

Introduction and scope of the study

In this new study, we analyse the information processes and generation of knowledge by Catalan consumers related to food-safety issues, going from habits that should be adopted when preparing and handling food, to the development of perceptions regarding food safety systems in our country. We can consider this study a complement to the previous study *Exploració de les percepcions sobre la seguretat alimentària a Catalunya* (Research on social perception of food safety in Catalonia [Barcelona: Generalitat de Catalunya. Agència Catalana de Seguretat Alimentària, 2007]), since it serves as a guide to define the factors that affect and condition these perceptions that will serve to open new efficient and viable communication channels related to food safety.

The **objectives of the study** were *analyse* three concepts: the individual learning process about food-related risks, the trio – learning – previous experience – new information and the interest for information on food safety in contexts such as *normality* and *crisis*; *establish* three proposals: first - the possibilities and limits of communication systems as inductors for learning and generators of knowledge about food safety; second – the differences between the attitude towards, and the confidence in, the received information which derives from the communication on food safety according to the media through which it is published, the key social and demographic variables and the agent used to transmit the information, and finally, the basic criteria used to generate an efficient communication; *define* which communication methods are the most efficient, in order to develop better knowledge of the food safety systems, and *propose* information and sensitization methods to adapt the communication channels to the interests and preferences of the population.

The **methodology** is based on three tools: 48 *focused personal interviews* (to explore the informative habits of the informers and an acquisition of knowledge in order to transform beliefs), 14 *group dynamics* (social interaction and specific ways of communication), and 60 *complementary questionnaires* (to determine changes and continuities). The sample is based on 10 different categories in basic social and demographic variables; these were complemented with 4 other categories that were created through professional assignment. Five communication channels were studied: television, radio, press, web portals and information and sensitization material (informative or sensitization campaigns).

Previous knowledge

We need to define three concepts as being included in a specific and specialized scope, that is, with a specific meaning according to food safety.

In the first place, we understand **social representation** (in other words, *systems of representations*) as everything that makes up the idea the members of a society have of the world, which in turn are shared socially and necessarily, and interpreted individually. They are based on knowledge and beliefs, values, systems of classification and regulation systems, in other words, behaviour rules.

The systems of representation and the behaviours refer to how the world thinks and lives, respectively; representations correspond to the practical knowledge that organises behaviour, and the latter feeds representations. Attitudes are the outcome of the combination of representations and behaviour. Thus, *when we talk of social representation, we mean being interested in a form of knowledge that guides attitudes, organises conduct, has been socially prepared, is shared by a social group, and contributes to an overall vision of reality and to common behaviour.*

In the second place, **knowledge versus information**. Knowledge means the set of data, concepts, practices and capabilities that an individual has acquired through training and which has been included and integrated in his representations, attitudes and behaviour. Information means the set of data that are accessible to the individual, that is, all those messages to which he or she is a compatible receptor. There is a clear difference between one thing and the other: even though the information will always end up converting into knowledge, it is very clear that this does not always happen.

In today's society, the abundance of information related to everything generates a significant offset between socially available information and the real knowledge people have. Consequently, there is a tendency to delegate opinions about numerous issues to the *so-called experts in the subject*, or to choose from among the existing interpretative repertoires, following different affinities and strong emotional components. In other words, we are interested in identifying the *elements that retain or block the assimilation of certain information related to food safety and the factors that allow this information to become solid knowledge.*

In the third place, **communication** (personal, mass, online), understood as the transmission of messages —visual, verbal, signs...— from the emitters to the receptors, even though the messages do not follow a linear and mechanical course between the parties; rather they are subject to *complex processes of interpretation and reconstruction of the information* they contain, thereby distancing us from the idea of an active emitter and passive receptor.

Besides interpreting and reconstructing information, people *filter or select* the information according to 4 conditions: linguistic (language as a transmission code), psychological (emotional status), cognitive (intellectual training), and physical status. Two of these are capital when it comes to finding out how an individual reacts to the information; they are linguistic capabilities —that include the capability to interpret other codes, such as visual— and the degree of training in a wide sense, that is, the knowledge that was acquired beforehand in the academic, corporate and personal fields. *Persons with a denser cognitive background, with more baggage of acquired knowledge that facilitates a faster integration of new information, can be more receptive to information about food safety, whilst those persons with less resources may feel overwhelmed by the flood of information that they are unable to process*, because the information they find difficult to process is the information that is beyond their own personal experience and baggage of knowledge.

In either case, the excess of information generates a feeling of irritation, frustration or even indifference to this information. The result in these cases is the same: *no attention is paid to the information; it is left aside.*

We need to distinguish between the three types of communication:

- **Personal communication**, where it is unusual to totally ignore the communication, even though one can give it partial attention; also, the message can be adapted to the receptor at any time according to the attention, level of comprehension, interest, and response. The scope of transmission has widened with the use of the telephone, mail, Email, chats, Internet forums, etc, with no limits to the space, time or relational network. Today, given that any information that is transmitted through the mass media is omnipresent, personal communication helps us not to miss much because the information is interpreted, processed and then internalized.

Personal *communication can be horizontal* (peer-to-peer) or *vertical* (top-down, teacher to student, father to son, speaker to audience). Also, information is often circular: it goes out but returns modified. Vertical personal communication can consist of two important parts: the information transmitted by *experts* (people who are recognised as being fully capable of giving a sound opinion, and even be decisive about a certain subject, considering the superior knowledge they are supposed to have about the subject), and *opinion leaders* (persons with close ties to the relational area of the individual, i.e., there is no unequal relationship but they have significant influence when it comes to positioning themselves). Opinion leaders are first class mediators between the information issued by mass media and the population as a whole.

- **Mass communication**, where the flood of information causes the receptors to ignore it or avoid it due to lack of interest, excess information, inability to process all the information, or due to lack of sensitivity caused by reiteration —the effect known as numbing by communication media. For this reason, it is considered that a message sent out by communication media should overcome a set of obstacles in order to be perceived: the individual should choose the message from among other competitive messages and accept it. This means that the message should respect the individual's rules and beliefs. *The process of assimilating a message sent out by communication media is essentially selective.*
- **Online communication** (Internet). It has the characteristics of personal and mass communication. The Internet extends the information that is circulated by the mass communication media, and causes its implosion by introducing critical, relational and personal reading elements. We have observed that some of these notices that had passed unobserved by some informers, or left a weak impression, had nevertheless been analysed in detail and assimilated by others: the information had been the subject of debates on forums and chat rooms. Consequently, the construction of the information was marked, not by the media that put it in circulation, rather by the debate it caused at a later date —personal communication in these areas.

Representations, knowledge and information on food safety

Representations on food: consists of analysing how the representations on food safety will be reconstructed with the help of new information, representations that uphold attitudes and guide behaviours. In today's society, representations about food are based on certain keys that are widely shared, the most significant being those that are integrated in the following groups:

- **The diet**, the coherent messages —or seen as coherent— the following representations show us which messages are not: *diets should be varied and balanced (positive valuation of the Mediterranean diet), it is important to everything but with moderation, breakfasts should be complete and dinners should be light.*
- **The products**, there is a clear tendency to classify products as being healthy or unhealthy, and compulsory consumption/reduced consumption or avoidable. *Thus, green vegetable and fruit are healthy and must be consumed everyday; cereals and legumes are healthy and should be consumed regularly; fresh products are healthier than processed foods; fish is healthy and should be eaten regularly; meat should be eaten but not in large quantities; fat should be avoided; the consumption of cold meats such as sausage should be reduced; the consumption of buns and rolls should be reduced/avoided; fast food should be avoided; olive oil is very healthy; alcohol should be consumed only in moderate amounts; consumption of refreshments should be avoided/moderated; consumption of coffee should be reduced or moderated.*
- **Cooking techniques**, in the case of green vegetable and legumes, ideally they should be boiled, consumed raw or steamed; frying should be avoided; avoid scorching meat on the grill; avoid re-heating oil too much and reusing it.
- **Health benefits:** a widespread idea and that has been considerably accepted is one that refers to the cancer-preventing effects of certain products. There is also: *the recommendation to consume fruit and vegetable, the need to consume dairy products regularly in order to prevent osteoporosis, soy is adequate for women in their pre-menopausal and menopausal stages, fibre is necessary to encourage bowel movement, blue fish is good for the health due to the ω -3 it contains, food with a high vitamin C content is good to avoid colds.*
- **Conserving and handling food**, food, once defrozen should never be refrozen; the cold chain should never be broken; pay attention to the smell and colour of foodstuff because they indicate the state of the product; pay attention to the “best before date”; wash your hands before handling foodstuff; pay special attention to eggs -and mayonnaise- they can be a source of intoxication; fruit should be peeled due to the presence of pesticides...

An interpretative repertoire is the set of repetitive patterns that are used in order to be able to understand events or situations and to give them a meaning, i.e., they are alternative forms, confronted or complementary, of interpreting the same reality. They provide several options of studying this reality, reason for which certain ways of understanding situations turn out to be culturally dominant. In terms of food safety, it would be: *today there are more controls than before, but also today there are more risks; food safety in our country –in the E.U.- is better than in other countries;*

the food products put in the market have better guaranties; the quest for economic profit endangers food safety, and current food production methods can be problematic but they guarantee the supply to the population.

As for **information processing**, the message that is selected from amongst all, receives primary attention (superficial or in-depth), and if it really fulfils all the expectations, and if enough attention is paid to it, we would talk of *processed information*; in order to be converted into knowledge, this information needs to be assimilated and integrated in attitudes and behaviour: when the information in question can be converted into a specific act, in other words, into a habit that is repeated regularly. However, *a large number of messages turn out to be relatively relevant —more or less personally interesting— but which we do not pay much attention to, and which by themselves have few chances of being processed. Even so, these messages are repeated very often; they often appear in the media and in different channels; they therefore end up in personal communication channels and are then intensely assimilated.* Given that information that has no direct effect generates little interest, it is quickly forgotten even though it leaves a negative print which in turn indirectly affects attitudes and behaviour, and can get activated in case there is an alarm that has a direct effect.

Regarding the **operation of food-related training processes**, we need to have in account that informed people are either partially or fully in charge of their food. This means that they have learnt basic notions on cooking, food conservation and handling from their parents, in particular their mothers; they often also obtain this knowledge from other family members -brothers, partners, grandparents-, friends, sales staff, etc. The fact of *regularly following cooking programmes and reading literature on the subject (such as books and magazines) does not necessarily imply any sort of training; only recipes that are used as a habit turn into knowledge. In reality, very few recipes are taken from magazines and books, and even more so is the number of recipes that come from cooking programmes.*

Lessons learnt about cooking, conservation and food handling turn in to knowledge when they are integrated into regular practice which keeps them updated and guarantees their assimilation through behaviour based on very routine associated knowledge. Therefore, *the addition of experience and routine is one of the most efficient formulas to incorporate methods that serve to guarantee food safety at home. Consequently, knowledge that has been acquired, such as how to cook vegetables or prepare macaroni, especially from the mother, is generally never put in doubt and is repeated with no further thought. However, there is nothing to say that they cannot be modified or will not be modified; this knowledge will be modified if it comes into contradiction with new interests or new information.*

It must be pointed out that, *it is very important that information that is received through the different communication channels be reinforced through personal relationships in order to be converted into real knowledge after a training process.*

Regarding **information and the food crises**, we need to recall certain *general aspects* such as minor alarms (the case of dioxins in Belgian poultry, benzopyren in olive-pomace oil, cases of collective salmonellosis) that seem to leave a lesser impression than the more important crises (rape oil intoxication, mad cow disease). This however does not mean that in their day they did not negatively affect sales or increase restlessness related to food safety; the fact that lesser importance was given to minor alarms—in particular when they had no personal effects— does not mean that they do not remain in the form of impressions or representations, that is, their effects that are latent during normal times can show up when a detonating cause arises. Regarding large crises, even though they differ from each other—in the number of deaths and people who were affected in Spain (this is not a minor difference)— they all have a common characteristic: they both received intense media coverage.

In other words, in spite of the fact that not all crises are registered (this is a proven fact), news related to food safety, even though at different intensities, does affect the way we think of food and *live* it because crises leave scars, and the more important the crisis is the deeper is the scar it leaves. Consequently, in *normal* times, any information about food safety that may have been divulged during an alarm will continue to leave a scar and, not less important, any news that has been spread during in times of *crisis*; any information that may have been divulged during normal times also leaves a scar.

In the *case of avian flu*, the analysis of the relative perceptions and showing how the information that was communicated about this issue was assimilated, serves as an example that can be applied to other similar situations (a relatively recent situation that was continuously addressed by the media). Therefore:

- **It is a longstanding problem:** Its duration downplays its personal relevance; consequently the attention that is paid to news related to this issue is often scarce and has direct practical consequences. If it dates back to a long time, there is no problem and we can go on consuming poultry; if it belongs to the recent past, it would be advisable to consider ceasing poultry consumption.
- **Knowledge about avian flu and recommended measures** – Since the overwhelming abundance of information does not guarantee its assimilation, only those informers who have shown to be close followers of the news —people who read the press, not just the headlines— and are interested in socially relevant issues, have given a wider description of the subject. The ideal would be to activate all the usual mechanisms to guarantee the safety of the consumed product.
- **News that modulates restlessness** – The media addressed the issue extensively *while the problem lasted*. Any problem seems to disappear once it no longer makes the headlines. The only thing this excess of information did was to generate excessive and unjustified alarm, at least in our country. As usual, the messages that deny or try to downplay the importance of the problem tend to be poorly received. Also the messages that assert that the *situation is under control* are put in doubt, whilst the messages that state that *steps are being taken* or that the *necessary steps will be taken* are the ones that generate more acceptance.

Key factors for informing about food safety

A matter of form: The key to understanding why *certain messages go unnoticed, whilst others seem to obtain considerable reception, is their **relevance*** (a necessary but insufficient condition).

The **relevance of the messages** implies that *the message must attract the individual's attention directly; it should answer a question that may have been asked explicitly; it should be the answer to a specific problem or should satisfy a specific need*. Its relevance should be clearly evident in the message from the very first moment, but the *correct condition* is that the information is converted in to an attitude or directly into behaviour.

There are three types of relevance:

- **Social relevance.** The set of *facts, events or situations* to which a society gives a particular importance or considers them to be matters of general interest: they obtain the characteristic of social relevance because they contribute to study, evaluation and critics about the society we live in, in other words, the representations. Nevertheless, *the fact that an issue is included in public agendas and, therefore is addressed intensively by the media, does not mean that it is socially relevant to the audience*. Hot issues in social agendas can be relevant to persons for two reasons: the relevance they are given can be due to actual interest about the issue and how the society we live in works; but it can also be so because the fact of being informed about these issues is a mechanism of integration and activation in social networks. In other words, not all messages related to issues in public agendas can be socially relevant for everybody; if they were, relevancy would not serve as a discriminating criterion, and it really does.
- **Personal relevance.** The key element that selects certain messages; *food in general*, from different points of view —health, body image, pleasure— *is an issue seen as relevant by most persons*; but not all food-related issues have the same relevance for everybody:
 - **Related to health information:** we pay attention to messages about nutrition (beneficial effects related to the consumption of certain products, or those referring to potentially negative effects) that affect us personally, and often, the information is processed, assimilated and integrated in usual habits, even when this information does not receive much credibility at the onset.
 - **Related to health alarms:** Certain alarms are ignored or receive very superficial attention. This is true if they do not refer to a product that one consumes. Practically, what is relevant when selecting information –filtering messages- is not overall food safety, as a system, rather the safety of what one eats as an individual. This is because general food safety is seen as being reasonably guaranteed in our society. There are moments in people's vital cycle (*pregnancy and birth of the first child are the moments to assume responsibility of one's own food –emancipation, death of spouse, divorce- or when suffering from an aliment or disease/having suffered an intoxication*) when issues related to food as a whole, and to food safety in particular, arouse special interest. Therefore, *the messages about food should be sent out at the right moment, when the possibility that the message be selected and processed is at its peak; not when it will be very badly received. This means opting for specific messages that address target groups instead of general campaigns (youngsters yet to be emancipated, and adults who are not in charge of family nutrition are the people who show most lack of interest in this issue)*.
- **Relevance according to the situation.** Certain information can pass unobserved under normal circumstances because they can be considered as being irrelevant. On the other hand, they can take on certain relevance under certain circumstances; for example, *recommendations to cook the meal well could cause very little interest in general, and even less if one tends to consume rarely cooked meat. On the other hand, in the case of a health alarm, these recommendations could take on considerable relevance, above all if the fact of cooking the meat turns out to be the best way to avoid all risks*.

The **modulating factors** modify the importance of the basic criterion of relevance; some of these factors are:

- **Affinity** that can be classified in three groups:
 - *Ideological affinity* (political, cultural and religious) that have an influence when choosing the media more than the information itself, even when the importance the media gives to the news depends on the interpretative repertoire they have chosen.
 - *Subject affinity* is the great modulating factor of this social relevance; it is the factor that determines which information will be read with attention (it explains why many notices that occupy a privileged space in the media are nearly ignored by the users of those media, even though the social relevance of the notice is similar to the relevance of others to which attention is paid).
 - *Affinity to towards the emitting agent*, whose characteristics (if the receptor is to choose the messages) do not fully coincide with the characteristics that are had in account to appraise and assimilate the messages; basically credibility.
- The **already acquired knowledge** determines the main attraction to the messages that are related to this knowledge because the receptor is able to differentiate the contents; assimilation will be higher as a consequence of more active attitudes.
- **Reassertion of one's own opinions** when choosing messages turns out to be a factor that is more decisive than the fact of wanting to change them, i.e. *often attention is focused on those messages that best fit the personal perception of the situation, whilst the messages that put it in doubt can be ignored*. This is due to three strategies by the audience: *selective exposure* to the messages they like, *selective perception* that allows us to interpret a message in such a way that it coincides with our own ideas, and *selective retention* that serves to remember only what we want to remember.
- The **media and the format in which the message is transmitted** is also important:
 - *Classification of different mass media*. Credibility; we will react to the messages of a media according to the confidence that media deserves; there is also an internal classification in each type of media (e.g. specialised and general magazines)
 - *In the case of publicity*. Evidence that the messages that are *sent out by the publicity are neither understood nor interpreted in the same way as the information that appears in the news*. It is the mass media that is most placed in doubt. This does not mean that nobody finds its message credible; a large part of the population is widely receptive to information that is transmitted through publicity channels and considers them reliable a source of information because they send out messages that are short, easy to understand, audio-visually attractive, and are seen are being personally relevant. Also, their form allows them to overcome perception obstacles easily and efficiently: *reiteration*. Even though institutional publicity is considered more credible than commercial publicity, it has the same disadvantages as the former: if the message is not perceived as being relevant, nobody will pay attention to it.

Food safety related communication channels

We will divide the information among the mass media (TV, radio and press), media belonging to the administration (posters and flyers), and online media (the Internet).

In the first place, the **radio and television**. According to the *Study of Public opinion on audio-visual media in Catalonia 2006 carried out by the Audio-visual Council of Catalonia (CAC) (Estudi d'opinió pública sobre els mitjans audiovisuals de Catalunya 2006)*, a considerable amount of time is spent during the week watching television and listening to the radio; this time can in no way be ignored. Consequently, we would be interested in playing the role of these media in order to be able to transmit messages about food and food safety, and to build representations related to these concepts. We would analyse the different formats these media use, to determine how the messages reach their audiences.

- **News broadcasts:** This format is the one with most audience when it addresses issues on food and food safety. Since a news broadcast presents the news in *journalistic terms, for a subject to be considered as news, it needs to have two basic attributes: it must mean some sort of change in the normal order of things and must be socially relevant. Therefore, a socially relevant fact has to cause considerable impact in order to become news*; this means that the matters related to food safety, that are most often found in this format, are **health alarms** and **food crises**. A fraction of the alarms and crises can have sufficient political and economical implication as to be included in public agendas, without affecting their impact and social relevance. Let us however remember that *the communication media, through public agendas, do not always state what the audience should think, rather that state what the audience should think of, and the fact that the TV news broadcasts tend to talk about specific events for many days and even weeks, convert these events into something socially significant.*

In other words, the messages related to food safety that appear on the news broadcasts —both on radio and on TV— will be heard or seen by the majority of the public simply because they are news and, even more because they are included in the core of public agendas. The intensity with which the news is processed will vary a lot, and so will the interpretation they are given; but they will be a part of a package of facts that everybody has heard about.

- **Programmes with current news; information and debates:** the information that is transmitted during these programmes is more complete, more abundant and more complex than when they are addressed during news broadcasts (overall food-related issues, and specifically food safety). When these programmes do not include hot issues (they are not included in public agendas), other elements must be put in to action for the information to be processed with certain efficiency: the matter that is being addressed must have strong social relevance, and mainly high personal relevance. *Anything that is related to health —food is seen as being very closely related— is considered to be highly relevant, both on a personal and social scale, in our society.* This social relevance explains the interest in programmes about obesity or eating disorders even when one is not affected by these problems. It is the personal relevance that explains the interest in programmes such as “Saber Vivir” (messages in form of recommendations). Even though these programmes have a poor audience, they still manage to attract users’ attention; therefore, its messages help to generate knowledge about food, both directly and through opinion leaders.

In second place, the **press**. This channel provides more extensive coverage (with a greater interpretative repertoire) of the issues contained in public agendas. Also, the reader is familiarised with the editorial lines of each media. The press can address subjects that are not strictly news, in radio-

television terms. Not only do they attract an audience that wants to be updated, but they also interest those persons who, apart from information and wanting *knowledge*, process it and assimilate information (at this point, it would be good to recall the difference between free and conventional press content, and the small difference there is when conventional press users are only headline readers). The television, the radio and the headlines allow us to create *impressions* based on messages related to a specific matter, whilst an in-depth reading —not compulsory— of written press allows us to generate knowledge.

In the third place, **flyers**. Six flyers published by the Catalan Food Safety Agency (Agència Catalana de Seguretat Alimentària) were analysed as media to broadcast information to the public. In general, *most of the informers did not recall having seen them before*. After having glanced through them, or even read them thoroughly, the documented evaluations showed that, on one hand, the flyers presented for the study were evaluated positively or even very positively in terms of presentation, clarity, length of the texts, as well as the quality of the content (mainly and very important- their contents were considered to be very interesting and useful). On the other hand, another positive attribute detected by different informers was the “things they spoke about”, in other words, the content of these flyers was not limited to indicating what had to be done and should not be done, or to recommend the right actions; rather, these flyers also explained the reasons behind the recommendations. We will come to this more in detail and will talk about the conditions needed to implement the recommendations.

- **How to prepare dishes containing egg**: was the flyer that generated most interest (*because preparing dishes containing egg is seen as a problem*); a flyer addressing this issue would normally be bound to be found very interesting. In all instances, it produced reactions of surprise; even women who considered they knew very well how to handle this risk at home, discovered that some (or quite a few) of their usual practices were not correct (it was this surprise that caused the evaluation of interest in the flyer to increase exponentially). The most frequent incorrect practices are:
 - *Breaking the egg on the dish in which it will be beaten*
 - *Not cooking the omelettes fully*
 - *Separating the white from the yolk in the same shell*
 - *Washing the eggs with water*
 - *Leaving omelettes at room temperature for more than 2 hours*
- **A safe way to consume fish**: the flyer about anisakis got a positive evaluation for its presentation, the images it contained, and the clarity of the text (even though the persons who were already aware of the issue considered that they did not contain much more information than what they were already aware of). The general idea that fish had to be frozen beforehand if one wanted to eat it raw, or that it had to be well cooked if it was not frozen, had been well broadcasted. Even so, in several instances we detected that the information had shifted, to state that fish had always to be frozen before eating, even when it was meant to be cooked. The most clear deficiencies were:
 - *Cephalopods can also contain parasites*
 - *Salted fish can also be a source of risk*
 - *Fish in vinegar can also be a source of risk*
 - *Cold-smoked fish is also a source of risk*
- **Practical guide on how to eat fish and seafood**: *the audience that was most interested, by far, was youth who had recently undertaken the responsibility of their own food*; buying and preparing fresh fish is still, for most of them, a complete novelty. Often, their main guides for buying fresh fish were the recommendations offered by the seller at the fish stall.
- **Four rules to ensure the safety of the food we prepare**: *at first, the flyer did not seem to generate very much interest, but the initial indifference towards the recommendations it contained changed in many cases after it had been read*. As in other cases, to this general approval of the information it contained, they added that if this information had been posted in a health centre or in a pharmacy, they would barely have even looked at it, probably because they don't have the habit of doing so, or simply because they considered that they were sufficiently informed and that these issues addressed people who were less prepared. The following practices were described as being incorrect:
 - *Defreezing at room temperature.*
 - *Leaving prepared food at room temperature for more than 2 hours.*

- *Not re-heating enough —or not at all— certain types of food.*
- *Not using one utensil for raw food and another for cooked food.*
- *Not cleaning the surfaces well enough before using them.*

The readiness to change a conduct is inversely proportional to the effort (or sacrifice) required to adopt a change —something widely known— and that the disposition to accept an information as being true and relevant —and therefore assimilate it as knowledge— also depends on this effort.

- **Advices for eating outdoors.** This subject generated the least interest among the majority of the audience for three reasons: they considered they already knew which steps had to be taken in this situation; *basically*, the audience considered that eating outdoors is not done as a habit and consequently they tend to minimize any related risks due to the scarce exposure and also because they considered that nature seemed cleaner or less dangerous than the kitchen of a restaurant.

Curiously, information related to polycyclic aromatic hydrocarbons (PAH) and their potentially cancer-causing nature (*notion that it is important to never scorch meat*) implies the assertion (not a novelty, and therefore surprise) of a prior knowledge. It is knowledge, not information, since it seems to have been assimilated quite well. *All this information was first put into circulation by the media, although later on it was spread out, and reinterpreted, through personal contacts. This shows that certain issues call people's attention with a certain efficiency, especially when this information is related to the cancer-causing nature of a product or habit.*

- **Genetically modified food:** The attitude to this flyer was different from the attitude towards the others (there were doubts and mistrust about its contents) caused by the polemic related to genetically modified food; *the persons who were most interested in the information were also the most critical about it.* They alleged that the flyer did not address the most important issues, it avoided stances, and in general did not answer any questions or clear any doubts (the flyer generates double meanings).

Other informed persons, to justify their lack of interest in this flyer, alleged that they did not want information related to genetically modified food, they preferred not to discuss the matter. The feeling that they are not knowledgeable enough to be able to reach conclusions often causes people to avoid the issue and its related messages.

In other words, **different conditions** are needed once *the flyer is in the hands of the public* for the information it provides to become a driving force for changes in habits:

- *The information has to surprise.*
- *The recommendation has to be understandable and make sense.*
- *Modifications to the habit must be seen as easily feasible.*
- *The change in the habit must be seen as relevant.*

Regarding relevance, *it has to be clearly and immediately evident* or must have an **intrinsic relevance**: the fact that it is information that is found, and not looked for is an element that has to be considered. Thus, *one of the channels for transmitting the relevance of the information contained in the flyers, is to communicate it at the same time the flyers are distributed to the readers* (the role played by the method of personal communication consequently seems to be necessary with this type of tool); the second problem appears when, even if it seems reasonable to adopt the proposed recommendations, there is the impression that not doing so does not mean a serious risk. Therefore, **personal relevance** (a factor that has proven to be the weakest in the case of flyers) has to be enhanced in the case of personal communication by *people selling food products, people of the medical trade, and trainers in cooking classes since they are the primary sources, in this sense.*

Finally, **the Internet**. In the first place, certain **characteristics** of this media must be pointed out (half of the interviewees stated using the Internet as a habit to look for information): *there is a significant difference between the information received through the press, television or radio, and the information received via the Internet; the former comes as given whilst the latter is based on one's own interest*: this has two important implications:

- **The wide range of messages that can be accessed, in theory:** The Internet can provide a specific answer, the moment the user presents the query, as opposed to the television, radio, or press (where the user has to choose from among the existing information):
- **The attitude towards this information:** The messages that are transmitted via the Internet can turn out to be very efficient when it comes to generating knowledge; for example, one would not pay the same attention to a cooking recipe that is presented just any day and on just any television programme, as when it was looked for on purpose at a specific moment, for a special occasion and with the express intention to prepare that specific dish.

Regarding the **food-Internet** ratio, the situation is rather unequal when it comes to the overall use of the Internet: on one hand by the informers, who do not use it at all—or very little—but who are an important factor in certain age groups, mainly in the age group above 65. On the other hand, within the group that uses the Internet very often, there is a subgroup that uses it basically to communicate (email, chat rooms and forums) and also occasionally for purchases (mainly plane tickets, travel, tickets for shows, etc.), and the other subgroup that also uses it for wider informational purposes.

The search for information on food-related matters is focused a lot on recipes and slimming diets. Even so, *one part of the informers—mainly women—assert having performed searches related to the properties and advantages of consuming certain types of food (nutritional content, calorie charts, laxative effects...); a reduced part of interviewees had performed searches related to ailments or diseases they suffer from (diabetes, hypertension and cholesterol). All were related to food.* Also, we must have in mind, searches made by third party channels: some aged persons—but not only people of this age group—and those who do not have access to the Internet—ask others (mainly children and grandchildren) to perform the searches for them, thus widening the margin of influence of this media.

However, not all the searches made by the informers were related to matters of personal relevance; some of the searches were related to food issues considered to have social relevance; one of the main subjects is genetically modified food.

Regarding the **search for information on food safety**, *none of the interviewees has expressly looked for information on food safety issues only*, even though one part confirmed that in the case of an important health alarm, they would probably access the net in order to obtain more information (food safety however, is for the moment, an issue that very few citizens have in their potential list for on-line searches).

None of the usual users of the Internet who took part in the survey had searched for a term related to food safety on a specific portal; rather the search was made using a search engine. It should however be stated that when the term “seguretat alimentària” is typed in Catalan, the web site of the Catalan Food Safety Agency (Agència Catalana de Seguretat Alimentària, ACSA) appears among the first results. This means that it can be selected in the first instance in all cases, followed by the Spanish Food Safety and Nutrition Agency (Agencia Española de Seguridad Alimentaria y Nutrición, AESAN) and *the fact that they are institutional websites, they were considered a guarantee of seriousness.* Other portals that appear well placed, such as *Consumer* aroused more doubts *especially* when the informer was not familiar with the site and selected it when looking for serious information. The determining factor that gives credibility to information found on the net, is to know who the poster is; in the issues that concern us, it is the expert who provides the credibility (veterinarian, doctor, etc.) and the institution that backs him or her (university, official agency, professional school, etc.).

After analysing the ACSA website, users observed that what was interesting was the basic information on issues that directly concerned them. They consider the introductory definitions as being very useful because they clarify concepts and provide new and sufficiently in-depth information. The readiness to visit these websites is related to specific interests—like in the case of a health alarm that would have a direct effect, or when one is looking for something specific—but they are not interesting enough to be visited as a habit. A factor that is in its favour is that it can be visited whenever necessary, even when one does not intend to use this type of service (the same goes for a lot of the information on labels that is never looked at, but has to be there as a guarantee). The easy access to the information by the public is seen as a primary right even though it is not used.

Communication and information

In the section **personal communication and mass communication**, we must recall that the knowledge we acquire through experience related to handling food at home is obtained almost exclusively through personal communication, whilst the news reaches us through mass communication channels. Therefore, the interaction between the mass communication channels and personal communication channels cannot be avoided when the former takes place. That is, personal communication is activated by the media, but later acquires its own dynamics through personal relationships. *Consequently, the when messages are broadcast by the media, they are subject to a certain control, but when these messages start to circulate through personal channels, they get modified very quickly, up to the point that the original meaning could even be distorted and generate very vague and imprecise interpretations.* To avoid this it is important that the experts be well informed and that they transmit the correct messages.

When talking about **possibilities, limits and interaction among the different communication channels**, we see that, on a long term, they complement each other; each communication media can lead to the use of the others. For the population sector that follows the news closely (it is not the majority), the fact of receiving messages through a specific channel can be the driver that induces them to look for information through other channels on condition that the message complies with certain criteria of relevance (for example, an event heard over the radio and that is then complemented with a search on the Internet). This population sector usually has opinion leaders.

Regarding the majority of the population—that is generally happy with selecting the messages that come in through the channels they usually follow—the interaction among the different communication media has basically three consequences that derive from reiteration even though they have opposing effects:

- The **superficial reception** of the messages that, without being actively selected, end up sounding familiar because they were heard several times and through different channels.
- **Saturation**, due to reception, causes the news to be ignored (even though it is relevant).
- The **assimilation** that takes place as a result of faster processing caused by the intense presence of a message in different media.

Looking for information is not the same as finding it, in the case of food safety: when information is the answer or the solution to a question or problem we are faced with, the interest we have in it is **higher** (because any information one looks for is relevant for the person who looks for it). Therefore, there are a lot of possibilities that this information ends up becoming knowledge. *When information is the answer to a question, the criterion of relevance becomes its core:* if a person considers that the knowledge he or she has about handling food at home is enough (like in the case of the flyer “How to eat outdoors”) there are lesser chances that the person pays attention to a message that is related to the subject, whilst a message referring to precautions that should be taken against a new risk—for example, in the case of mad cow disease, avoid the bone marrow—is likely to attract more attention.

Today, the only thing that is clear is the readiness to search for information that is related to food safety in the case of a crisis or important alarm, and when this alarm affects us personally. Even though, at first, it seems that there is little interest in matters related to food safety, we can distinguish:

- **Constant and immediate concern and interest** related to health and body image (not hygiene and sanitary, since we give for granted that the products available in the market comply with hygienic and sanitary conditions, with one exception; we often have doubts about food safety in restaurants, bars and fast-food establishments)
- **Alarms** related to food, that increase the possibilities of actively looking for information, especially

through the Internet. Opinion leaders are included in this group of active searchers.

- **Problems that cease to exist when we stop talking about them**, that is, interest or concern over certain issues is limited to the period during which they are present in public agendas (genetically modified food is a good example of this case).
- **Latent concerns**, for example current food production methods or the idea that what we eat is vital for our health and well-being, do not generate an active search for information (even though we know that the information is available); it needs a trigger in order to turn into an active search. The arguments that justify this lack of activity are: the control over these productive processes does not depend on one, and eating is a daily fact. Therefore we cannot avoid buying what is offered in the market.

The role played by emitting agents and intermediate agents in evaluating and assimilating information

Emitting agents are those who emit messages, who transmit information on food safety: the messages that are emitted by mass communication media and personal communication channels of certain agents known as experts. *Intermediate agents* are those who receive and interpret the messages that are transmitted by the emitting agents: *journalists and opinion leaders*.

Emitting agents include **political agents**, who deserve certain considerations:

- **Politics and credibility**, extremely low in all cases. The negative opinion of politics and of politicians is an interpretation that is largely widespread and assimilated. Therefore the *messages emitted by political agents receive very low credibility* in comparison to the credibility given to scientists or to technicians (experts in general) for many reasons:
 - *Politicians have no idea what they are talking about*, because often these posts are held by persons who have no training or experience in the field they are working in.
 - *Actions by politicians are subject to their electoral calendar*, they are only interested in issues that have short-term results and immediate electoral results.
 - *Politicians are only interested in winning votes in order to stay in power; they are not worried about things that should concern them*, that is, politicians will only say what serves their interests and the electoral interests of their party (they will say the truth if it favours their own interests).
 - *Politicians lie, manipulate and hide the truth* in order to protect each other; at times they even do it to avoid the perverse effects of a so-called social alarm.
 - *Politicians give more importance to the interests of economic agents than to general well-being*; an example of this is the housing situation in our country
- **Evaluation of specific declarations made by political representatives**. *The nuances surface when we pass from general representations about the political class, to specific declarations by certain agents*. In certain situations, we see that the credibility and appraisal of the person change to positive; these situations are related to a series of factors.
- **The agent's characteristics**. The ideological and political affinity, and preliminary image, that is, the personal appraisal of the political representative affect the credibility of the messages that are emitted; even so, the citizen often does not have a preliminary image of a politician, but responds to his or her acts, behaviour and form of expression.
- **Characteristics of the situation and its consequences**. In situations of normality, the messages emitted by politicians about food and food safety are selected by the receptors according to their social or personal relevance and the attention that is given to these types of declarations; when there are no problems, it is scarce or even insignificant. However, it is important to point out that superficial attention, even though it does not convert into knowledge, does get processed as impressions (that are the base for positive evaluations of food safety).

- **Characteristics of the message.** When an issue appears as a problem in the media, the messages that try to deny its existence, or minimize the risk bother (or even cause indignation) a greater part of the receptors. On the other hand, tranquilizing messages—that admit the existence of a problem, but assures that steps are being taken to solve it—are interpreted in different ways but do not generate the disgust or indignation of the receptors. Nevertheless, they should be accompanied by declarations made by experts on the subject rather than by politicians.

Some informers observe that when a message is emitted in times of crisis, it is done so as a mere formality and therefore give no credibility to its contents; they merely approve its form. Other informers believe the tranquilizing messages for different reasons:

- Because they want to be tranquilized.
- Because they think that in a situation that represents a health risk to the population, the feeling of responsibility will prevail and that politicians will give more importance to general well being over their own interest.

Even so, the messages that warn about a potential or real risk are more credible than messages that are meant to be tranquilizing or deny them. Thus, faced with two emitting agents—one that alerts and the other that tranquilizes—the messages of the former seem more credible than the messages of the latter. To explain this, there is the argument that a politician will never unnecessarily warn about a risk (any warning pays a political price). Therefore, if they do so it is because something is happening. In other words, an argument that reinforces this forced confidence is based on the supposition that however much a politician looks after his or her own interests first, they should never try to harm the citizen as a whole, especially when health is at stake.

Other emitting agents are:

- **Administration Representatives:** authorities that informers do not confuse with politicians. Such as experts, they have more credibility because they are entrusted with performing the controls that are needed to guarantee that the products reaching the market are safe. Even so there is the belief that the administration will be more lenient when faced with economical interests that do not endanger the population's health.
- **The experts:** a group consisting of *professionals such as veterinarians, biologists, doctors, and people, whose training, based on their scientific nature, represent a solid and reliable source of knowledge.* Scientists who are experts in certain fields deserve a high degree of confidence because they are people who really know; they are specialists and can be decisive in a given issue. Nevertheless, *communication between these experts and the population is neither constant nor fluid* (advances in research are never the core subjects on the news, and when they are, they are filtered by the media). An exception would be the nutritionists because they talk of health, body image and food-related issues that interest society. *When the subjects do not generate a polemic, the respect for the messages that are emitted by scientific experts is noticeably higher* (except when these messages that contradict deeply rooted beliefs and habits, or even more, strong preferences). *When the matters generate more debate—for example transgenic products—these agents can be put in doubt more often.* However, once the doubt has set in (a risk that is seen as barely controllable and with unknown consequences), or mistrust (messages that are contradictory, or there is denial or an intent to minimize the situation), even the messages issued by these experts can be put in doubt.
- **The economic agents** that are more implicated in broadcasting information related to food and food safety, are the primary producers and the food industry, but we must have in consideration that *any public intervention by these agents can be received with different levels of reticence, even though these steps to solve a problem can be received in the same positive manner as when they come from the public authorities.*
- Normally, **consumers' associations** generate confidence; their name is enough to generate credibility (“*they are people like us*”), and also to give credibility to their messages. They are considered a preferred mediator in case of problems since they are above the hidden interests that sometimes the experts are implicated in.

- **Specialised associations** offer advice or professional help to certain groups (livestock farmers, farmers, celiac or diabetic patients...) and are a primary reference for these groups, but not for the population as a whole.

To summarize, the rating from lowest to highest credibility would be: *lowest rating for political representatives and economic agents; a not so low rating for the Administration, and a better rating for the experts, consumers' associations and specialized associations.*

Informers have three basic opinions about **mediating agents (journalists)**: *they don't know what they are talking about* (lack of knowledge), *they say what they want to say or what they are required to say* (biased information), *and their main interest is to increase their audience rating* (show anything that could have enough impact to be able to turn into news and generate social concern). *It would be right to say that over-information happens when there is a crisis, even though it has proven pernicious effects –because it enhances the alarm which in turn tends to have negative effects on markets- it also has positive effects*: if the public agenda does not reflect any such incident, safety could be considered as guaranteed, that is, the feeling of normality is reinforced in the absence of a crisis.

Personal communication channels have certain **emitting agents related to food and food safety**: *professionals of the medical trade, dieticians and pharmacists*. Today, they don't seem to play an important role in spite of their enormous credibility and the facility they have for personal communication (they don't inform when there is no disease) appears as the great channel that is not taken advantage of (or is done so badly) in order to communicate information on food safety. *There are other sources of information, such as the staff at the meat stall, at the fish stall, cold meat stall, etc, in other words, all persons who handle food* since they are the persons who are closest to the consumer in the food chain and have shown to have direct knowledge and responsibility of the product they sell (in a hypothetical case of risk, often the salespersons have the last word). This trust is based on four points:

- **Personal confidence** gained throughout the years.
- **They favour their own interests** to preserve their business.
- **The experience one has gained** by buying always in the same place, without any problems.
- **Social responsibility** since they have their clients' health in their hands.

Salespeople play the role of information suppliers, especially in situations of alarm or suspected risk, but not in situations of normality when the interesting information is related to the quality of the product, its price, or advice on how to prepare it; it is not related to hygienic and sanitary guarantees because these are given for granted. This trust in salespeople turn them into a *privileged communication channel in moments of crisis*, and even more so when one considers the advantages that personal communication has in terms of the attention given to the message.

Regarding the **mediators of personal communication**, **opinion leaders** play an important role; they are people in the related field, who are considered to be most knowledgeable or be the best informed (with a lot of credibility). When it comes to food-related issues, often these opinion leaders are the *persons who are in charge of household food*; it is therefore advisable to provide them with serious and credible information since they are the ones who have the ability to both tranquilize a situation at home, or to increase an alarm.

Social differences

There are two types of differences in the comprehension, interpretation and attitude to information:

- Differences according to key social and demographic variables, such as:
 - *The search for information via the Internet is increasingly widespread among the population, especially in the 25-45 year age group where the tendency is highest.*
 - *The criterion of personal relevancy in choosing information related to food and health is core in all age groups, mainly in the case of persons who are in charge of the food of their children and the older generation.*
 - *The criterion of social relevancy, when it comes to choosing information, seems to be more important in men and in those who have higher studies.*
- Persons with special food diets (people with diabetes, celiac disease, allergies, or who do not tolerate certain types of food). Given that these food-related issues have special importance for them, we were interested in knowing the learning processes and how they assimilated new information about these matters. To this effect, *it would be interesting to point out that the associations seem to play an important part* (informers with special food needs but who do not belong to any association show more shortages). Therefore, persons with celiac disease complain about a certain lack of understanding by the rest of the population due to their lack of knowledge; but at the same time, the fact of suffering from this disease does not imply greater interest for the rest of the population in other food-related issues. *Whatever the case may be, when a person suffers from such a dysfunction, receptivity to information is very high, and so is the readiness to look for it actively.*

Final proposals and synthesis

Basic criteria for efficient communication

- **Communication in normal situations.** *It would be advisable to inform of:* the controls and steps that are being implemented in order to guarantee food safety, and to display all the agents that are implicated in this safety. The *method of communication* should transmit the relevance of the message (intrinsic, personal and social), it should provide answers to questions (solve problems and refer to issues of concern), and should directly address the all possible receptors. Finally, the transmission of the information would be more efficient if the message was emitted through different channels and is repeated.
- **Communication in situations of known crisis:**
 - *Avoid* contradictions and ambiguities (messages that deny or try to minimize the situation), and also avoid providing excess information about the matter.
 - *Explain* the steps that have been taken as well as the steps the population has to take.
 - *Provide* access to the information the opinion leaders are looking for on the Internet.
 - *Inform* and provide tools to: preferential mass communication media agents (journalists), to experts working in the field of personal communication (or help to turn them into information providers), and to preferential agents who have credibility and generate confidence (consumer associations).
 - *Give priority* to technical information instead of to political speeches.
 - *Assume* the situation of uncertainty; on the contrary, there could be a substantial loss of credibility on a midterm basis.
- **Four key methods to adapt communication channels to the interests and preferences of the population:**
 - Transmit the information simultaneously through different communication channels.
 - Enhance personal and impersonal communication channels (through personalised communication), as well as online communication.

Synthesis of key points

1. **Broadcasted information** does not necessarily mean **information that is understood, assimilated or accepted**.
2. For a message to be chosen, it is important that it fulfils the **criterion of relevancy** (personal, social or situational).
3. The **relevancy** should be clear from the very **first moment**.
4. **Personal communication** is more efficient at drawing the attention of the receptor because the message can be personalised to enhance the relevance it has for a specific receptor.
5. **Previous knowledge** about an issue makes it easier to call attention to a message.
6. The fact that a message appears in the **media** is not enough; **personal communication** also has to be **very active**. This happens in the case of issues that are considered relevant.
7. Give preference to **specific messages** addressing **target populations**, instead of large general campaigns.

8. Certain situations display the need to pay attention to messages which in go unnoticed in normal situations. This **situational relevance** should also be taken advantage of when deciding when and who (target population) the information should address.
9. Spreading the same message through **different channels** and in **different formats** increases its **communicative efficiency**.
10. Matters that are not instantly seen as being relevant need to be **repeated**.
11. The **television, radio** and **press headlines** generate **impressions** about issues; **they do not generate knowledge**.
12. The **Internet, books** and **flyers** generate **knowledge**.
13. **Personal communication** generates **knowledge**.
14. Personal communication through **experts in the health field** should be a **preferential channel to transmit information** about issues related to food safety.
15. The **Internet** occupies a greater and privileged position in relation to **actively sought information**.
16. Only **one part of the population** actively looks for information in different media.
17. Information on the **Internet about food safety**: clear, understandable, serious, proven and easy to find.
18. **Actively searched information** is better processed and assimilated than information that is found.
19. The active search for information is enhanced when a **message** appears in **mass communication media**.
20. A **condition** that is necessary in order to **look actively for information**: it has to be **relevant**.
21. **Food** and **health** tend to be issues with **personal relevance**.
22. Some of the interviewees considered that **food production methods** have **social relevance**.
23. The **ACSA web portal** —and the AESAN website— received a generally **positive rating**. The **easy access to the information by the public** is seen as a **primary right**, even though it is not always used.
24. **Flyers**: interesting tools, and potentially useful; should be **reinforced** in **personal communication**.
25. **Consumers' and specialised associations** are considered to be **credible**, but they should occupy a more relevant position in **transmitting** information about **food safety**.