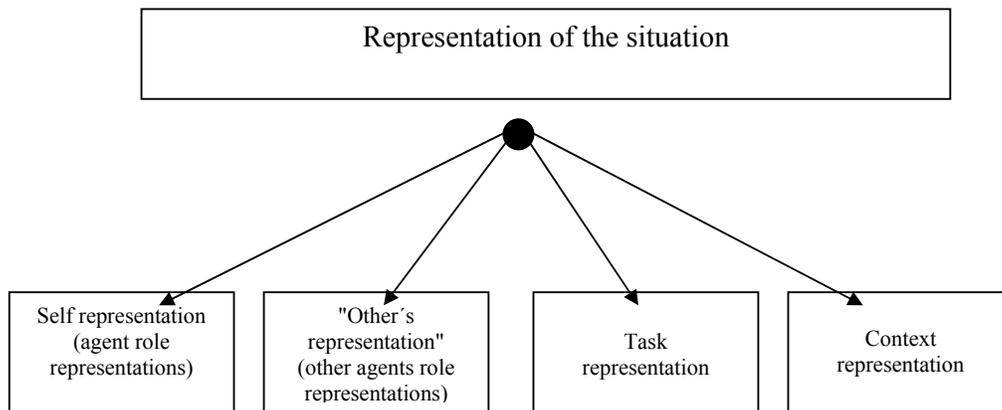
Social Representations play then a determinant role. If we consider (figure below) that the excluded is an individual who refers him or herself to a group to which he or she belongs to, in a given social situation (socio-economic context), he is in interaction with multiple actors: the members of its own group, the social agents (educators, for example) who deal with him, the institutions and their rules and norms system, etc. And each one of the elements of this system is the subject and the object, the producer and the receptor of a social representation. (Abric, 1996, p. 13).

Scheme 1 - Abric (1996a)



Based on the precedent studies, we do suppose to treat here a representation that the different groups of subjects have from the traffic as a complex cognitive system made of four components: the representation of its own role as a driver; the representation of the others drivers; the representation of the task (the act of “driving”); and finally the global representation of the situation; in other words, the traffic itself. The application perspective of such model, based mainly on Codol (1969a, 1969b) is like an approach of how social representation can influence behaviors in the traffic.

Scheme 2 - Abrie (1996b)



An exploratory study was developed to test the validity of the model. The subjects were young drivers, college students of different majors who obtained their driver's license two years ago, and ages up to 25, distributed in equivalent groups according to their characteristics in the different phases of the research.

In the operationalization of representations to be studied, we chose to consider according to the theoretical model: the representation of itself, as a "representation of the I, as a driver"; the representation of the others, as "other drivers"; the representation of the task as "driving" and the context as the "traffic". Therefore, the research was divided into three phases: phase 1, study of the representations of the "I - driver" (from now on simply called driver representation) and the "other drivers"; phase 2, study of the social representation of "driving"; phase 3, study of the "traffic representation".

Phase 1

We chose the framework the representations of the "driver" and the "other drivers", as being "good/bad" driver, considering that the characteristics/qualities of a driver have positive or negative consequences to the traffic. So, it was elaborated open, exploratory questions, applied to two different conditions, a version centered on the "good driver" and another version referring to the "bad driver". The first version was applied to 94 subjects, according to the characteristics already defined in this work, while the second was applied to 98 subjects. The question presented was the following: "Imagine that you

got a ride for the first time. You are seated in the passenger’s seat and observe the way this person drives. Which behaviors or conducts indicate to you that this person is a bad driver? Provide us with least four answers”.

The results were analyzed based on the frequency with survey of the main behaviors defined as a “good driver” and a ‘bad driver”, according to Table 1 (attached). As expected, we found out a bi-polar structure where “good drivers”and “bad drivers” behaviors oppose themselves whose main behaviors were: attention/inattention; calm/nervous; adequate speed/high speed; wearing of seat-belt/not wearing seat-belt; thrust/insecurity; responsibility/imprudence; respect the laws/does not respect the laws; adequate speed/low speed.

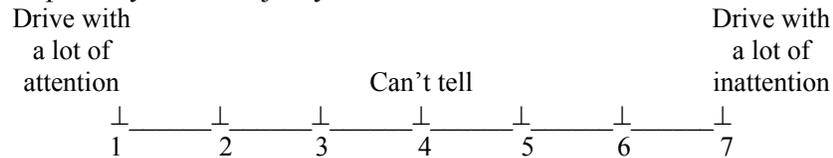
Table 1 - Characteristics of Good/Bad Driver

Good driver	Bad driver
Attention	Inattention
Calm	Hurry
Adapted speed	High speed
He wears the safety-belt	He doesn’t wear the safety-belt
He has trust	He is insecure
He respects the traffic laws	He doesn’t respect the traffic laws
He drives with responsibility	Imprudence
Adapted speed	Low speed
He uses the arrow (signal)	He doesn’t use the arrow
He respects the traffic-lights	He doesn’t respect the traffic-lights
He has agility	He doesn’t have agility
He looks the rear view mirror	He doesn’t look the rear view mirror
Only surpasses with safety	He surpasses without safety
He respects the minimum distance among the vehicles	He “glue” in the back of the next vehicle
He brakes calmly	He brakes abruptly

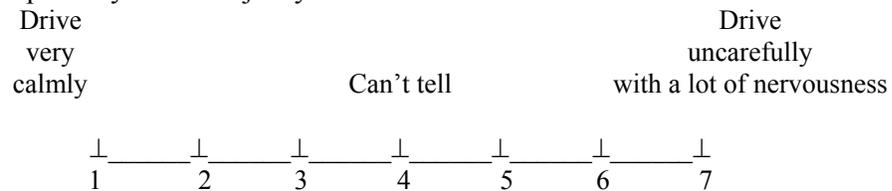
Based on these results, it was elaborated a second instrument made up of two questions, each of them made up of X scales, varying from seven points, being one pole characterized by a behavior perceived as the “typical” of a good driver and the contrary behavior, typical of a “bad driver”. The first question asked the subjects “In your opinion, you”, followed by the scales, while the second question was formulated in the following terms: “In your opinion, the majority of the drivers”, asking the subjects to position themselves according to the scale.

We present below the two examples:

a) In your opinion you/the majority of the drivers



b) In your opinion you/the majority of the drivers



This second instrument was applied to 177 subjects, young drivers. The results (Table 2) indicate a global trend of the subjects in considering themselves as “good drivers”, while the “other drivers”, generally, are considered “bad drivers”. We can say that this trend is more concentrated in the items attention, responsibility, care and respect to traffic laws, where the largest differences appear, between the given averages attributed to him or herself and to the other drivers. The results also present some elements (adequate speed, respect to traffic lights, agility and use of rear mirror) for which the subjects tend to approximate more to the representation they have of the other drivers.

Table 2 -Results of the self and other-perception scales, in reference to the characteristic behaviors of “good and bad driver”

Averages Behavior	Self-perception average (SR of itself)	Other's perception average (SR of the other)	Difference among averages
Attention	1.98	5.90	3.92
Respect the minimum distance	2.60	5.52	2.92
Calm	2.62	5.25	2.63
He uses the direction's arrow	2.01	5.22	3.21
He respect law traffic	2.08	5.18	3.10
He surpasses with safety	2.00	5.06	3.06
Appropriate speed	2.91	5.03	2.12
Responsibility	2.06	5.00	2.94
He brakes calmly	2.20	4.80	2.60
Respect traffic lights	2.09	4.38	2.29
Agility	2.04	4.13	2.09
He uses the rear view mirror	1.67	4.11	2.44
Trustful	1.90	3.55	1.65
Use of safety-belt	1.59	2.71	1.12

Phase 2

In order to carry out a study of the “driving” social representation, it was applied a question such as “evocation question”, classic in the structural approach of social representations. A group of 191 subjects participated in this phase, answering to the formulated questions in the following terms: “When you hear the expression TO DRIVE, what words or expressions come spontaneously to your mind?”

To treat this data, two criteria were considered: the frequency and the average evocation rank (order). The results are presented in Table 3, classically denominated “4-Houses Table”, where we find the subjects production distributed: in the left superior house, we can find the hypothetically central elements² which present high frequency and are evocated, on average, at the first positions; in the right superior and left inferior houses, we find the elements belonging to the so called “first periphery” or “close periphery”, characterized either by a high frequency associated to a medium evocation position in the last positions, or by a low frequency associated to a medium evocation in the first positions; and, finally, the last house, right inferior, is made up of elements typically peripheral, but associated to the representation individual modulations.

Therefore, the obtained results in this question seem to indicate that the task of “driving” is quite positive and it is organized around two main elements, responsibility and attention (represented by the words responsibility, prudence and respect, on one

side, and attention, care and safety, on the other side), beside those, we can enhance, in the first periphery, the elements such as traffic, pleasure, calmness, danger, control. We can also infer that we are dealing with a representation supposedly adequate, in the sense of rules and expectations, explicit and implicit established by Traffic National Code and principles of the traffic engineering. However, we can also suppose that the inducting word “driving” ends up inducing an idealized social representation, i.e. probably it was activated to a representation of the “ideal driving”.

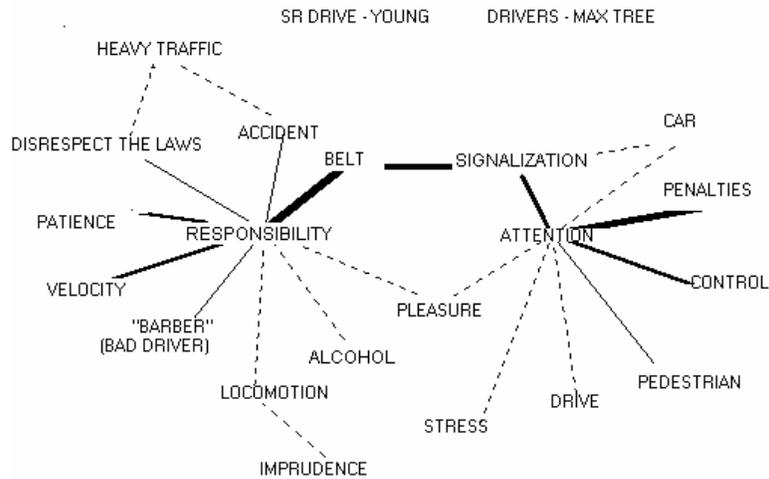
Table 3 - 4-Houses Table - Results of the Evocation Question, Social Representation of the “Act of driving”, elaborated by young college drivers

Average Evocation Order
3.25

85 responsibility (.2.25) 81 attention (2.28) 50 care (2.06) 30 respect (3.23) 22 prudence (2.82) 20 to drive (1.30)	
18 security (2.72) 14 traffic (1.79) 13 pleasure (2.85) 12 calm (3.25) 11 control (3.09) 11 to conduce (1.30) 10 danger (3.00) 10 freedom (2.44) 09 car (2.38)	16 patience (3.75) 10 pedestrian (3.50) 10 accident (3.40) 10 agility (3.89) 9 “barber” (bad driver) 8 tranquility (3.86)

In the treatment of specific data called “evocation analysis”, there is an operation of a categorization with the objective to group the words and expressions that denote or refer to the same nucleus of “sense”, to a same “meaning”. The work carried out is found on Attachment 1. Once the categorization is operated, the data are submitted to a statistical analysis such as “similitude analysis” which matrix of similitude can be expressed through graphics. The results referring to the social representation of “driving” are presented in the “maximum tree” graphic.³

Figure 1 – Maximum Tree Graphic of the “driving social representation”



In the similitude graphics, we can observe the connection of the elements (a quantity of links around of an element), and the intensity of these links as well (which are graphically expressed by more intense than the others). It is expected that the central elements are more “linked”, for they generate the meaning of the set of representation and other elements, as these links are “more intense” than the links around peripheral elements.

Thus, an analysis of the maximum tree graphic of the “driving” representation (Figure 1) seems to reinforce the previous results, indicating a central place in the structure of the representation to the elements of “responsibility” and “attention”.

Phase 3

In this phase it was applied to a group of 177 subjects the following evocation question: “When you hear the expression TRAFFIC, what are the words or expressions that come immediately to your mind?”

The results are presented on Table 4, from which we can emphasize as probably central elements: rush, attention, stress and car: as long as they appear in the first periphery of the elements accidents, fines, noise, danger, responsibility and tumult. It is important to emphasize that contrary to the representation of “driving” in which predominates positively elements valued at the traffic organization, in the traffic representation, the main elements are, in great part, “negatives” (rushes, accidents, fines, stress, noise, tumult, danger, etc). Although the central elements of “task”, i.e. to drive (attention and

responsibility) still appears with a relative distinction, the predominance is a negative representation of the traffic.

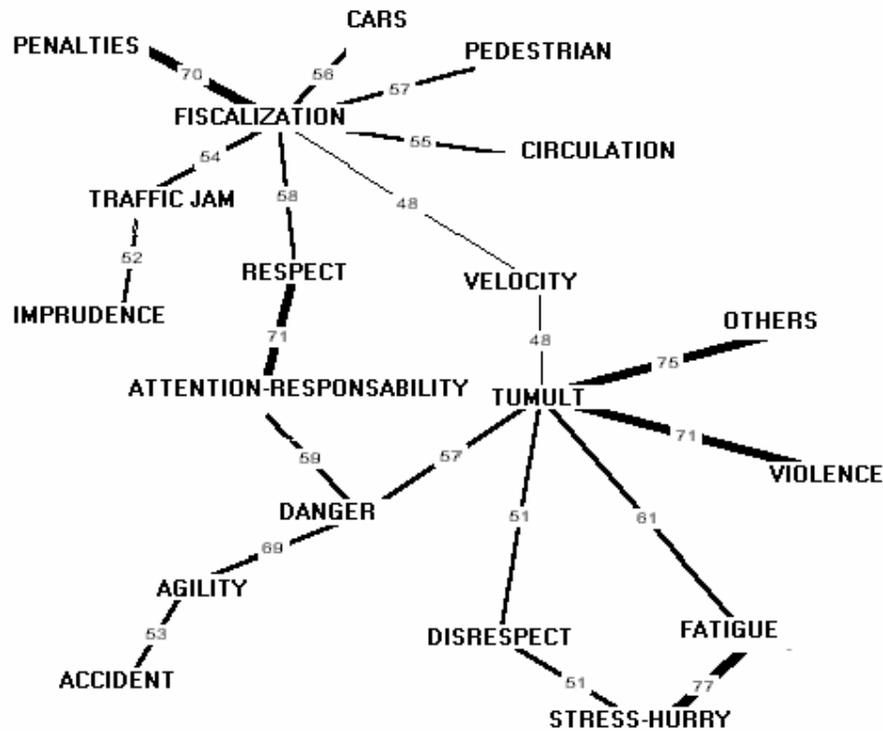
Table 4 – Results of the Evocation Question “Traffic Social Representation”, elaborated by young college drivers

Average Evocation Order
3.6

83 rush (heavy traffic) (3.21) 53 attention (3.57) 45 stress (3.36)	43 fines (4.81) 38 accidents (4.18)
37 car (3.57)	
29 responsibility (3.39)	28 pedestrian (5.04) 25 imprudence (4.72) 24 care (4.02)
23 tumult (2.77) 23 noise (3.32) 22 danger (3.50)	22 respect (4.50) 21 velocity (4.95)

The same categorization procedement was applied to the results, making possible, therefore, the so called similitude analysis, which maximum tree graphic is represented on Figure 2.

Figure 2 - Maximum Tree Graphic of the “traffic social representation”



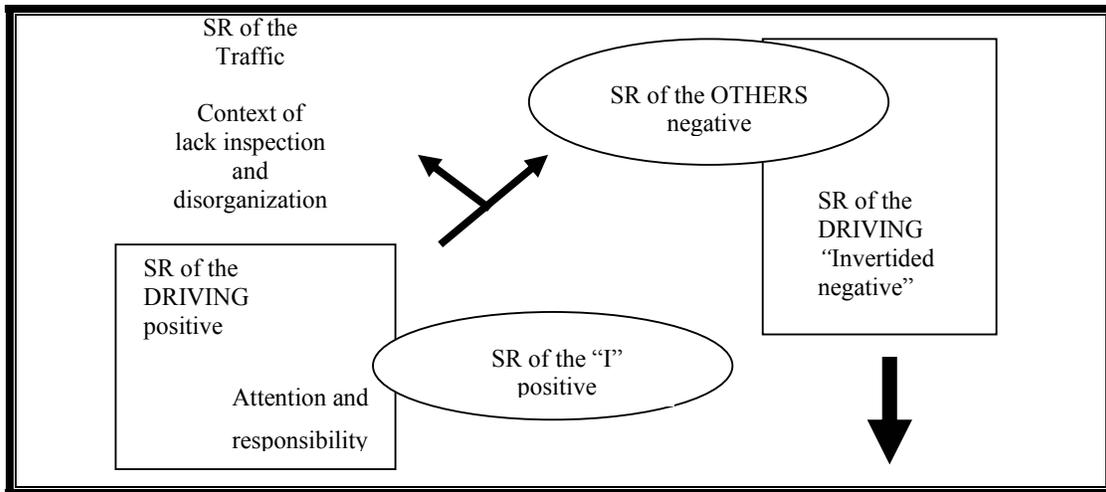
We can say that, probably, the subjects, by representing the Traffic most ample context, contrary to the representation of the task (to drive), reveal a negative social representation, organized around two set of main elements, probably an organization distributed into two “blocks”: the first organized around the notion of tumult; and, the second, joint around the notion of inspection (or lack inspection), being that the first one refer more to the set of characteristics of other drivers, such as lack of attention, not respecting the traffic laws, stress, etc. that provoke a tumult situation in the traffic; about the second element, it is concentrated to the aspects linked to the traffic organization, a State responsibility, that does not enforce it, not maintaining the roads conserved and signalized, ineffective structure of inspection, that also contributes to cause insecurity and tumult.

Globally, it is observed that there is, from the part of the subjects, a positive auto-perception as a driver and a negative of other drivers and the traffic system as a whole. The data set shows a quite positive representation of themselves as drivers, similar to

the representation that they have of driving, when they represent the traffic context, have a negative social representation, made up of two problems: the first, related to the traffic (bad signs, inadequate roads, ineffective inspection etc) and the second related to the characteristics of other drivers (inadequate speed, did not obey the minimum distant, impatient, unsafe crossing, are irresponsible, break suddenly, do not respect the laws, do not pay attention, etc.).

The results seem to indicate that the subjects develop a cognitive system, collectively built on the negative representation of the traffic which goal is to justify the fact to permit not obey strictly the traffic rules (not always be “good drivers”) because the other drivers (who are always bad drivers), as well as the disorganization of the traffic system, oblige them to drive badly. Returning to the proposed analysis, synthesized by the framework previously presented (Scheme 2) we could propose an interpretative framework, based on the obtained data which permits us to think about the individuals behaviors in the traffic, about the social interaction and to initiate a problem approach integrating norms, values, representations and social practices.

Scheme 3 - A Model of Analysis of the “Traffic” and “Driving” Social Representations



Obviously the data are preliminary and the conclusions are provisory, however, we can affirm that the proposed model can permit an integration of the directed studies on norms, values and practices and it seems to us, at the present moment, a very promising clue for the understanding of the adopted behaviors in the traffic by the different groups of subjects. We can also propose that the development of this model can open the doors

to the identification of behavioral styles of the different groups, suggesting new techniques of selection (habilitation) and considerable progresses on traffic education as well.

NOTES

¹The reference to a great Social Representations Theory is an allusive form recognized among researchers of the domain as making a direct reference to the theory as it was proposed by Moscovici (1961).

²In this house we can also locate two types of elements that are not central: the prototypes and those elements that quantitatively come near to the nucleus without, although, having the fundamental characteristic of centrality which is qualitative and refer to the fact that the central elements “not being negotiable”.

³A maximum tree is a synthetic reunion of connexity relations between different elements whose characteristics are to graphically express, not the strongest relations, but the highest degree of connection between two elements, considering the elements that are closer among themselves.

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