

CASPER evaluating the validity of an electronic survey for child safety purpose comparing results with the ones normally obtained in surveys

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Abstract

The European Community Project CASPER - Child Advanced Safety for European Roads - aims to reduce the number of fatalities on European roads. In addition to studies regarding biomechanics another key element to this aim is to understand the gap between the driver's wish of protecting their child/ren and non-adapted behaviour (misuse of safety systems). To explore this issue a sociological questionnaire has been developed and deployed in two primary ways, as a traditional paper survey and as an electronic on-line version. This paper evaluates the validity of the electronic survey by comparing the results to those obtained from the paper survey. The main advantage of the paper surveys has been the possibility to involve directly the parents and obtain their collaboration, while conversely the on-line survey gives the chance to reach a potentially much larger number of people (with lower cost and quicker data processing) but this direct collaboration is lost. Also each approach has implications for who responds. The paper approach can be quite targeted, for example directly asking parents in certain schools in certain areas, whilst the on-line approach can lead to 'self selection', those who have an interest in the area anyway.

1. INTRODUCTION

The European Community Project CASPER - Child Advanced Safety for European Roads - aims to reduce the number of fatalities on European roads. One of the key elements to the project is an understanding of the gap between the driver's wish of protecting their child/ren and non-adapted behaviour (misuse of safety systems). In other words, one of the tasks of CASPER is to provide an overall sociological understanding of safety practices concerning the child environment in car transportation. The objective is to define the main issues relating to the transportation of children aged between 0 and 10 years and to show the social factors which can affect the practice of restraining children.

Therefore a sociological research protocol was designed to investigate the way child restraint systems (CRS) are used and to understand parental attitudes, habits and behaviours but also to evaluate their safety knowledge and opinions relating to child transportation in cars. To collect data, a self-administrated questionnaire was sent to parents of children aged between 0 and 10 years and focus groups were conducted to question parents a little deeper on the subject.

To evaluate the cultural disparities, the questionnaire was distributed to parents in France, Spain and Italy in a paper version. Respectively 252, 176 and 113 completed questionnaires were collected.

The questionnaire was also translated in different languages and distributed as an electronic survey via the internet, therefore reaching many more countries, even out of Europe (United-States, Australia). In total, 1491 responses for the electronic survey were collected.

The main goal of this article is to compare the two different methods used to administer the questionnaire to parents. In the first part of the article will be presented; the methodologies used to distribute the paper version of the questionnaire and the implementation of the on – line questionnaire; the comparison of the results obtained in France with both methods; and the main results obtained in the on-line survey. In the second part the advantages, disadvantages and limitations of both methods will be discussed.

2. THE TWO METHODS : PAPER VERSION / ELECTRONIC VERSION

The paper version questionnaire was distributed to parents in France, Spain and Italy and the link to the electronic version of the questionnaire was put on the website of the CASPER project.

2.1 Paper version: Distribution of the questionnaires and data collection

In France, the paper questionnaire was sent to 580 parents with a child or children aged between 0 and 10 years. Of the 580 questionnaires sent out, 232 were filled in and returned to CEESAR. Consequently, 38% of the questionnaires sent out were completed and returned.

In France, the recruited participants were mainly parents of children from nursery (35%) and primary schools (65%) located in the Calvados department (Normandy), but also in Ile-de-France and some questionnaires were distributed in the South West (Ciboure, Pyrenees Atlantiques).

With reference to the geographic distribution, 19% of questionnaires were distributed in a school in a metropolitan area, 36,5% of questionnaires were given out in schools from a regional city and 44,5% were distributed in schools in a country town. The period of distribution and collect was from December 2009 to March 2010.

In Italy, the paper questionnaires were distributed in various situations in Italy, by ELASIS (Fiat company). 250 questionnaires were distributed during an exhibition dedicated to child safety indoors and outdoors, held 6th-14th February 2010 at “Città della Scienza” (the Science Centre Interactive Museum - Naples). The exhibition was titled “Produciamo Sicurezza” (To Produce safety) and was organized by INAIL and Confindustria. To have a relevant sample, not influenced by the Neapolitan context, about 100 questionnaires were sent by e-mail to partners based in other Italian towns. With reference to the geographic distribution 70% of questionnaires were distributed in Naples and the remaining 30% was distributed by e-mail. The period of distribution and collection was between February and March 2010, and July 2010 for questionnaires sent by e-mail.

In Italy, 113 questionnaires were filled in. Consequently 32% of the questionnaires sent out were completed and returned to ELASIS. With reference to the geographic distribution of the filled in the questionnaires, almost all Italy was covered (30% North Italy, 46% South Italy, 24% Centre Italy).

In Spain, the surveys were done in the Saint Joan de Deu (Barcelona), the main child hospital of Barcelona. Due to the time needed to complete the questionnaire, areas where people have to wait a long time, such as schools and hospitals, were selected at first. Tuning of the original questionnaire was undertaken so that it could be completed in 7-10 minutes, but with the same structure of the original one. Accordingly the Saint Joan de Deu hospital was selected for the possibility to distribute the questionnaires in the waiting halls. In the hospital there was an explicit authorization of the medical centre, providing identification and medical uniforms in addition to the accreditation of the CASPER project for the IDIADA team. The surveys were done in March, April and May 2010. In Spain, 176 questionnaires were filled in, with an answer percentage of 100%, considering the survey methodology adopted.

Table 1 summarizes the distribution of the questionnaires and collection of data in France, Italy and Spain.

Table 1: Distribution of the questionnaires and data collection

	Completed questionnaires	When	Where		Geographic context		
					Metropolitan area	Regional city	Town & rural area
France	232	December 2009 – April 2010	Nursery Schools	Primary Schools	19%	36.5%	44.5%
			35%	65%			
Italy	113	February – September 2010	Child Exhibition	E- mail	60.5%	19.1%	20.4%
			40%	60%			
Spain	176	February – May 2010	Saint Joan Deu Child hospital		100%	-	-
			100%				

2.2 Electronic version: Implementation of on – line questionnaire

An electronic version of the questionnaire was created and put on the CASPER website for six months (between March and August 2011). The objective was to test a new tool to collect a larger number of data and to reach different countries. Therefore the questionnaire was translated into different languages. After many revisions from Loughborough University (UK), GIE RE PR (France), CEESAR (France), ELASIS (Italy) and IDIADA (Spain), it was built and put on the CASPER website by TUB (Technische Universität, Germany) and VSFB (Verein für Sozialwissenschaftliche Forschung and Beratung).

In total, 1491 questionnaires were recorded in the database. Parents living in 33 different countries participated in this survey. The largest number of questionnaires were completed by parents living in France, the United Kingdom, Germany, Italy and Belgium. Less than 10 questionnaires were filled in for 22 out of 33 countries.

Not all parents who participated in the electronic survey answered all the questions, therefore only 1095 (73.5%) completed questionnaires were selected to analyse.

The following table shows the number of electronic questionnaires recorded and the number of questionnaires selected to analyse in key countries (countries were selected according to the number of responses).

Table 2: Number of electronic questionnaires recorded/selected

	Number of questionnaires recorded	Number of questionnaires selected
FRANCE	374	312 (83.5%)
ITALY	92	81 (88%)
UNITED KINGDOM	274	233 (85%)
GERMANY	185	144 (78%)
BELGIUM	107	89 (83%)
OTHER	123 United States = 51 Australia = 45	99 (80.5%) United States = 41 (80.5%) Australia = 38 (84.5%)
UNKNOWN	187	10 (5.5%)

As shown in Table 2, in most countries over 80% of questionnaires were selected for analysis and also 5,5% of the questionnaires for which countries have not been given by the parents were selected .

3. THE RESULTS OBTAINED WITH BOTH METHODS

The following section contains firstly the comparison of the sample of parents who completed the questionnaires in paper survey and in electronic survey in FRANCE. And then the analysis of the sample obtained by electronic survey (for all countries).

3.1 Example: FRANCE

In France, as mentioned previously 232 parents filled in the paper questionnaires, 159 women (68.5%) and 73 men (31.5%). In the electronic survey, 312 parents completed the questionnaires. The sample represents 183 women (58.7%) and 129 men (41.3%). Women were more likely to be those who filled the survey. The table below shows the number of completed questionnaires according to gender.

Table 3: Number of completed questionnaires according to the gender (FRANCE)

	Paper version	Electronic version
Men	73 31.5%	129 41.5%
Women	159 68.5%	183 58.5%

As shown in Figure 1, most of the parents or carers who participated in the surveys are between 31 and 40 years of age. It was also interesting to see that the participants who responded in the electronic version are younger than in the paper version.

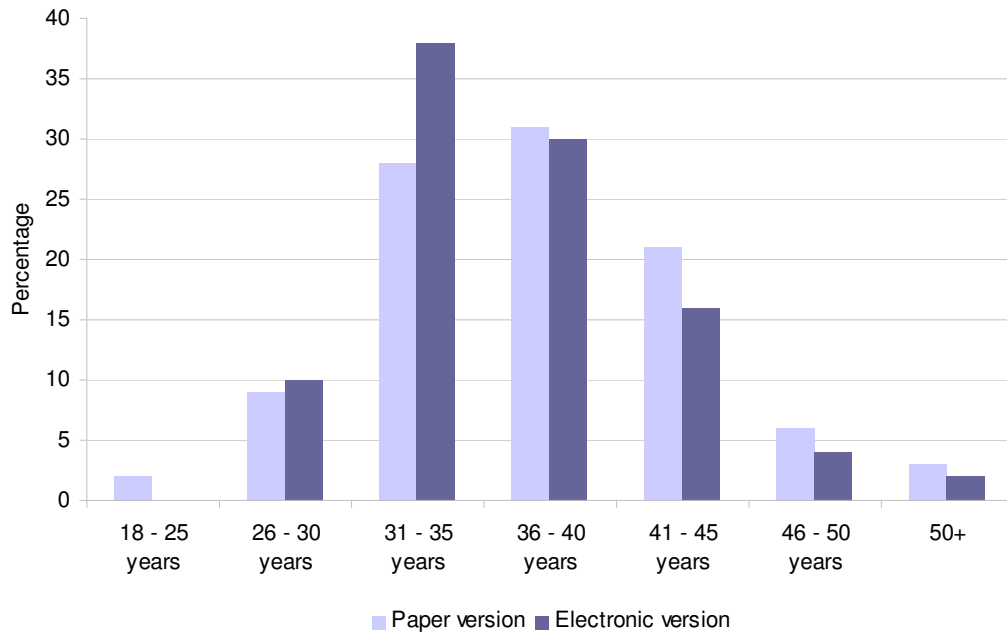


Figure 1: Age groups (years) of participants according to both methods

For parents who participated in the paper survey there is a tendency to have more children than those who completed the electronic version (see Figure 2).

Regarding the average number of children per family, the answers showed that the average of children per family obtained with both methods are close to the French reality: the average number of children per family for the paper version questionnaire sample is 1.94 and of the electronic version 1.91, which is similar to the 2009 census: 1.98 per family.

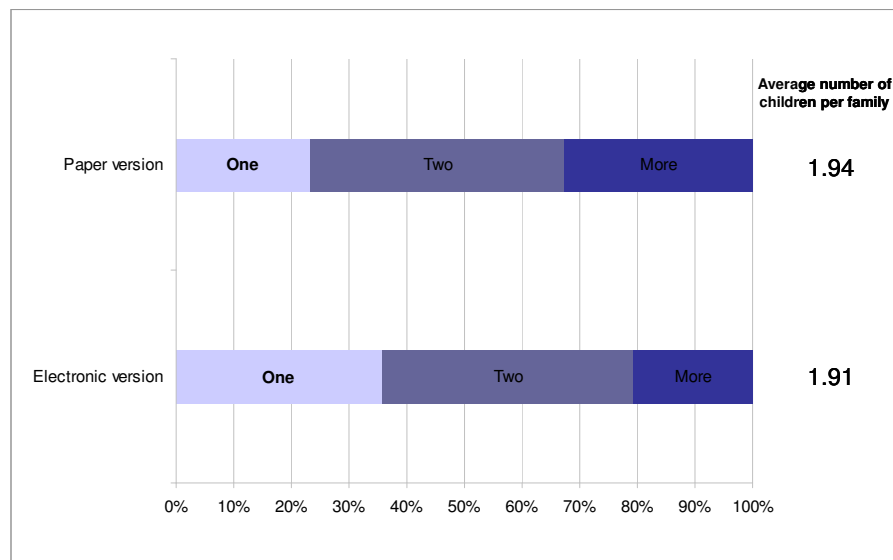


Figure 2: Number/Average of children per family

The sample of children in the paper survey represents 221 boys (61.5%) and 174 girls (48.5%), while in electronic survey it represents 261 boys (51%) and 251 girls (49%).

The following figure shows the number of children according to their age. In the electronic survey, 48% children are between 0 and 3 years old and 52% of them are between 4 and 10 years old, whereas in the paper version 25% of children are between 0 and 3 years and the remaining 75% of children are between 4 and 10 years old.

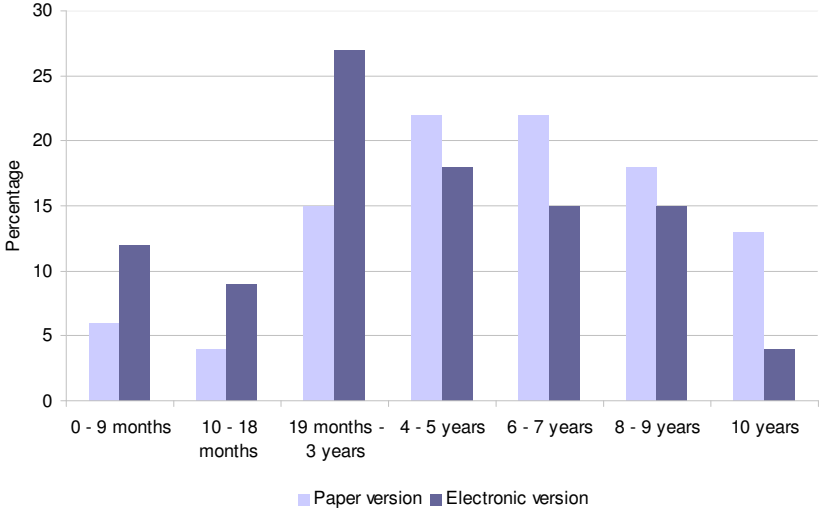


Figure 3: Number of children according to their age

Figure 4 shows the level of education of the parents who completed the questionnaires in both versions. We can notice that the parents who responded in the electronic survey (85%) have higher level education than the parents who responded in paper version (40%).

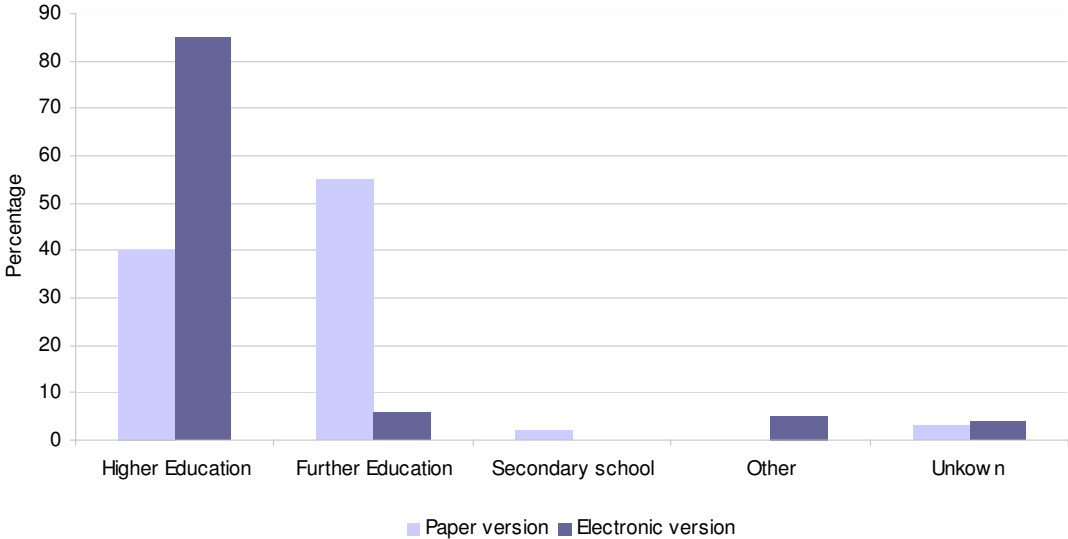


Figure 4: Education level by type of survey completed

Concerning the residence of the parents, in the paper version, a large proportion of participants reported that they lived in a country town (42%) and in the electronic survey most of the parents reported to live in metropolitan area (47%).

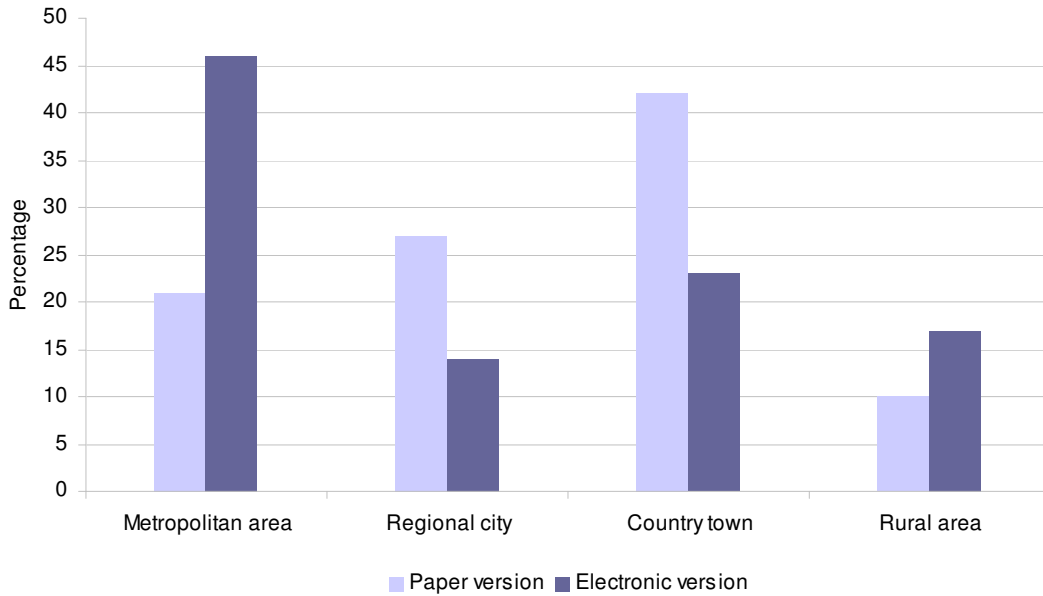


Figure 5: Residence by type of survey completed

3.2 Results from electronic survey

The following table describes the analysis of the sample obtained in the electronic survey, with 1095 questionnaires selected for analysis. The sample represents 749 women (69%), 320 men (29%) and 26 (2%) genders are unknown.

Regarding the age of participants, 60% of parents are between 31 and 40 years of age. In addition, the great majority of them (95%) reported that they live as couple.

Concerning the number of children, 39% of participants have one child and 43% of them have two children. In the questionnaires filled in by parents the total number of children aged between 0 and 10 years is 1889, with 922 girls (49%) and 894 boys (47%), and 45% of them are between 3 and 7 years old.

The large majority of parents reported to have a higher level education (70%). Concerning parents' residence, just over one third of parents reported that they lived in a metropolitan area (33%), one third in a country town (30%), one quarter in a regional city (24%) and the remainder reported that they live in a rural area (13%).

Table 4: Description of the sample (electronic survey)

Gender	69% of women 29% of men
Age of participants	60% of parents who participated to the survey are between 31 and 40 years of age.
Marital status	95% of participants live as couple
Number of children	39% of parents have one child 43% of parents have two children
Average number of children per family	1.87 children per family
The sample of children	49% Girls 47% Boys
Age groups of children	12% = 3 years old 18% = 4-5 years old 15% = 6-7 years old
Education level	70% higher education 13% further education
Residence	33% Metropolitan area 24% Regional city 30% Country town 13% Rural area

4. ADVANTAGES, DISADVANTAGES AND LIMITS OF BOTH METHODS

The following section contains firstly the advantages and disadvantages of traditional surveys (by paper) and the electronic surveys and then the limits of both methods.

4.1 Advantages and disadvantages

The comparison between the traditional surveys (by paper) and the electronic surveys is useful information for those defining a survey methodology, knowing in advance advantages and disadvantages of each technique (for sample dimension, costs, time, data reliability, etc.).

The **traditional surveys**, by paper questionnaires, have been distributed in France, Italy and Spain, in different situations that influenced also the response rate:

- In France the questionnaires were distributed to schools in a large and defined geographic area, with a response rate of 38%;
- In Italy a mixed technique was used. Some questionnaires were distributed during a child exhibition and others distributed by e-mail. In total there was a response rate of 32%;
- In Spain the questionnaires were distributed in a childrens hospital, with response rate of 100%. In these circumstances the questionnaire distribution was more similar to a direct survey.

The main advantage of the traditional surveys, by paper questionnaires, has been the possibility to involve directly the parents and obtain their collaboration. The comparison between the response rate in the three countries shows that full parental involvement can be obtained only if the parents have the possibility to interact directly with the interviewers and obtain clarification to several questions.

In the Spanish surveys the response rate of 100% and the 0% of not answered questions are the clear example of this (few Spanish questionnaires were collected in electronic surveys).

The main disadvantage is the need to define in advance the geographic area where the interviews have to take place. In France, the participants recruitment and the geographic distribution have defined a sample more representative of the French reality. Different are the Spanish results, limited to the Barcelona area and Italian results, partially influenced by people in the South of Italy (46% of the filled in questionnaires).

Other disadvantages of the traditional surveys by paper questionnaires are:

- The time spent for the surveys is quite high and influences the survey costs, increased by the presence of the interviewers on-site.
- The presence of interviewer influences the answers;
- For long questionnaires, like the CASPER questionnaire, sometimes there is not a long time to fill in the questionnaires (for example, the Italian surveys, during the child exhibition), consequently different data collecting mode have to be defined in order to collect several questionnaire (for example, by e-mail);
- Takes a long time to input the collected data into a database;
- The time required to obtain all the agreements for the questionnaire distribution is long, particularly in France where questionnaires were distributed in schools. To have the agreements initially CEESAR contacted French Education authorities and then school principals.

With respect to the traditional surveys, **the electronic surveys** have a lot of advantages that minimize the disadvantages of traditional paper surveys:

- Low surveys costs (only the cost for the electronic implementation and the promotion of the electronic link);
- Low risk of influencing the answers by the investigators;
- The chance to have many participants if promotion is successful;
- Possibly longer time availability for long questionnaires;
- Possibility to store directly the questionnaires in a database.

The main disadvantages of electronic surveys are:

- Long time to have a reliable sample of surveys (for the CASPER project the electronic surveys started in March 2011 and were closed in August 2011); less time was required for the traditional surveys in Spain, France and Italy;
- An information campaign needs to be implemented to inform people that an electronic survey is available; when a mailing list is used it is required that the e-mailing list is reliable;
- There is a 'self selection' of the involved people (generally only people really interested in the theme will spend time to fill in the questionnaires);

- The need for a computer and the associated skills to answer, and also an interest in getting involved in digital activities, can biased the participant demographic;
- There are more missed answers as it is not easy to ask for more information; accordingly a good graphical format is required in order to encourage the participants to complete the survey.

	Traditional survey	Electronic survey
Participant involvement	☺	☹
Time and cost	☹	☺
Sample selection	☺	☹
Investigator influence	☹	☺
Time to store data	☹	☺

4.2 Limits of both methods

Using the advantages/disadvantages collected in both methods, the **time** involved is a limit of both methods, even if the way to use the time is different.

- Using traditional survey methods you spent less time to have the surveys, but more time to fill in the data in the database;
- In the electronic survey the time to prepare the electronic survey and to start the survey is high, but no extra time is required to fill in the database the information.

When the participant target is those taking care of children it will always be a challenge to engage them in an activity (a survey) that will use some of their time when they are not directly looking after the children (or carrying out all the associated tasks based around them). For this particular subject area this is a challenge for both types of survey method.

5. CONCLUSION

This article is based on the methodologies used to deploy the questionnaires in the CASPER project. As described previously both methods (paper version and electronic version) have advantages and disadvantages. Two questions arise, first how can we reduce the inconveniences of both methods to have a better data collection and secondly is there any other method to deploy questionnaires.

One of the solutions might be the use of tablet computers for future surveys. The participants can fill in the questionnaire in the presence of an interviewer: so the database will be created immediately, without the need to transfer their answers later into a computer (which is one of the disadvantages of the paper survey). But if the participants have questions, they have a human point of contact. If some participants are not familiar with electronic systems, the interviewer can fill in their answers directly. This can bridge the gap between the online survey and persons without computer skills (which has been outlined as one of the disadvantages of the electronic survey). So, this method would unite some of the advantages of both methods: No paperwork and fast creation of databases, but no loss of human communication.

The second solution might be to do the survey by telephone (for example to use a polling institute in order to do the survey). The advantage of this method is to have people from different geographical areas and socioprofessional groups in the sample. That would avoid the main disadvantage of the electronic survey, with the participating parents having, mainly, a higher educational level and living in metropolitan areas. In the French sample most of the parents who filled in the paper questionnaires are living in country towns and have the further education level due to the locations of questionnaire deployment. A telephone survey might reduce this gap between the level of education and the geographical area.

Finally another solution to join the advantages of the two methods could be to start the electronic surveys using, for example, a internet community like Facebook, Twitter or LinkedIn. The sample selecting could be done directly by using digital approaches, with the creation of sub- groups with defined numbers of people. When the sample is created the electronic survey can start. Forum sections will encourage the participants to complete questions in the questionnaire but also be involved in child safety. Generally web communities will be a way to allow experts and the public to discuss about child safety together, allowing a continuous dialogue.