RESPONSE BEHAVIOR PATTERNS AMONG YOUTH[1]

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Abstract. In 2023, the Italian National Institute of Statistics conducted the second edition of the survey on behaviours, attitudes and future plans of children and young people, addressed to 107,635 boys and girls, between 11 and 19 years old, resident in Italy. Building on the previous experience, innovations were fielded in the data collection methods, including improvements in the questionnaire's design. To meet the needs of young respondents, a streamlined, short, easy to answer, and responsive questionnaire was designed. We analysed data on sampling units who accessed and submitted the questionnaire and those who accessed but did not submit it to identify different response behaviour patterns among youth. First, we analysed how many times the sampling units tried to access the questionnaire, by which device and mode (by scanning the QR Code or entering the website address), and where they stopped filling in the questionnaire. Then, we studied partial non responses to non-mandatory questions – i.e. if respondents preferred not to answer when they were not obliged to do it. Finally, we applied a logistic regression model to identify the determinants of the youngers propensity to submit the questionnaire. The findings provided useful insights on the design of web questionnaires targeting young respondents.

1. Background

In 2023 the Italian National Institute of Statistics conducted the second edition of the survey on behaviours, attitudes and future plans of children and young people. The aim was to collect information on daily lives and future plans directly from boys and girls, aged between 11 and 19 years old, and resident in Italy.

The data collection ran from 2 October to 20 December and involved a random sample of 107,635 children and young people, drawn from the Individuals Basic Register, i.e. a statistical register obtained by integrating several administrative data sources (Ascari *et al.*, 2023). The sampling design allowed the thematic experts to make estimates at a regional level both for the young Italians and the young people

[1]This article is the result of the collaboration between the authors. In particular: paragraphs 1 and 7 have been written by Simona Rosati, paragraph 2 and 5 have been written by Serena Liani, paragraphs 4, 8 and 9 have been written by Sabrina Barcherini, paragraphs 3 and 6 have been written by Silvia Pecora.

of the five largest groups of foreigners in Italy (Romanians, Albanians, Ukrainians, Chinese, and Moroccans). A total of 38,872 sampling units actually submitted the questionnaire (36.1 percent response rate).

Since the younger generations are 'digital natives', the survey design focused on mobile devices, Internet and social media (Conti *et al*., 2024). First, a questionnaire to be administered via Computer Assisted Web Interview was designed. To encourage participation in the survey, the questionnaire was designed to adapt to filling in not only from personal computer, but also from mobile devices.

Unlike the previous edition, schools did not support Istat in promoting the survey but an effective communication campaign also based on social media was run. The sampling units received an advance letter containing information on the survey and how to access the web questionnaire; the advance letter was addressed directly to the sampling units, if over 18, or to their parents if they were minors.

To foster the participation of young foreigners, the advance letter was translated and made available in the Istat website in ten languages other than italian, and the web questionnaire could be compiled in nine languages (Albanian, Arabic, Chinese, French, English, Romanian, Spanish, German and Ukrainian).

Section two describes the questionnaire design strategies intended for reducing response burden and improving both the submission rate and the quality of responses obtained; in sections three to eight, the methods and results of some analyses carried out to study the questionnaire completion behaviors of young people and their perception of the statistical burden are finally reported.

2. The questionnaire design

The questionnaire was structured in seven thematic sections and a final evaluation section of the questionnaire. The survey questions were few and simple, and gathered information on: family, housing environment, school, citizenship, relationships with friends and family, educational poverty, leisure, expectations for the future, opinions on gender stereotypes, and informations on filling experience.

As the questionnaire had to be self-administered by young respondents, without being supported by an interviewer, it had to be easy to access and fill out. Thus, we designed some measures to increase the response rate, reduce the response error, and prevent the chance of questionnaire's breakoffs.

Firstly, to facilitate the access to the web questionnaire we gave respondents the opportunity to scan an individual QR Code, printed on the advance letter, in addition to type the web address and enter the passcode. Indeed, scannig a QR Code is more straightforward for smartphones, which we thought could be the devices most used by young people to fill in the questionnaire. As discussed in Section seven, this has

proven to be successful as over two thirds of respondents who submitted the questionnaire said they accessed via QR Code.

Always considering the specific target of respondents and the general confidence of young people with mobile devices, it was important to design a questionnaire easy to fill in not only on desktop or laptop computer, but also on smartphones and tablets. Therefore, we developed the web questionnaire with LimeSurvey, an open-source software tool that enables scholars to develop mobile responsive questionnaires. In particular, it allows to develop questionnaires whose display automatically adapts to the device, avoiding horizontal scrolling on mobile ones; furthermore, on mobile device screens it convert a matrix question in a set of single-choice questions that fit to the width of the screen.

Particular attention was then paid to the design of effective questions that could be appropriate for the specific target and could avoid satisficing behaviour (Krosnick, 1991). We strive to reduce the cognitive effort of the respondents by designing short questions, with a straightforward syntax and few response options. The language was tailored to the youths, by chosing unambiguous terms, and replacing unknown terms to them with more familiar ones. Finally complex structures that could burden the still-developing cognitive capacities of young respondents were avoided wherever possible (Bell, 2007).

3. Methods

We studied the response behaviour patterns among sampling units who accessed the web questionnaire, analyzing how many times they tried to access, how many of them completed and submitted the questionnaire and how many did not.

We then focused on data quality issues, analyzing the number of missing answers to non-mandatory questions and the answers to the questions of the last section on any problems the respondents encountered in filling it.

We ran descriptive analyses using frequency distributions and contingency tables, and multivariate analyses using logistic regression models.

4. Finding on questionnaire accesses

Of the 107,635 young people in the sample, 43,546 accessed the questionnaire at least once, i.e. 40 percent of the theoretical sample. Almost all of them (38,290, i.e. 87.9%) have accessed the web questionnaire once (Table 1). Among those who tried to access and fill in the questionnaire more than once, few sampling units have made more than two accesses anyway (2.3%).

Those who made more than one access are mostly younger people: 13.1 percent among boys and girls aged 11 to 14 compared with 10.6 percent among those aged 15 to 19. The difference is even larger when citizenship is taken into account: for the foreigners, the percentage of those who made more than one access is twice as high (16.0%) as for italians (8.1%) (Table 1).

Table 1 – *Sampling units who accessed the questionnaire by number of accesses, age and citizenship. Year 2023 (percentage and absolute values).*

	1 access	2 or more accesses	Total
AGE			
11-14	86.9	13.1	25,139
15-19	89.4	10.6	18,407
CITIZENSHIP			
Italians	91.9	8.1	21,968
Foreigners	84.0	16.0	21,578
Total (%)	87.9	12.1	100.0
Total (n)	38,290	5,256	43,546

Elaboration on Istat data on behaviours, attitudes and future plans of children and young people

5. Findings on submissions and break-offs

Data on sampling units who completed and submitted the questionnaire and those who accessed but did not submit it were then compared. Among sampling units who accessed the questionnaire, 38,872 completed and submitted it (89.3%), while only 10.7 percent definitely stopped compiling[2] (Figure 1).

78.9 percent of the questionnaire's submissions were made via smartphones or tablets, confirming the confidence of young people with the mobile devices.

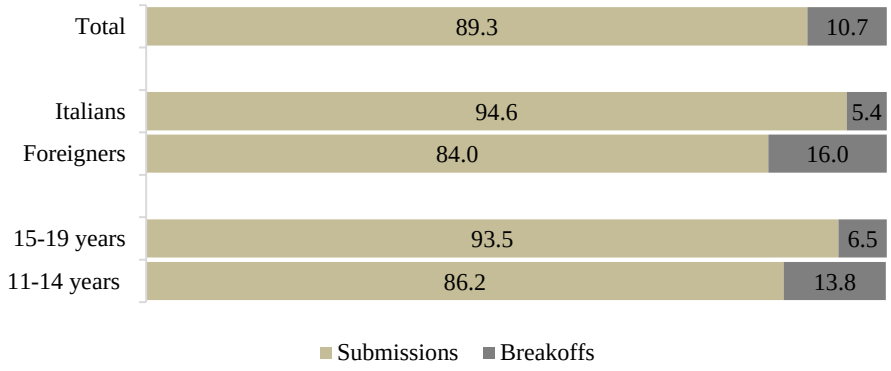
Those who accessed the questionnaire but did not submit it stopped at the first sections: over 85 percent of those who definitively stopped did not pass the third section, and more than half did not even pass the first. The choice of whether or not to continue thus does not seem to depend on fatigue or on response burden, but on a lack of engagement, an aspect on which further work needs to be done. Perhaps the questionnaire's access through QR Code may have encouraged young people to access out of curiosity without any real intention of continuing the compilation.

[2] Among the 43,546 sampling units that accessed the web questionnaire at least once, 342 sampling units completed it but never submitted it.

Due to the lack of survey information for young people who stopped filling in the questionnaire, little is known about their socio-demographic characteristics, with the exception of gender, age and citizenship[3].

With regard to gender, we found no association with the propensity to submit or not submit the questionnaire, whereas this seems to be associated with citizenship (Figure 1). As can be seen below, the breakoff rate is higher among young people (13.8% for 11-14 year olds vs. 6.5% for 15-19 year olds) and foreigners (16.0% for foreigners vs. 5.4% for Italians) (Figure 1).

Figure 1 – *Submissions and breakoffs by citizenship and age. Year 2023 (percentage values).*



Elaboration on Istat data on behaviours, attitudes and future plans of children and young people

6. Findings on partial non responses

We analyzed partial non responses to non-mandatory questions as a measure of data quality. In fact, if some survey questions are left unanswered, this may introduce a bias (Groves *et al*. 1991).

Unlike the other sections of the questionnaire, the last two included questions for which the respondents were not obliged to answer: one concerning their opinions on women and men (section G)[4] and the other one about their experience with filling in the questionnaire (section H). Only the questions in these two sections could be left unanswered without preventing respondents from submitting the questionnaire.

[3] Information on gender, age and citizenship was drawn from administrative records.
[4] Note that this section included four Likert scales: the first one was administered to everyone, while the others were administered only to the respondents over 13 years old.

Partial non-response rates to questions in both sections are very low: in section G the question with the highest non-response percentage reaches 5.3 percent, while in H reaches 1.7 percent. Furthermore, data show that few young respondents skipped both G and H sections: only 0.2 percent of those who submitted the questionnaire did not answer any questions of them[5].

Note that, for confidentiality reasons, at the beginning of the section G a message explicitly informed the respondents of the possibility of not answering, while no such message was included in section H. Furthermore, unlike the questions in section H, those in section G asked about sensitive topics and had a matrix format that could be burdensome for some young respondents. All these factors could have effect young people's propensity to answer.

Indeed, 4.9 percent of respondents who submitted the questionnaire did not answer any of the questions in G (Table 2), while only 0.4 percent of them failed to answer the whole H section. Furthermore, 4.7 percent of respondents who did not answer any questions in G then answered some questions in H section.

Foreigners show higher values of partial non responses: 6.0 percent of foreigners did not answer any questions in section G compared to 3.9 percent of Italians (Table 2). As expected, the difference in partial non response rate depending on device was not that relevant since the questionnaire was responsive: 5.1 percent for respondents who submitted the questionnaire via smartphone or tablet vs 4.2 percent of those who used the PC.

Table 2 – *Answers and no answers to section G by citizenship and device. Year 2023 (percentage and absolute values).*

	No answer in section G	At least one answer in section G	Total
CITIZENSHIP			
Italians	3.9	96.1	20,421
Foreigners	6.0	94.0	18,451
DEVICE			
Smartphone/Tablet	5.1	94.9	30,670
Pc	4.2	95.8	8,202
Total	4.9	95.1	100.0
	1,914	36,958	38,872

Elaboration on Istat data on behaviours, attitudes and future plans of children and young people

[5] Partial non response rates were calculated by dividing the number of respondents who answered a question by the number of respondents who were eligible to answer it.

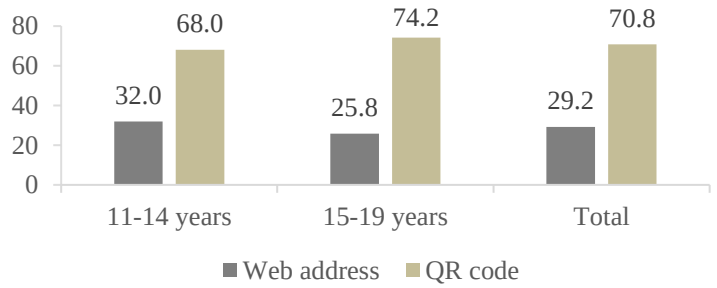
7. Findings on questionnaire filling experience

The last section of the questionnaire asked respondents information about the device used, any need for assistance in accessing the questionnaire, the difficulties in viewing the questions, and the questionnaire's aspects to be changed according to the respondents. Collecting feedbacks from respondents could in fact suggest to further simplify the structure of the questionnaire or to improve the usability of the tool (Barcherini *et al*., 2022).

The data described in this section refers to the sampling units who completed and submitted the questionnaire.

The respondents appreciated the possibility of accessing the questionnaire via QR code: 70.8 percent of those who submitted the questionnaire used this method to access the web questionnaire rather than typing the web address provided in the advance letter (Figure 2). Furthermore, those aged 15 and older used QR Code more often than the youngers (74.2% vs. 68.0%).

Figure 2 – *Questionnaire access method by age. Year 2023 (percentage values).*

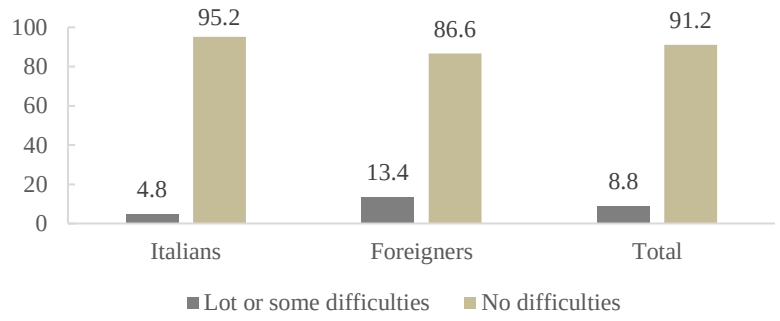


Elaboration on Istat data on behaviours, attitudes and future plans of children and young people

Most of the respondents had no difficulty accessing the questionnaire: only 11.1 percent reported needing help to access. In particular, those who used a personal computer needed more support than those who used smartphones or tablets (18.8% vs. 9.0 %). Both for the choice of access method and for the need for support, there is no relevant association with citizenship.

Concerning the display of the screens, only 8.8 percent of respondents reported having had many or some difficulties in viewing them. Note that foreigners reported viewing difficulties more often than their Italian peers (13.4% vs. 4.8%) (Figure 3).

Figure 3 – *Questionnaire viewing difficulties by citizenship. Year 2023 (percentage values).*



Elaboration on Istat data on behaviours, attitudes and future plans of children and young people

Finally, respondents were asked to indicate up to 3 aspects of the questionnaire that they would have changed. The most significant data is that almost two thirds of those who submitted the questionnaire would not change anything (64.4%), confirming the validity of the choice made in designing the questionnaire, based on the characteristics of this specific target of population (Table 3).

Table 3 – *Respondents by questionnaire aspects that would change. Year 2023 (percentage and absolute values).*

	Respondents	
Suggestions	(n)	(%)
I would not change anything	24,612	64.4
Length	8,522	22.3
Wording	2,736	7.2
Graphic layout	3,084	8.1
Pages loading speed	1,689	4.4
Question display	1,653	4.3
Navigation buttons position	1,228	3.2
Error warning display	969	2.5

Elaboration on Istat data on behaviours, attitudes and future plans of children and young people

At the same time, some respondents still highlighted areas for improvement in which to invest for future editions of the survey. Among those who indicated aspects to be modified, the main issue was the length of the questionnaire (22.3%), followed by the layout (8.1%) and the questions wording (7.2%). Some changes can still be made to streamline the structure of the questionnaire and further adapt the wording of the questions to this specific target. Finally, less than 5 percent of young people

report some aspects that could be improved from a usability point of view, such as web pages loading speed (4.4%), the position of the navigation buttons (3.2%) and the display of error warning (2.5%).

8. A multivariate approach: the logistic model

Logistic regression models were used to support the descriptive analysis (Hosmer *et al.*, 2013).

A first model was applied to examine the interaction between the number of questionnaire's accesses and some background information of respondents. The indipendent variables were age, citizenship, household economic condition, dropping out of school, having friends to confide in, reading book in the past twelve months, being satisfied with relationships with friends or family, to be hyper connected to Internet (more than 4 hours a day), need help to access the questionnaire, difficulty viewing the questions and the device used for filling in. The dependent variable was having made one access or more than one access, setting as a reference the risk of doing more than one access. A stepwise method was employed to select the most representative variables, with a significance level of 0.05 for both entering and retaining variables in the model. The percentage of pairs of observations in which model predictions agree with observed responses is 59.4%, indicating that the model demonstrates a good ability to correctly predict the classes.

The risk of multiple accesses before submitting the questionnaire was mainly related to citizenship, but also to having had difficulty viewing the questions, device used, age, difficulty of access, and being hyper connected to Internet (Table 4).

Foreigners had more than twice the risk of making multiple accesses than Italians.

Those who had difficulty viewing the questions had a risk of doing multiple accesses one and a half times higher than those who viewed the questions without problems.

Those who filled in via smartphones or tablets had a one and a half times higher risk than those who used the personal computer: probably smartphones imply more breaks in filling in the questionnaire because of notifications, messages, and calls that require respondents to stop and exit the questionnaire.

Table 4 - *Probability of doing more accesses to the questionnaire. Year 2023.*

	Analysis of Maximum Likelihood Estimates			Odds Ratio Estimates		
Parameter	Estimate	Standard Error	P-value	Point Estimate	95% Wald Confidence Limits	
Intercept	-3.4508	0.0893	<.0001			
Under 14 years old (ref. 15-19 years)	0.2001	0.0334	<.0001	1.222	1.144	1.304
Foreigner	0.7275	0.0334	<.0001	2.070	1.939	2.210
Connected more than 4 hours a day	0.0402	0.0200	0.0444	1.084	1.002	1.172
Need help to access the questionnaire	0.1672	0.0500	0.0008	1.182	1.072	1.304
Difficulty viewing the questions	0.4612	0.0488	<.0001	1.586	1.441	1.745
Smartphone/tablet (to submit the questionnaire)	0.4573	0.0449	<.0001	1.580	1.447	1.725

Elaboration on Istat data on behaviours, attitudes and future plans of children and young people

Another model was applied using the need help to access the questionnaire as the dependent variable. The most representative variables were selected again using a stepwise method, with a significance level of 0.05 for both entry and retention in the model. In this second model, the predictive ability is improved; specifically, we observe a percentage of pairs of observations in which the model's predictions align with the observed responses of 69.4%.

In this case, the most important variable is the age: children under 14 years old were almost five times more likely than the older ones to need support to access the questionnaire (Table 5).

Those who filled in via personal computer have 2.3 times higher risk of having difficulty accessing than those who filled in via mobile devices.

Unlike the previous model, proxy variables of a distress attitude such as dropping out of school, not having trusted friends, having a perception that one's own family has financial distress, and not reading books were significant. All these factors slightly increased the risk of needing help in access.

The amount of time spent on Internet was another difference compared to the previous model: being less connected in fact increased the risk of needing help in access.

Table 5 - *Probability of the need help to access the questionnaire. Year 2023.*

	Analysis of Maximum Likelihood Estimates			Odds Ratio Estimates		
Parameter	Estimate	Standard Error	P-value	*Point Estimate*	95% Wald Confidence Limits	
Intercept	-3.4730	0.07550	<.0001			
Make more accesses	0.2830	0.04820	<.0001	1.327	1.207	1.459
Under 14 years old (ref. 15-19 years)	1.5980	0.04490	<.0001	4.943	4.526	5.399
Household economic condition not good	0.2911	0.04900	<.0001	1.338	1.215	1.473
Dropping out of school	0.4449	0.07790	<.0001	1.560	1.339	1.818
Not having friends	0.3064	0.04280	<.0001	1.359	1.249	1.477
Connected less than 4 hours a day	0.1430	0.02380	<.0001	1.331	1.212	1.461
Not being satisfied with relationships with friends	0.2243	0.08650	0.0095	1.251	1.056	1.483
Being satisfied with relationships with household	0.1242	0.06140	0.0430	1.282	1.008	1.631
Not having read books in the past year	0.2661	0.03660	<.0001	1.305	1.215	1.402
PC (to submit the questionnaire)	0.4165	0.01800	<.0001	2.300	2.143	2.469

Elaboration on Istat data on behaviours, attitudes and future plans of children and young people

9. Conclusions

Innovations in questionnaire design led to good results in terms of submissions even with a hard-to-survey target as young people. Of the young people who accessed the questionnaire, nine in ten were finally able to submit it; and in most cases they filled in and submitted it at one time. In addition, those respondents who submitted the questionnaire did not seem to have encountered any problems in filling in it: they reported few difficulties in viewing the questions, and most of them answered they did not need help to access it.

In conclusion, having taken into account the specificities of young respondents in designing a short questionnaire, responsive to mobile devices and easy to access (via QR Code) facilitated responents in compiling and submitting it, thus increasing participation in the survey.

Further improvements are still possible, especially for enocuraging the youngers (11-14 years old) and foreigners to access and submit the questionnaire. Some changes in the questionnaire design in terms of length and layout can help make it

more appealing to these targets, but also other interventions in the data collection methods will be needed to reach and motivate them to fill in the questionnaire.

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