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FACULTY OF SOCIOLOGY AND SOCIAL WORK

SEXUAL RELATED RISKS ON THE FACEBOOK SOCIAL NETWORK SITE AMONG TEENAGERS

- P H D T H E S I S S U M M A R Y -

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I. CURRENT KNOWLEDGE OF THE AREA STUDIED

1. Introduction

This doctorate thesis aims to identify risks of a sexual nature that teenage social network users are exposed to. The literature claims (Vasiu and Vasiu 2011) that along with the increase in the number of social network users, the number of virtual offences has increased as well. Such offences comprise child pornography, electronic harassment (*cyber-bullying* or *cyber-grooming*), which manifest in the perpetration of sexual abuse against minors (Albert-Lőrincz and Csipkes, 2015). In this context, minors represent a category with an increased vulnerability to victimization (Wolak et al*.,* 2008).

The motivation, timeliness and importance of the topic studied were presented in *sub-chapters 1.1 and 1.2. of the thesis.* "In recent years, online social networks ("social networking services", SNS) have become omnipresent. (...) Establishing and maintaining relationships through social networking sites represents the means through which communication is predominantly achieved in the 21st century." (Mihăilescu and Raț, 2010, 29). In Romania, the number of underage social networking users has grown from 46% to 79% between 2010 and 2013 (Velicu et al., 2014).

The study presents interdisciplinary aspects consisting of the sociological justification of the risks in social networks and the legal justification for the protection of this category of persons. The conceptualization of the notion of social networking was undertaken in *sub-chapter 1.3.1. of the thesis.*

The main moments of the evolution of social networks are identified in *(sub-chapter 1.3.2.)*, alongside the presentation of current statistics about the spread of these networks *(sub-chapter 1.3.3. of the thesis).*

The researched focused mainly on the social networking site, *Facebook*, but other networks used by teenagers were also probed.

The sociological theories and perspectives constructed around the internet and social networks were debated in *section 1.4. of the thesis.*

The legal aspects as well as those related to the protection of minors in an online environment were analysed in *chapter two of the thesis.*

The general principles of the legal protection of minors are applicable in the environment of using the internet, as shown in *chapter 2 of the thesis.* The authorities, the parents or guardians,

respectively, as well as educators have a series of obligations with regard to protecting minors from the various dangers and abuses, as well as physical and psychological exploitation (Alexandrescu, 2014). In order to protect minors, UN Member States at an international level, EU Member States, as well as each National State have adopted a series of measures (see *section 2.5 of the thesis* regarding legislative aspects). These measures consist of awareness campaigns for children, parents and educators, collaboration with social networks to combat the risks, and establishing various hotlines.

A vast collection of sources was perused concerning the area studied by performing a meta-analysis, and the most recent studies and issues that the literature is concerned with were highlighted (*Chapter three of the thesis*), since following the expansion of this phenomenon, the number of studies analysing the risk factors to which young people are exposed in a virtual environment increased considerably (Lenhart, 2009; Lenhart et. al., 2015).

The projects, *EU Kids Online* and *Net Children Go Mobile*, financed through the *Safer Internet* programme of the European Commission constitute the main research efforts undertaken in the area of child safety on the internet at the level of the European Union.

According to Livingston and Haddon (2009), the risks associated with sexuality can take the following forms: electronic harassment *(sexual cyber-bullying)*, sending and receiving messages with sexual content (*sexting*), recruiting minors for sexual purposes (*grooming*), child pornography and its particular forms, as well as exposure to pornographic material – shown in *Fig. 1*.

Fig. 1. - Risk categories analysed (Livingston and Haddon, 2009)

The main risk categories in the digital environment, according to the EU Kids Online study, can be placed in several categories: risks concerning aggression, sexuality, commercial risk, risks regarding negative social values (Livingston and Haddon, 2009), collected in *Table 1.*

Table 1. - Online risk categories identified by *Eu Kids Online*

	Risks pertaining to content	**Risks pertaining to online interaction:**	**Risks pertaining to online behaviour**
Aggression	violent and aggressive content	harassment	*bullying*
Sexuality	pornographic content	*grooming*, sexual abuse, child pornography	*sexting, sexual cyber-bullying*
Negative social values	content related to hate speech and racism	ideological conviction	harmful content created by the user, harmful advice
Commercial	online marketing	risks pertaining to personal data	online games

Source: Livingstone and Haddon 2009, 10.

In the following sections, each risk will be presented briefly: sexual cyber-bullying (1.2.1.), sexting (1.2.2.), cyber-grooming (1.2.3.), child pornography (1.2.4) and exposure to sexual materials and other risks (1.2.5.).

1.2.1. *Sexual cyber-bullying*

According to some, *cyber-bullying* is a particular type of online harassment (*cyberstalking*) that targets minors exclusively (Vasiu, Vasiu, 2010). Therefore, the two phenomena have similar content, distinguished only by the categories of impacted persons. Willard (2004) maintains that *cyberstalking* is a form of online harassment, and thus a form of *cyber-bullying* directed against a specific person and causing emotional distress. The aim is to disturb, alarm and emotionally abuse another person. The perpetrators collect information about their target through social networking accounts and public information, sometimes accessed even illegally (Willard, 2004).

1.2.2. *Sexting*

Sexting consists of sending or receiving messages or photographs with sexual content via mobile phone or computer, using various applications, interactive platforms and social networks (O'Keeffe and Clarke-Pearson, 2011). The notion of *sexting* has appeared relatively recently, in the year 2005, following a study performed by the *Pew Research Center* in the USA. The literature

treats *sexting* differently from *cyber-bullying*, yet some maintain that *sexting* is a form of *cyber-bullying* (electronic harassment) (Domokos, 2014).

Lenhart (2009) stated that a large number of minors frequently send and receive messages with explicit sexual content. The images and messages thus distributed can constitute the elements of the crime of child pornography, in which case even the teenager sending such messages may become a perpetrator (Walker and Moak, 2010).

1.2.3. *Cyber-grooming*

Grooming means the recruitment of minors for sexual purposes, and is defined as a particular form of harassment in the online environment whose victims are minors. *Grooming* consists of actions undertaken by an adult with the purpose of contacting a minor and befriending them, with the ultimate goal of luring them into performing activities of a sexual nature (Vasiu and Vasiu, 2010). In other words, *grooming* refers to "the preparation of a child for sexual abuse, motivated by the desire of using the child for sexual gratification" (Vasiu and Vasiu, 2010, 249).

Addressing the theory of *grooming*, O'Connell (2003) identifies a five-stage process pertaining to the offence of recruiting minors for sexual purposes: *friendship forming stage, relationship forming stage, risk assessment stage, exclusivity stage* and *sexual stage*. These stages vary according to the intent of the perpetrator; there are offenders who spend more time in certain stages or reduce the entire recruitment to a single phase (Wollis, 2011).

1.2.4. Child pornography

Child pornography constitutes an offence and are closely linked to abuse and sexual exploitation using various means, including ones in the scope of pornography and mistreatment of minors. The danger to which minors are exposed to are immense, given that the number of participants to the traffic in virtual space is unlimited. Compared to written pornographic material or films on an electronic medium, which spread within a restricted range and at limited speeds, internet posts spread extremely quickly. The number of online materials with pornographic content which feature children experienced a fourfold increase from 2007 to 2011, reaching 17.3 million such images and videos (Paraschiv, 2013).

1.2.5. Exposure to sexual materials and other risks

The voluntary and, respectively, involuntary/unwanted exposure to online sexual materials is identified by the literature as a distinct risk category. Voluntary exposure happens in most cases by intentionally accessing webpages with sexual content (both with the intention of viewing pornographic material and of receiving advice about sexual life) (Barbovschi, 2008). The intentional behaviour of exposure may also manifest in receiving or sending messages or images with sexually explicit content, and thus the phenomenon is included into the category of *sexting* (Ringrose et. al., 2013).

Unwanted exposure to sexual material manifests in "situations in which the minor is unexpectedly confronted with images and films with sexual content while searching for other types of materials, browsing the internet, opening emails, electronic messages or links sent via email or messenger". (Antal and László, 2008, 113). The unwanted behaviour of displaying sexual materials, coercive *sexting* can be identified as electronic harassment (*cyber-bullying*) (Ringrose et. al*.,* 2013).

II. RESEARCH SECTION

2. Study Methodology

This aim of this study is to analyse the social perception of the sexual risks existing in online social networks, as well as the analysis of the relationships between the use of these networks and the risk factors encountered. The level of exposure of pupils to sexual risks can be influenced by socio-cultural and socio-economic factors, as well as factors in online behaviour. The study uses a series of both quantitative (survey) and qualitative (focus group and interview) methods.

2.1. Population and sampling

With regard to the sampling technique, we chose for stratified random sampling: in the first phase, we identified the population studied (pupils registered into the 10^{th} grade in Cluj-Napoca). In the 2017-2018 school year, 2753 pupils were enrolled into the 10^{th} grade in the municipality of Cluj-Napoca, divided into 102 classes within 40 educational establishments. Study participants were randomly selected from the classes of pupils while maintaining the proportions according to study profile: theoretical (50%), vocational (21.6%) and technical (29%).

The data were entered into the SPSS software suite in order to establish the stratified randomised sample. We set out to interview a number of 300 pupils in 14 classes, who were chosen using the random case selection function of the SPSS suite.

2.2. Data collection techniques

Regarding the teenagers, we proposed to use the method of the questionnaire, for which we were inspired by other studies (Kalmus, Blinka and Ólafsson, 2015; Lenhart, 2009), as well as studies in this field, especially *EU Kids Online II* and the research carried out by the *Save the Children* organisation: *Studiul privind utilizarea internetului în familie. [A study regarding the use of the internet in the family]*. Administering the questionnaires to the teenagers at the school took place with the prior approval of the Cluj County School Inspectorate.

The qualitative method of the focus group involved both teenagers, the group interview taking place in one of the classes taking part in the sample, as well as parents.

The method of the qualitative interview was used with nine teachers from the educational establishments which were chosen for the sample, based on semi-structured interview guide.

2.3. Hypotheses and study questions

The opinions and studies in the literature inspired the devising of a series of hypotheses regarding the risks involved in the use of social networks by teenagers:

1. The teenager over whom strict parental control is exercised is less exposed to sexual risk than the child over whom no strict parental control is exercised (Kalmus, Blinka and Ólafsson, 2015).
2. Female teenagers are affected by the risks encountered online to a greater degree than male ones (Livingstone and Haddon, 2009).
3. Male teenagers send messages or images with sexual content more often than female ones (Studiul privind utilizarea internetului în familie [*A study regarding the use of the internet in the family*], 2014).
4. Female teenagers use the security settings of their personal profile more frequently than male ones (Studiul privind utilizarea internetului în familie [*A study regarding the use of the internet in the family*], 2014).
5. Teenagers in an urban environment receive messages or images with explicitly sexual content to a greater extent compared to those from a rural environment (Studiul privind utilizarea internetului în familie [*A study regarding the use of the internet in the family*], 2014).

6. Teenagers who spend more time on social networks are exposed to more risk than the ones who spend less time on social networks (Hasebrink, 2014).

The study questions that are to be formulated were inspired by the three studies, *EU Kids Online;* the study by the *Save the Children* organisation, *Studiul privind utilizarea internetului în familie [A study regarding the use of the internet in the family]*; the American study through the *Pew Research Center's Internet & American Life Project* which studied the phenomenon of *sexting* (Lenhart, 2009). This study is aimed at the online sexual victimisation of teenagers in Cluj-Napoca, a city where a similar study had been carried out 10 years previously (Antal and László, 2008).

The questions proposed begin with the general aspect of the pupils' behaviour in the online environment and go on to discuss the specific aspects of the topic studied. The study questions are directed towards the demographic features of the sample (A), the habits of social network usage (B), the risks encountered in these networks (C), as well as the preventive measures and their effects (D).

The presentation of the findings is to be structured in the order of the aforementioned primary categories of questions, and the verification of the hypotheses is to be included in a separate chapter.

2.4. Proposed statistical analysis methods

Statistical processing was done using the SPSS software suite. Demographic data and the variables concerning the socio-economical and socio-cultural status are to be presented using descriptive methods.

By performing exploratory factor analysis, we pursue the reduction in the number of variables in each category and the identification of the associations (interrelations) between them – employing the technique of principal components analysis - PCA. The design of the techniques used are found in *Fig. 2.*

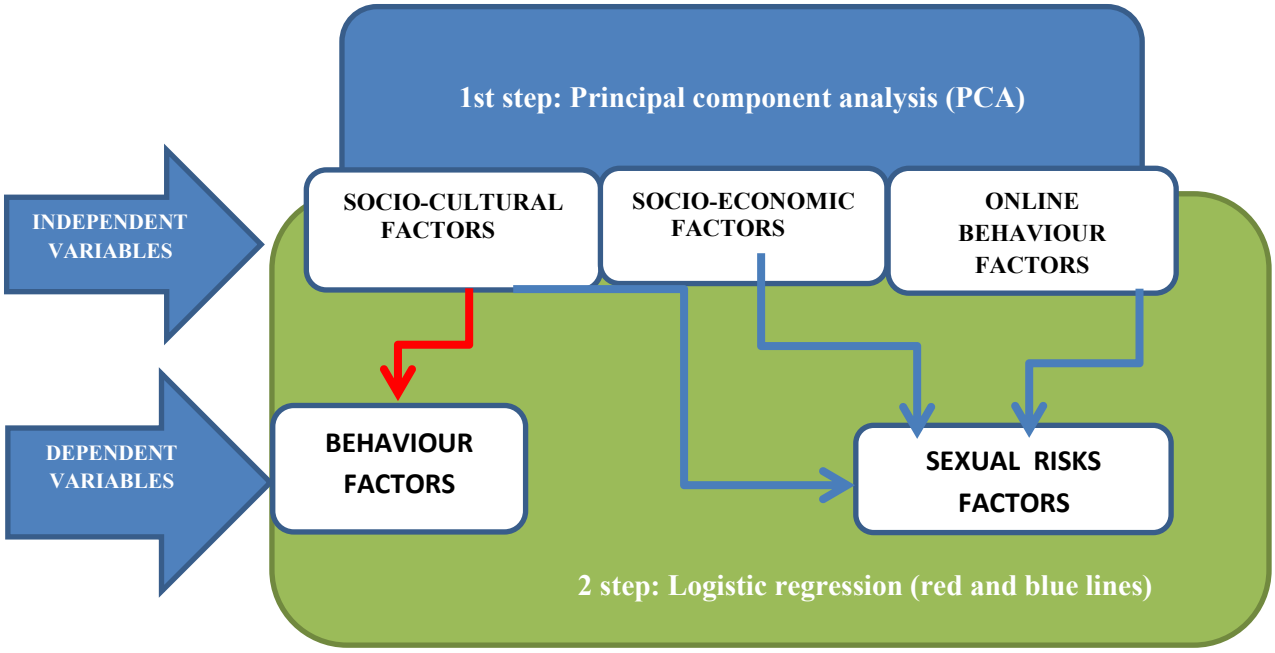

Fig. 2. – The design of the techniques used

The order of appearance of the data is to be established thematically: demographic features, habits of using social networks, risks and preventive measures (see *Fig. 3.*).

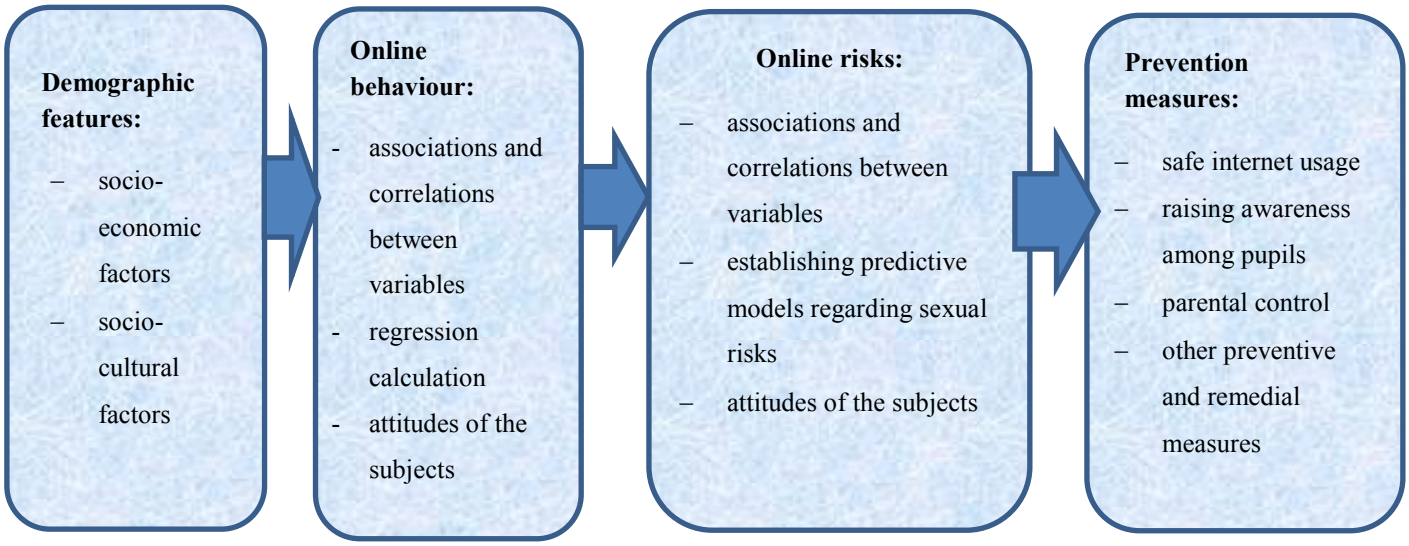

Fig. 3. – The design of the study

The results are primarily based on the quantitative data obtained as a result of administering questionnaires, but also on qualitative data resulting from the teenager and parent focus group, as well as interviews with teachers.

3. Research results

3.1. The demographic features of the sample

With regard to sex of the pupils participating (n=303) 51.2% (n=155) are female and 48.8% (n=148) are male. All subjects are pupils enrolled into the 10th grade: 83.5% (n=253) were aged 16, 12.5 % (n=38) had turned 15, and 4% (n=12) had turned 17 at the time the questionnaires were administered.

3.1.1. The socio-economic environment of the teenagers

The studies show that in the development of the *patterns* of internet use, aside from demographic features such as age and sex, "the social, economic and cultural situation of the family is also important, influencing the chances and opportunities of the individual in their digital life" (Tőkés, 2014, 74, *apud* Tőkés, 2010).

The children (n=301) assess the income of their families as being average in a proportion of 49.2% (n=148), and 35.2%(n=106) believe said income to be large. 8.6% (n=26) reported small incomes, and respectively, 6.3% (n=19) indicated very large incomes. Income levels are not related to the educational level of the parents (probability test for the mothers: x^2=18.994, *DF*=16, *N*=258, *p*=0.269, and for the fathers: x^2=22.839, *DF*=16, *N*=249, *p*=0.118). Similarly, neither the goods owned by the families (own house, car, holiday cottage, and so on), nor the gadgets bought for the child (smartphone, laptop, PC, PlayStation) are dependent upon the educational level of the parents.

A lower rate is seen amongst parents who work abroad, meaning that the proportion of families of the teenagers involved in the study in which nobody works abroad is 86.8% (n=263). Only 1.3% (n=4) of the mothers work abroad, while in the case of the fathers, the percentage is higher: 10.6% (n=32). The situations in which both parents are employed abroad is rare (1.3%, n=4).

In the case of the mothers, the occupation is not associated with the income of the family (*Table 13*). The likelihood ratio chi-square shows a lack of statistical significance between the two variables (x^2=23.37, *DF*=32, *N*=273, *p*=0.866), whereas in the fathers, the likelihood ratio chi-square shows a significant association between the two variables (x^2=49.766, *DF*=32, *N*=273, *p*=0.023).

With regard to the monthly income of the family, correlated to academic record, there is a weak positive correlation ($r(300)$=0.192, $p<0.01$) according to the likelihood ratio (x^2=30.682

DF=16, *N*=300, *p*=0.15), and thus it can be claimed that teenagers whose families earn larger incomes are better at studying.

Family income is significantly associated (likelihood ratio test x^2=34.459, *DF*=20, *N*=301, *p*=0.023) with the number of extracurricular activities engaged in by the pupil, while the Pearson correlation test is positive and weak (*r*(301)=0.2, *p*<0.01). The better the financial situation of the family, the more the number of activities taken part in increases.

Following the analysis of the primary components, it was found that out of the set of variables pertaining to the financial situation of the family, no defining features can be extracted that would explain the existing correlations.

3.1.2. The socio-cultural environment of the teenagers

The socio-cultural environment of the teenagers impacts on the types of experiences encountered in the digital environment. Accordingly, "the family, the circle of friends and the context of school are important sources of mediation in the use of the internet by the child, a fact often admitted to in public debates" (Velicu et al., 2014, 69).

With respect to the socio-cultural environment of teenagers, it can be noted that 69.4% (n=209) come from an urban environment, and 30.6% (n=92) are from a rural environment. Of the valid answers (n=286) with regard to the religious affiliation of the pupils in Cluj-Napoca, 67.5% (n=193) declared themselves to be Orthodox Christians, 9.8% (n=28) are Roman Catholics, 12.2% (n=35) are Protestant, 3.8% (n=11) Neo-Protestant, 4.2% (n=12) Greek Catholics, and 2.4% (n=7) consider themselves to be atheists.

The answers given by the subjects (n=301) revealed that 54.6% (n=164) are believers, 25.9% (n=78) are undecided in this regard, and 19.6% (n=59) do not consider themselves to be believers.

With regard to the educational level of the parents, the 10th-grade pupils (n=259) have stated that their mothers have a tertiary education in a proportion of 55.6% (n=144), 1.9% (n=5) completed post-secondary studies, 32.8% (n=85) are high-school graduates, 7.3% (n=19) graduated from vocational schools, and 2.3% (n=6) possess training offered in primary and middle school (forms 1-8).

In the case of fathers, (n=250), the data reveal that 42.4% (n=106) have a tertiary education, 2.8% (n=7) graduated from post-secondary school, 34.8% (n=87) are high-school graduates, 17.2% (n=43) graduated from vocational schools, and 2.8% (n=7) completed primary and middle school studies.

In families from an urban environment, mothers possess a higher level of education (64.8% tertiary education, *N*=118), as opposed to the rural environment, where most mothers are high-

school graduates (44%, *N*=33). By performing the likelihood ratio chi-square test, it is revealed that there is a significant statistical association between the level of education of the mother and the origins of the family (x^2=29.764, *DF*=4, *N*=257, $p<0.01$). The Pearson correlation coefficient is moderate between the two variables ($r(257)=-0.336$, $p<0.01$).

A proportion of 28.4% (n=86) of the respondents have no siblings; 58.1% (n=176) have one sibling, while 13.5% (n=41) have siblings.

Most of the pupils in Cluj-Napoca, namely, 61.1% (n=185) live with both or one of their parents, as well as their siblings. A proportion of 34.3% (n=104) live only with their parents, and 4.6% (n=14) live with other relatives or other persons.

The teenagers were asked to specify how much time they spend with their parents daily. The respondents (n=301) claim, in a proportion of 29.2% (n=88), that time spent with the family is sufficient, 28.9% (n=87) consider the time spent with the family to be little, and 17.6% (n=53) feel that the time spent with their parents is very little. A proportion of 15.3% (n=46) spend much time with their parents, and 9% (n=27) spend very much time with them.

The report of the teenager focus group (*Appendix 8 of the thesis*) complements certain aspects regarding the time spent online: the pupils state that they use no other devices alongside their *smartphones* to access social networks. They access different social networks almost continuously, and are connected to the internet with an online status owing to their *smartphones*.

The analysis of the main components (*section 5.2.2. of the thesis*) revealed the presence of three eigenvalue components above 1.0, which explains 57% of the total variation. The distribution of eigenvalue components above 1.0 reveals a sudden upsurge in a single component of the three identified. Thus, the largest proportion of the socio-cultural variables are grouped around a single factor made up of the following variables: mother's education, father's education, number of activities engaged in and academic record. The values of the variables were aggregated into factor scores weighted based on the degree of association with the factor in question. These scores represent a weighted and linear combination of socio-cultural variables, and are to be used in calculating logistic regression.

3.2. Social network usage habits among teenagers

This sub-chapter will present the social networking sites used by the 10th-grade pupils, their favourite networks, and the reasons why certain sites were opted for, the time allocated to online activities and the number of friends in social networking sites.

Social networking sites include: *Facebook* in a proportion of 98% (n=297), followed by *Instagram* in a proportion of 77.6 % (n=235) and *Snapchat* with 70.3% (n=213).

Each pupil might have several accounts on the various social networking sites, and thus 17.2% (n=52) own 1-2 accounts social network accounts, 42.1% (n=127) have 3-4 profiles, 27.9% (n=84) have 5-6, and a proportion of 11.6% (n=35) possess seven or more accounts.

The top most favourite social networking sites are as follows: *Facebook* with 44.2% (n=134), followed by *Snapchat* with 33.7% (n=102), while the third place is held by *Instagram* (33%, n=100).

These results are consistent with the results of an American study initiated by the Pew Research Center in 2018, which shows that only 51% of the teenagers queried (aged between 13 and 17) claim to use *Facebook*, and the most popular platforms are *YouTube* (85%), *Instagram* (72%) and *Snapchat* (69%). The drop-off rates of young users are enormous when compared to the results of the previous survey in 2015, when 71% of teenagers stated that they use *Facebook* (Anderson and Jiang, 2018).

Of the 10th-grade pupils taking part in the study, 16.1% (n=48) spend more than 3 hours online daily on social networking sites, 27.1% (n=81) spend between 2 and 3 hours online daily, 35.1% (n=105) state that the time they spend is between 1 and 2 hours, and 21.7% (n=65) assign less than one hour to this activity, as shown on the histogram in *Fig. 4*.

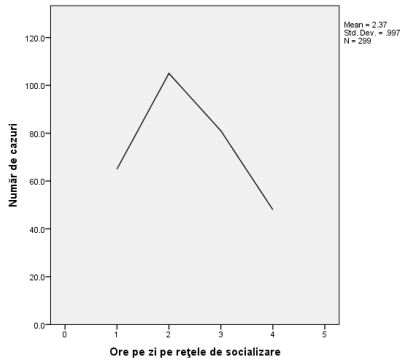

Fig. 4 – Time spent daily on social networking sites

A proportion of 30.9% (n=92) of the pupils have between 300 to 500 friends and followers on their favourite social networking sites, 26.2% (n=78) have less than 300 friends, 24.8% (n=74) have between 500 and 1000 virtual acquaintances, and 18.1% (n=54) have over 1000 friends (see *Fig. 5*).

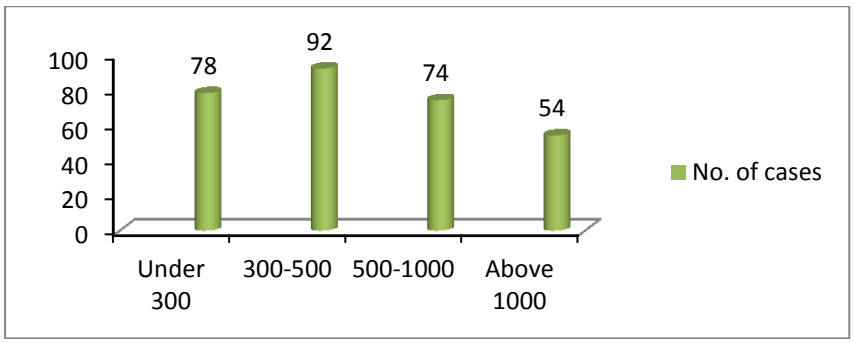

Fig. 5. – Number of online friends and followers

These data show that all 10th-grade pupils are present on social networks, perform online activities daily, and interact through these platforms with a large number of teenagers.

The number of siblings is significantly associated with the number of online friends, to the effect that those with a sibling or several siblings have more friends on social networking sites (*Pearson's chi-squared test*: x^2=22.189, *DF*=6, *N*=298, p<0.01), with a weak correlation (r(298)=-0.099, p=0.046). The number of friends on social networks is significantly associated with time spent offline (*likelihood ratio chi-square test*: x^2=25.001, *DF*=9, *N*=296, p<0.01; the correlation is weak (r(296)=0.174, p<0.01). Teenagers with less virtual friends spends less time with their friends outside cyberspace.

Of all the variables referring to behavioural aspects on social networking sites, seven variables underwent principal components analysis (PCA). The KMO (Kaiser-Meyer-Oklyn) value is 0.657. The analysis of the main components revealed the presence of three eigenvalue components above 1.0, which explains 43% of the total variation.

Factor 1 (Component 1): the number of elements in published personal data, accepting friend requests and number of friends;

Factor 2 (Component 2): the number of accounts on social networking sites, time spent online and parental involvement.

The values of the variables were aggregated into factor scores weighted based on the level of association with the factors in question. These scores represent a weighted and linear combination of socio-cultural variables, and will be used in logistic regression.

Standard multiple regression was applied to evaluate the socio-economic factors, with a view to predict the online behaviour of pupils in the 10th grade in Cluj-Napoca. Following preliminary analysis, it was found that the conditions for the normality, linearity, multicollinearity and homoscedasticity of the data had been ensured.

In the case of the first aggregate online behaviour factor with regard to aspects such as the number of elements in published personal data, accepting friend requests and number of friends, the

total variance explained by the model was negligible (R square=1.7%, $F(5,282)=0.995$, $p=0.421$ according to the ANOVA test). This prediction model is insignificant.

In the case of the second aggregate online behaviour factor with regard to aspects such as the number of social networking accounts, time spent online and parental involvement, the total variance explained by the model was 4.3% (R square), $F(5,283)=72.532$, $p=0.029$ according to the ANOVA test performed as part of the calculation of multiple regression. This prediction model is significant at an alpha level of $p<0.05$; however, it predicts a reduced weight of socio-economic factors vis-a-vis online behaviour factors.

The *Net Children Go Mobile* project regarding the digital behaviour of teenagers depending on socio-economic status reports similar findings. Thus, the socio-economic status of the pupils is negligible as to what concerns the use of social networking sites (Velicu et al., 2014, 55).

Standard multiple regression was used to evaluate the socio-cultural factors, with a view to predict the online behaviour of pupils in the 10th grade in Cluj-Napoca. It was found that the conditions for the normality, linearity, multicollinearity and homoscedasticity of the data had been met.

In the case of the first aggregate online behaviour factor with regard to aspects such as the number of elements in published personal data, accepting friend requests and number of friends, the total variance explained by the model was only 3% (R square), $F(4,194)=1.523$, $p=0.197$ according to the ANOVA test performed as part of the calculation of multiple regression. Therefore, this prediction model is insignificant.

In the case of the second aggregate online behaviour factor with regard to aspects such as the number of accounts on social networking sites, time spent online and parental involvement, the total variance explained by the model was 13.4% (R square), $F(4,194)=7.528$, $p<0.01$ according to the ANOVA test performed as part of the calculation of multiple regression. This prediction model can be considered as significant, bearing in mind that it predicts a reduced weight of socio-economic factors vis-a-vis online behaviour factors. For instance, the *Eu Kids Online II* findings show that there are very weak relationships of interdependence between the parents' level of education and excessive use of the internet (Šmahel and Blinka, 2012).

3.3. Risks encountered on online social networks

This sub-chapter will identify the behaviours of teenagers in an online environment that may constitute a situation of risk for them.

Sexting - of the valid answers (n=298) with regard to sending messages or images with sexually explicit content, the teenagers confided in a proportion of 17.1% (n=51) – according to

Table 1 – that they had at one time sent such photographs. The results of the above-mentioned reference studies, such as *Eu Kids Online II* of 2010 regarding the online situation of teenagers in Romania (focusing on children between the ages of 9 and 16) show that a proportion of 3% of the children had sent such materials.

Table 1 – *Sexting* – Sending sexual content

Sending pictures/messages with sexual content				
		Frequency	Percentage	Valid percentage
Valid	Yes	51	16.8	17.1
	No	226	74.6	75.8
	Does not know	21	6.9	7.0
	Total	298	98.3	100.0
No answer		5	1.7	
Total		303	100.0	

Our research reveals that almost half of the respondents (n=300), in a proportion of 44.3% (n=133) had already received online images or messages with sexual content (*Table 2).*

Table 2 – *Sexting* – receiving sexual content

Receiving pictures/messages with sexual content				
		Frequency	Percentage	Valid percentage
Valid	Yes	133	43.9	44.3
	No	145	47.9	48.3
	Does not know	22	7.3	7.3
	Total	300	99.0	100.0
No answer		3	1.0	
Total	303	100.0		

These sexual materials, insofar as they contain images of the minor's sexual organs, may constitute an offence of child pornography (Russo and Arndt, 2010).

The data show that 23.8% (n=73) of the high-schoolers in Cluj-Napoca (n=298) had posted photographs of themselves wearing a bathing suit or underwear on social networking sites (*Table 3*).

Table 3 – Photographs in a bathing suit/underwear

Posting of photographs in a bathing suit/underwear				
		Frequency	Percentage	Valid percentage
Valid	Yes	71	23.4	23.8
	No	227	74.9	76.2
	Total	298	98.3	100.0
No answer		5	1.7	
Total		303	100.0	

Additionally, the respondents (n=300) reported in a proportion of 18.7% (n=56) that they had been asked to provide photographs showing their sexual organs (see *Table 4*). Compared to the data obtained from the study by the *Save the Children* organisation, which recorded a frequency of 5% for this phenomenon, according to the data in our study, there was an increase of approximately 13%.

Table 4 – Intimate pictures being requested by strangers

Nude pictures being requested by strangers				
		Frequency	Percentage	Valid percentage
Valid	Yes	56	18.5	18.7
	No	220	72.6	73.3
	Does not know/remember	24	7.9	8.0
	Total	300	99.0	100.0
No answer		3	1.0	
Total		303	100.0	

Meeting with unknown persons – represents risky behaviour for teenagers: 44.6% (n=133) of them (n=298) claimed that they had physically met with one or more unknown persons whom they had contacted online (see *Table 5*).

Table 5 – Meeting with strangers

The teenager met with unknown persons whom they got to know online				
		Frequency	Percentage	Valid percentage
Valid	Yes	133	43.9	44.6
	No	165	54.5	55.4
	Total	298	98.3	100.0
No answer		5	1.7	
Total		303	100.0	

Sexual cyber-bullying – refers to the sexual victimisation in general of teenagers. According to the data obtained (n=295), a proportion of 12.5% (n=31) were disturbed online by messages or

pictures with sexual content, and respectively, 2.7% (n=8) of the pupils (n=296) stated that they were active subjects, meaning that they intentionally disturbed other persons (see *Table 6*).

Table 6 – *Sexual cyber-bullying*

The child was the subject of online sexual harassment				
		Frequency	Percentage	Valid percentage
Valid	Yes	37	12.2	12.5
	No	229	75.6	77.6
	Does not know/remember	29	9.6	9.8
	Total	295	97.4	100.0
No answer		8	2.6	
Total		303	100.0	
The child had committed some form of online sexual harassment				
		Frequency	Percentage	Valid percentage
Valid	Yes	8	2.6	2.7
	No	274	90.4	92.3
	Does not know/remember	15	5.0	5.1
	Total	297	98.0	100.0
No answer		6	2.0	
Total		303	100.0	

The sex of the children displays the following significant associations with sexual risks present on online social networks: in the case of sending and receiving sexual content, boys are more exposed to risk as opposed to girls (Fisher's exact test: $p>0.01$, weak Pearson correlation coefficient, significant: $r(277)=0.286$, $p>0.01$), and respectively, when it comes to online harassment, boys are more predisposed to commit acts of harassment as opposed to girls (Fisher's exact test: $p>0.01$, weak Pearson correlation coefficient, significant: $r(282)=0.180$, $p>0.01$). Distress caused by sexting is more often encountered in girls (Fisher's exact test: $p>0.01$, negative Pearson correlation, weak, significant: $r(266)=-0.200$, $p>0.01$).

This result is corroborated by the report of the study performed by the Save the Children Romania Organisation, where boys took part in *sexting* to a higher degree than girls (Save the Children Romania, 2014).

A series of correlations were found between the sexual risk factors present on social networking sites:

- Sending and receiving sexual content (photographs and messages): the correlation is strong and positive ($r(264)=0.517$, $p<0.01$). Pupils who sent messages with sexual content tend to receive such messages.

- Sending sexual content and posting photographs in a bathing suit: the correlation is weak and positive ($r(275)=0.196$, $p<0.01$). The pupils who had sent messages with sexual content seem to be predisposed to also post photographs in a bathing suit or underwear.
- Sexual content being sent and nude pictures being requested by strangers ($r(257)=0.274$, $p<0.01$). The pupils who had sent messages with sexual content seem to be more exposed to the risk of nude pictures being requested by strangers.
- Sending sexual content and sexual harassment of other persons: the correlation is weak and positive ($r(162)=0.161$, $p<0.01$). The pupils who had sent messages with sexual content seem to be willing to commit sexual harassment acts to a higher degree.
- Receiving sexual content and posting photographs in a bathing suit or underwear: the correlation is weak and positive ($r(276)=0.268$, $p<0.01$). The minors who had received messages of a sexual nature have a higher tendency to post photographs in underwear or a bathing suit.
- Receiving content of a sexual nature and nude pictures being requested by unknown persons: the correlation is moderate, positive ($r(259)=0.487$, $p<0.01$). The children who had received messages with sexual content seem to be more exposed to the risk of being asked for nude pictures by strangers.
- Receiving content of a sexual nature and meeting with unknown persons: the correlation is weak, positive ($r(276)=0.265$, $p<0.01$). The pupils who had received messages or photographs of a sexual nature seem to be more willing to meet with unknown persons whom they got to know online.
- Receiving content of a sexual nature and the risk to be sexually harassed: the correlation is weak, positive ($r(247)=0.209$, $p<0.01$). The pupils who had received messages or photographs of a sexual nature may become victims of sexual harassment to a higher degree.
- Receiving content of a sexual nature and harassing other persons: the correlation is weak, positive ($r(263)=0.189$, $p<0.01$). The pupils who had received messages or photographs of a sexual nature may become perpetrators of sexual harassment.
- Posting photographs in a bathing suit or underwear and nude pictures being requested by strangers: the correlation is weak and positive ($r(274)=0.196$, $p<0.01$). It seems that strangers may request nude pictures from children who had posted photographs in a bathing suit or underwear to a higher degree than from those who had not posted such photographs.
- Posting photographs in a bathing suit or underwear and meeting with unknown persons: the correlation is weak and positive ($r(296)=0.224$, $p<0.01$). The children who had posted photographs in a bathing suit or underwear seem to be more willing to meet with unknown persons whom they got to know online.

- Nude pictures being requested by strangers and meeting with strangers: the correlation is weak and positive ($r(274)=-0.129$, $p=0.033$). The minors from whom nude pictures had been requested by unknown persons seem to be more exposed to the risk of meeting with unknown persons.
- Nude pictures being requested by strangers and passive subjects of a harassment event: the correlation is weak and positive ($r(245)=-0.265$, $p<0.01$). The pupils from whom nude pictures had been requested by strangers may become victims of a harassment event more easily.

  Thus, the data indicate the existence of certain interdependencies between the sexual risk factors on social networking sites. The factor most often encountered in relationships of correlation with other factors is sexting, which may be associated through a moderate correlation coefficient with *cyber-bullying*, and through a low correlation coefficient with *the general risk of exposure* and *grooming*.

Each risk factor was analysed separately using the method of logistic regression in order to establish the prediction models (*sub-chapter 5.3.3. of the thesis*), through which we attempted to determine the probability of the impact socio-economic, socio-cultural and behavioural factors have on risks of a sexual nature in social networks. Thus, a total of 7 predictive models were created.

In the case of sending materials with sexual content by teenagers, the first model containing all prediction variables was statistically significant ($x^2=39.464$, $DF=13$, $N=172$, $p<0.01$). This model can differentiate between teenagers who had and those who had not sent such photographs or messages. The model explains a proportion of between 20.5% (Cox and Snell R square) and 34.8% (Nagelkerke R square) of the variance, and has correctly classified 85.5% of all cases.

A total of three independent variables (*the sex of the children, time spent with offline activities and the type of housing*) make significant contributions to the model. The strongest predictor with an odds ratio of $OR=9.6$ is *the sex of the children*. This result indicates an estimated relative risk of being exposed to the risk of sending sexual content that is 9 times higher in the case of male pupils than in that of girls. The next predictor with an odds ratio of $OR=2.1$ is the *time spent with offline activities*. This result indicates an estimated relative risk of being exposed to the danger of sending sexual content that is a little over 2 times higher in the case of pupils who pursue offline activities for a considerable length of time than in that of pupils whose offline activities take up less time. The last predictor with an odds ratio of $OR=0.394$ is the *type of housing*. This result indicates a very low estimated relative risk, and thus shall be removed from the model. There have been references made in the literature (Haddon and Livingstone, 2014) to a possible shift of risks from the offline to the online environment.

In the case of receiving materials with sexual content by pupils, the second model containing all prediction variables was statistically significant (x^2=34.124, *DF*=13, *N*=173, p<0.01). The model can differentiate between children who had and those who had not received such photographs or messages. The model explains a proportion of between 17.9% (Cox and Snell R square) and 23.9% (Nagelkerke R square) of the variance, and has correctly classified 71.1% of all cases. Two independent variables (*the sex of children and online behaviour factor no. 1*) make significant contributions to the model. The strongest predictor with an estimated relative risk of *OR*=3.27 is *aggregated online behaviour factor no. 1*, which contains a weighted score for three variables. This result indicates an odds ratio of being exposed to the risk of receiving sexual content that is a little over 3 times higher in the case of pupils who reveal more personal data, accept friend requests by strangers and have a large number of friends than in that of pupils in whom the behaviour variable score is lower. The second predictor with an estimated relative risk of *OR*=2.86 is *the sex of the children*. This result indicates a risk of being exposed to the danger of receiving sexual content that is almost 3 times higher in the case of male pupils than in that of female teenagers. The *Eu Kids Online II* study revealed similar tendencies in the sense that boys were more exposed to *sexting* in the form of receiving such content (Hasebrink et al., 2011).

In the case of posting photographs in a bathing suit or underwear by the pupils, the third model containing all prediction variables was statistically insignificant (x^2=19.219, *DF*=13, *N*=187, p=0.116), indicating that the model cannot differentiate between teenagers who had and those who had not posted such photographs.

In the case of nude pictures being requested by unknown persons, also called *cyber-bullying*, the fourth model containing all prediction variables was statistically significant (x^2=36.414, *DF*=13, *N*=175, p<0.01), indicating that the model can differentiate between teenagers who had and those who had not received such photographs or messages. The model explains a proportion of between 18.8% (Cox and Snell R square) and 29.4% (Nagelkerke R square) of the variance, and has correctly classified 81,7% of all cases. Two independent variables (*origins and online behaviour factor no. 1*) make significant contributions to the model. The strongest predictor with an odds ratio of *OR*=8.88 is *aggregated online behaviour factor no. 1*, which contains a weighted score for three variables. This result indicates a risk of being exposed to the danger of being asked for nude pictures that is almost 8 times higher in the case of pupils who reveal more personal data, accept friend requests by strangers and have a large number of friends than in that of pupils in whom the behaviour variable score is lower. The second predictor with an odds ratio of *OR*=0.246 is the *origins of the children*. This result indicates a very low estimated relative risk, and thus shall be removed from the model.

In the case of meeting with strangers whom they got to know online, the fifth model containing all containing all prediction variables was statistically significant (x^2=31.372, *DF*=13, *N*=186, p<0.01), indicating that the model can differentiate between teenagers who had and those who had not met with unknown persons they had got acquainted with online. The model explains a proportion of between 15.5% (Cox and Snell R square) and 20.7% (Nagelkerke R square) of the variance, and has correctly classified 65.1% of all cases. A total of four independent variables (*sex, religion, origins and online behaviour factors no. 1 and 2*) make significant contributions to the model.

The strongest predictor with an odds ratio of *OR*=2.7 is *the sex of the children*. This result indicates an odds ratio of being exposed to the risk of meeting with unknown persons that is almost 3 times higher in the case of male pupils than in that of girls. The results of the *Eu Kids Online I* transnational study show that compared with girls, boys are more willing to meet *offline* with a person initially encountered only online (Hasebrink et al, 2009). In the *Net Children Go Mobile* study, boys in the general sample in Romania are more willing to cultivate such online contacts – yet only 6% more girls reported that they had come in contact with strangers (Velicu et al., 2014, 58).

The next predictor with an odds ratio of *OR*=2.678 is *aggregated online behaviour factor no. 1*, which contains a weighted score for three variables. This result indicates an estimated relative risk of being exposed to the danger of meeting unknown persons that is over 2.5 times higher in the case of pupils who reveal more personal data, accept friend requests by strangers and have a large number of friends than in that of pupils in whom the behaviour variable score is lower.

In third place regarding predictability, with an odds ratio of *OR*=2.342 is *aggregated online behaviour factor no. 2*, which contains a weighted score for three variables. This result indicates an odds ratio of being exposed to the risk of meeting unknown persons that is over 2.3 times higher in the case of pupils with a large number of accounts on social networking sites, more time spent online and where parental involvement is lower than in that of pupils in whom the behaviour variable score is lower.

The last predictor with an estimated relative risk of *OR*=2.131 is *the faith of the children*. This result indicates an odds ratio of being exposed to the risk of meeting with unknown persons that is almost 2 times higher in the case of religious pupils than in that of non-religious pupils. It is assumed that these children are more trusting in others, but further research is needed for a more in-depth explanation.

In the case of committing acts of sexual harassment on social networks by pupils, the sixth model containing all prediction variables was statistically insignificant (x^2=92.411, *DF*=13, *N*=167,

p=0.247), indicating that the model cannot differentiate between teenagers who had and those who had not engaged in such behaviour.

In the case of being subjected to acts of harassment by pupils, the seventh model containing all prediction variables was statistically significant (x^2=30.414, DF=13, N=177, p>0.01). However, this model cannot be interpreted owing to sample size, since only a total of three cases had suffered online harassment acts.

3.4. Prevention measures and their effectiveness

This sub-chapter is structured into four sections, each analysing one means of prevention. These are: the use of security settings by teenagers, raising awareness among pupils, exercising parental control and other means of prevention, such as restricting access, calling hotlines, requesting help from parents, friends and teachers.

3.4.1. Using security settings provided by social networking sites

The pupils (n=300) had displayed a series of personal data on social networking sites, such as: family name (83%, n=249), school name (71.3%, n=214), personal photographs (66.7%, n=200), real age (56%, n=168), false age (26%, n=78), home address (9%, n=27), telephone number (8.7%, n=26). Only a proportion of 1.7% (n=5) of the pupils had not posted any personal data on social networking sites. The literature considers revealing personal data to be high-risk online behaviour (Mitchell et. al.,2013).

The teenagers queried (n=299) about the settings of their account reported that they have a partially private profile in a proportion of 40.5% (n=121), 32.8% (n=98) own a private account, 21.4% (n=64) had set their account to be public, and 5.4% (n=16) do not know what setting their profile is on.

Following the teenager focus group, it was revealed that they can easily recognise if someone wants to contact them for dubious purposes. They prefer to use security settings to exclude their parents or adults in general.

3.4.2. Informing pupils at school and at home

With regard to informing pupils at school activities about the risks of the online environment, the respondents (n=298) have stated in a proportion of 66.4% (n=198) that they had discussed these risks at school, a proportion of 17.1% (n=51) are not certain whether they had taken

part in such instruction, and respectively, 16.4% (n=49) claim that they had not received any information.

Nevertheless, it seems that most teenagers display conscious behaviour with regard to the use of social networks. Concerning the type of public posts, 71.8% (n=214) of the respondents (n=299) stated that they act with diligence (they consider the possible consequences before posting), 22.1% (n=66) refrain from commenting and posting, a proportion of 6% (n=18) post recklessly.

Of the teachers taking part in the interviews (n=9), a total of three educators highlighted the fact that through adequate preparation, the children could be empowered, especially if there is a bond of trust between parent and child. However, no emphasis is placed on prevention in all high-schools that were included in the study.

All interviewees believe that it would be necessary to organise additional preparatory courses both among educators and among pupils, as well as parents.

5.4.3. Parental involvement and control

The results obtained (n=300) from the teenagers about parental involvement and parental control show that 30.3% (n=91) of parents are not involved at all in the online activity of their child, 44% (n=132) merely show interest, 13% (n=39) give advice to the pupil, 10.7% (n=32) of parents intervene into this activity if they deem it necessary, and a proportion of 2% (n=6) are constantly checking the child's activities in the online environment.

The short time spent with parents is significantly associated with the lack of supervision of online activities by parents (*likelihood ratio chi-square test*: x^2=31.062, *DF*=16, *N*=298, p=0.013; the correlation is weak (r(298)=0.234, p<0.01). In families where cultural activities happen more often, parental involvement is significantly more pronounced than in families where cultural activities are rarer (*likelihood ratio chi-square test:* x^2=33.18, *DF*=16, *N*=300, p<0.01; the correlation is weak (r(300)=-0.178, p<0.01).

Religious activities are associated with the level of involvement in the online activities of the teenager on the part of the parent to a significant level (*likelihood ratio chi-square test*: x^2=51.826, *DF*=20, *N*=297, p<0.01); weak to moderate correlation r(297)=-0.294, p<0.01), in the sense that the monitoring of the pupils' online activities is more frequent in religious families.

The teenager focus group revealed that the pupils seem to be conscious of the presence of adults on *Facebook*, and consequently had stopped posting personal photographs, instead choosing to distribute different materials taken from other sites, and selecting impersonal posts that are to

their own family's liking. Personal posts are distributed in other networks, where adult presence is non-existent, such as *Instagram* or *Snapchat*.

According to the information provided by the parent focus group, most of them had talked to their children about using the internet safely and are preoccupied with the supervision of the child's online activities.

5.4.4. Other preventive and remedial measures at the pupils' disposal

Among the other preventive means studied are found: restricted access, hotlines, call for help to other persons.

A possible restriction seems to be needed due to the risks present in these online networks. With reference to the topic while conducting the interviews, eight educators claimed that social networks represent a danger to teenagers. It seems that teenage pupils are extremely susceptible to influence and manipulation in the absence of parental supervision. Nonetheless, adequate education and a1wareness-raising of the pupils appears to be a better solution than interdictions and restrictions.

With regard to hotlines, a proportion of 24.2% (n=72) of the pupils responding (n=297) stated that they have some knowledge, 42.8% (n=127) are uncertain, and 33% (n=99) do not know of any such sites (*Fig. 6*).

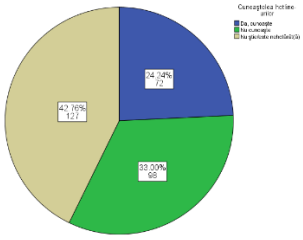

Fig. 6. – Awareness of hotlines

As to what concerns help requested from other persons by the teenagers in Cluj-Napoca, when in need, the 10th-grade pupils (n=298) would contact friends or other persons in a proportion of 44.3% (n=132), 35.2% (n=105) would turn to their parents for help, 23.8% (n=71) would not ask anyone for help, a proportion of 17.8% (n=53) would directly contact the social networking service used, 2.3% (n=7) would use hotlines, and 1.7% (n=5) would call on a teacher. "The effect of the mediation of the reduction of online risk and their negative impact by friends is, however, less clearly demonstrated in studies" (Velicu et al., 2014, 79). The *Net Children Go Mobile* study reveals that in Romania, mediation coming from friends is the most frequent (Velicu et al., 2014).

"The authors believe this to signify compensation for deficient mediation on the part of other actors" (Velicu et al., 2014, 79).

3.5. Testing the hypotheses

It was considered appropriate to dedicate a separate section to the testing of the hypotheses.

1. *The teenager over whom strict parental control is exercised is less exposed to sexual risk than the child over whom no strict parental control is exercised (Kalmus, Blinka and Ólafsson, 2015).*

This hypothesis was inspired by other studies involving younger children. In our study, this hypothesis could not be confirmed based on quantitative data at the age category of 16, because the number of cases in which parents constantly supervise the minor is extremely low (2%, n=6). Moreover, the focus group showed that when restricted by their parents, pupils will change social networks, usually abandoning *Facebook*, and start using mobile applications such as *Snapchat* or *Instagram*, where their posts automatically disappear after a short period, and are impossible to control by parents.

2. *Female teenagers are affected by the risks encountered online to a greater degree than male ones (Livingstone and Haddon, 2009).*

This hypothesis is invalidated, at least from the viewpoint of risks of a sexual nature. After establishing predictive models using logistic regression, it was concluded that the exposure to the risk of meeting with unknown persons is 2.7 times more probable in male pupils than in girls. It is yet again boys who tend to send pictures and messages with sexual content, with an odds ratio that is 9.6 times higher than in girls, and when receiving such messages, the risk of exposure is 2.9 times more probable.

3. *Male teenagers send messages or images with sexual content more often than female ones (Studiul privind utilizarea internetului în familie [A study regarding the use of the internet in the family], 2014).*

The hypothesis was again confirmed using logistic regression, showing that male pupils send pictures and messages with sexual content with an odds ratio that is 9.6 times higher than in female pupils.

4. *Female teenagers use the security settings of their personal profile more frequently than male ones (Studiul privind utilizarea internetului în familie [A study regarding the use of the internet in the family], 2014).*

This hypothesis is confirmed, as is apparent from *Table 7*; male pupils are more negligent in using security settings than female pupils. The association is significant (*Pearson's chi-squared test*: x^2=18.974, *DF*=3, *N*=299, p<0.01, weak correlation r(299)=-.201, p<0.01).

Table 7 – Sex * Account settings

			Account settings				
			Public	Partially private	Private	Does not know	Total
Sex	Female	N	18	66	61	8	153
		%	11.8%	43.1%	39.9%	5.2%	100.0%
	Male	N	46	55	37	8	146
		%	31.5%	37.7%	25.3%	5.5%	100.0%
Total		N	64	121	98	16	299
		%	21.4%	40.5%	32.8%	5.4%	100.0%

5. *Teenagers in an urban environment receive messages or images with explicitly sexual content to a greater extent compared to those from a rural environment (Studiul privind utilizarea internetului în familie [A study regarding the use of the internet in the family], 2014).*

The hypothesis has been invalidated because of the urban planning characteristics of the Cluj Metropolitan Area, where the adjacent settlements are practically joined with the municipality, and do not show significant differences in this regard (*Pearson's chi-squared test*: x^2=1.851, *DF*=2, *N*=298, p=0.396).

6. *Teenagers who spend more time on social networks are exposed to more risk than the ones who spend less time on social networks (Hasebrink, 2014).*

As a result of logistic regression, we have found that in the case of pupils with a large number of accounts on social networking sites, more time spent online and where parental involvement is lower, there is a more than 2.3 higher rate of probability of being exposed to the risk of meeting unknown persons than in the case of pupils in whom the behaviour variable score is lower. Therefore, our claim is that time spent online does not increase the probability of all risk categories examined, and thus the hypothesis can be confirmed only partially.

4. Elements of novelty and practical usefulness of the thesis

An element of novelty and practical usefulness of the thesis is drafting a model questionnaire comprised of nine general questions in order to assess the degree of exposure and the sexual risk categories encountered by teenagers in the online environment (*Chapter six of the thesis*). The results of the assessment can be used by parents or teachers for preventive purposes,

provided the teenagers answer the test questions beforehand. Thus, for instance, it could be revealed whether there are individuals in a class of pupils who are exposed to a high degree of risk and require increased attention both from parents and teachers. The results of the questionnaire will show not only de degree of exposure of the teenager to three levels of sexual risk, but the risk categories they might be most probably exposed to as well. The development of the risk categories was inspired by the Eu Kids Online study, which places the participating countries into five categories: "*lower use, lower risk" "lower use, some risk" "higher use, some risk" "higher use, higher risk"* and *"new use, new risk"* (Livingstone et al., 2011). The exposure test, however, use only 3 levels of risk instead of 5, applied to individuals instead of countries.

The predictive models presented above resulted in the odds ratios of exposure to different online risks (*sexting* via sending and receiving materials with sexual content, meeting with strangers, as well as nude pictures being requested by strangers) and factors extracted through principal component analysis (*sections 5.1.1.2., 5.1.2.2. and 5.5.2. of the thesis*). These data were used in the construction of the model.[1]

According to the test, the teenager will have to indicate their sex, and then answer the following questions, indicating a score of 1 to 5 (except sex, where the value for the male sex is 1 and the value for the female sex is 0).[2]

After performing the calculations, we receive the teenager's degree of exposure to each sexual risk category encountered while using social networks; by performing a few simulations with cases of risk chosen from our own database, three levels of risk were established: low risk of exposure, medium risk of exposure and high risk of exposure, according to *Table 8*:

Table 8 – Levels according to risk categories

	Low risk	Medium risk	High risk
Sending materials with sexual content	< 0.66	0.67 – 0.83	> 0.84
Receiving materials with sexual content	< 0.5	0.51 - 0.54	> 0.55
Meeting unknown persons encountered online	< 0.46	0.47-0.52	> 0.53

[1] *Sexting*: sending sexual content: ((Question1 * 0.9) + (Question2 * 0.2)) / 2
Sexting: receiving sexual content: ((Question1 * 0.3) + ((Question3 * 0.742 + Question4 * 0.739 + Question5 * 0.623) * 0.3)) / 2
Meeting with strangers: ((Question1 * 0.3) + ((Question3 * 0.742 + Question4 * 0.739 + Question5 * 0.623) * 0.2) + ((Question6 * 0.749 + Question7 * 0.742 + Question8 * 0.473) * 0.2) + Question9 * 0.2)/4
Nude pictures being requested by strangers: (Question3 * 0.742 + Question4 * 0.739 + Question5 * 0.623) / 3 * 0.8.

[2] The test questions are: 1.Sex of the teenager M/F. 2.How much time does the teenager spend offline with their friends? 3. How much personal data is public on the teenager's account? 4. To what extent is the teenager willing to accept friend requests from unknown persons? 5. How many friends does the teenager have on online social networks? 6.How many social networking sites does the teenager use? 7.How much time does the teenager spend on social networks? 8.What is the extent of parental involvement with the teenager? 9. To what extent does the teenager consider themselves religious?

Nude pictures being requested by strangers	< 1.68	1.69 - 2.09	> 2.1

This model regarding the degree of exposure to risks of a sexual nature online was verified and is valid in the context of the database used in this study. A more general applicability would require additional research and the collection of a new dataset, which, however, is beyond the scope of this study.

The stages of developing and administering the questionnaire about the exposure to risks of a sexual nature encountered online are given in *Fig. 7*. In the *first stage*, the odds ratio obtained through logistic regression was employed, and this data formed the basis of developing the nine questions. In the case of online behaviour factors 1 and 2 (resulting from principal component analysis), which were also included in the questions, each component was kept with their initial weight. Thus, in *stage two* of the development of the model, the answers to the nine questions were codified appropriately. These answers represent weighted scores included in the four mathematical formulae for each risk category. In *stage three*, the level of risk to which the teenager is exposed to can be identified, and in *stage four*, preventive intervention can be accomplished.

5. Final conclusions

Part I of the thesis focuses on theoretical aspects starting from the motivation and timeliness of the topic, which is mainly found in the fact that the number of teenagers who have access to the internet and use social networking sites has increased in past years, and respectively, the cases of sexual abuse connected to the use of these online platforms have multiplied (*sub-chapter 1.1. of the thesis* – the motivation and timeliness of the topic). The evolution of social networks was presented in *sub-chapter 1.3 of the thesis,* and the sociological theories and perspectives developed around the internet and social networks were debated in *sub-chapter 1.4 of the thesis.*

The risks of a sexual nature that may be encountered on social networks were defined (*sub-chapter 1.2. of the thesis*). The legal aspects as well as those related to the protection of minors in an online environment were analysed in *chapter two of the thesis.*

A vast collection of sources was perused concerning the area studied by performing a meta-analysis, and the most recent studies and issues that the literature is concerned with were highlighted (*chapter three of the thesis*).

The second part of the thesis presents the methods (*chapter four of the thesis*) and results (*chapter five of the thesis*) of the study.

Quantitative research yielded the following results:

- the sex of the teenagers presents significant associations with the phenomenon of *sexting* (both in the case of sending as well as in the case of receiving sexual content), and respectively, *cyber-bullying* (cases of active or passive subjects of online harassment), in the sense that boys are involved to a greater degree in such risky activities;
- parents' employment abroad is associated with receiving sexual content by the teenagers;
- the religion of pupils seems to be in relationships of association with the risk of exposure to nude pictures being requested by strangers, in the sense that neo-Protestants, Eastern Orthodox and Roman Catholics are more reticent when it comes to online activities;
- teenagers who read more have a higher tendency to use security settings;

After the logistic and multiple regression calculations (*sub-chapters 5.2.3., 5.2.4. and 5.3.3 of the thesis*), the following points were revealed:

- exposure to the risk of sending sexual content is 9 times more probable in male pupils than in female pupils;
- exposure to the risk of sending sexual content is 2 times more probable in pupils who pursue offline activities for a considerable length of time;
- exposure to the risk of receiving sexual content is 3 times more probable in pupils who reveal more personal data, accept friend requests by strangers and have a large number of friends;
- exposure to the risk of receiving sexual content is 3 times more probable in male pupils than in female pupils;
- exposure to the risk of nude pictures being requested by unknown persons is almost 8 times more probable in pupils who reveal more personal data, accept friend requests by strangers and have a large number of friends;
- exposure to the risk of meeting with unknown persons is 3 times more probable in male pupils than in female pupils;
- exposure to the risk of meeting with unknown persons is over 2.5 times more probable in pupils who reveal more personal data, accept friend requests by strangers and have a large number of online friends;
- exposure to the risk of meeting unknown persons is over 2.3 times more probable in pupils with a large number of accounts on social networking sites, more time spent online and where parental involvement is lower;
- exposure to the risk of meeting with unknown persons is over 2 times more probable in pupils who consider themselves believers than in pupils who do not consider themselves to be believers;

The qualitative data (which were presented alongside the quantitative ones) revealed, after the teenager focus group, the following main points:

- the most widely used networks are *Facebook, Instagram* and *Snapchat*: these are also the favourites of the pupils;
- the pupils are bothered by the online presence of adults: the applications *Instagram* and *Snapchat* represent a place of refuge;
- children had indicated a false age on *Facebook* in order to have access to restricted materials;
- social networks are used more predominantly on mobile phones;
- the pupils are preoccupied with the security settings of their accounts with the aim of limiting the viewing of their posts by adult persons (parents, relatives, family friends) and by unknown persons;
- *Snapchat* is considered to be the application which provides the greatest degree of privacy to its users.

With regard to parents, it has been found that most of the parents taking part in the focus group had been actively involved in the child's behaviour in cyberspace, going as far as restricting the teenagers' activities on social networking sites. In light of the fact that the teenagers' parents are also active users of social networks, they possess relatively much information about this topic. The parents showed worry over the latest trends of mobile applications where they are no longer able to exercise their parental control.

With regard to the high-school teachers taking part in the interviews, it was found that they are somewhat preoccupied with the topic of social networks. They believe that using these platforms represents a negative impact in the teenagers' development: addiction, loneliness, isolation, voluntary exposure of private information, harassment, negative entourage and meeting with unknown persons. However, the teachers do not discount the positive effects of social networks, as long as these are used in a conscious manner by the pupils. They identify several important factors in the digital empowerment of young people, such as the parental education of the child, communication with the parents, social environment, the pupil's personality and, last but not least, school.

In order to present the results as consistently as possible, the hypotheses formulated were tested (*sub-chapter 4.4. of the thesis*).

One point of novelty provided by the study is found in *Chapter six of the thesis*: it was found that despite the existence of awareness-raising programmes about the safe use of the internet, there are no websites intended for teenagers that would help them to check their own level of exposure to risk in the online environment. To combat the situation, we propose launching an online

platform that would enable teenagers to review their risk status. To this end, a model test was developed to identify teenagers who are more exposed to certain risk categories of a sexual nature encountered in the online environment. The test, based on a questionnaire, is meant to support parents or teachers in the effective and early prevention of abuse cases.

SELECTED BIBLIOGRAPHY

Alexandrescu, G. (2014). Ghid juridic privind promovarea şi respectarea drepturilor copilului, accessed: 14.05.2016, http://salvaticopiii.ro/upload/p0001000100010003_Ghid%20Juridic.pdf

Antal, I., & László, É. (2008). Victimizarea sexuală online a adolescenților din Cluj-Napoca. Posibilități de prevenire. *Beneficii şi riscuri ale utilizării internetului în rândul copiilor şi adolescenţilor*, 111.

Anderson, M., & Jiang, J. (2018). Teens, Social Media & Technology 2018. Washington, DC: Pew Internet & American Life Project. Retrieved June, 3, 2018.

Barbovschi, M. (2008). Să întâlnim „străinii". Comportamentul adolescenților de întâlnire online-offline. Beneficii şi riscuri ale utilizării internetului în rândul copiilor şi adolescenţilor, Presa Universitară Clujeană. 45-71.

Domokos K. (2014). Cyberbullying: Zaklatás elektronikus eszközök használatával. Alkalmazott Pszichológia.14 (1):59-70, accessed: 17.05.2016, http://ap.elte.hu/wp-content/uploads/2014/05/APA_2014_1_Domonkos.pdf

Haddon, L., & Livingstone, S. (2014). The relationship between offline and online risks. In Feilitzen, C. and Stenersen, J., (eds.) Young people, media and health: risks and rights. The Clearinghouse Yearbook 2014, Goteborg, Nordicom, pp. 21-32. ISBN 9789186523893

Hasebrink, U. (2014). Children's changing online experiences in a longitudinal perspective. accessed:11.05.2016, http://eprints.lse.ac.uk/60083/1/__lse.ac.uk_storage_LIBRARY_Secondary_libfile_shared_repository_Content_EU%20Kids%20Online_EU%20Kids%20Online_Longitudinal_report.pdf_2014.pdf

Hasebrink, U., Görzig, A., Haddon, L., Kalmus, V., & Livingstone, S. (2011). Patterns of risk and safety online: In-depth analyses from the EU Kids Online survey of 9-to 16-year-olds and their parents in 25 European countries. accessed: 12.05.2016, http://eprints.lse.ac.uk/39356/1/Patterns_of_risk_and_safety_online_%28LSERO%29.pdf

Hasebrink, U., Livingstone, S., Haddon, L., & Olafsson, K. (2009). Comparing children's online opportunities and risks across Europe: Cross-national comparisons for EU Kids Online. EU Kids Online.

Kalmus, V., Blinka, L., & Ólafsson, K. (2015). Does it matter what mama says: evaluating the role of parental mediation in European adolescents' excessive internet use. *Children & Society*, *29*(2), 122-133.

Lenhart, A. (2009). Teens and Sexting: How and why minor teens are sending sexually suggestive nude or nearly nude images via text messaging. accessed: 17.05.2016, http://www.ncdsv.org/images/pewinternet_teensandsexting_12-2009.pdf

Lenhart, A., Duggan, M., Perrin, A., Stepler, R., Rainie, H., & Parker, K. (2015). Teens, social media & technology overview 2015. Pew Research Center [Internet & American Life Project].

Livingstone, S., Görzig, A., și Ólafsson, K. (2011). Disadvantaged children and online risk. accessed: 03.05.2015, http://eprints.lse.ac.uk/39385/1/Disadvantaged%20children%20and%20online%20risk%28LSERO%29.pdf

Livingstone, S. și Haddon, L. (2009) Eu Kids Online. Final Report. accessed: 17.08.2016, http://www.lse.ac.uk/media@lse/research/EUKidsOnline/EU%20Kids%20I%20(2006-9)/EU%20Kids%20Online%20I%20Reports/EUKidsOnlineFinalReport.pdf

Livingstone, S., Haddon, L., Görzig, A., și Ólafsson, K. (2011) EU kids online: final report. EU Kids Online, London School of Economics & Political Science, London, UK.

Mihăilescu, L., & Raţ,T. (2010). Reţelele sociale online din perspectiva securităţii. *Revista Română de Studii de Intelligence*, 29-41.

Mitchell, K. J., Finkelhor, D., & Wolak, J. (2003). The exposure of youth to unwanted sexual material on the Internet: A national survey of risk, impact, and prevention. Youth & Society, 34(3), 330-358.

Paraschiv,G. (2013). Creşterea Pericolului Pornografiei Infantile Pe Internet. *Acta Universitatis George Bacovia. Juridica*, (2), 445-460. accessed: 13.05.2016. Http://Juridica.Ugb.Ro/

Ringrose, J., Harvey, L., Gill, R., & Livingstone, S. (2013). Teen girls, sexual double standards and 'sexting': Gendered value in digital image exchange. Feminist Theory, 14(3), 305-323.

Russo, C. J., & Arndt, K. J. (2010). Technology and the Law: The Dangers of Sexting in Schools. School Business Affairs, 76(4), 36-38.

Salvați Copiii România.(2014). Studiu privind utilizarea internetului în familie.

accessed: 17.08.2016,
http://salvaticopiii.ro/upload/p0001000300010000_Raport%20cercetare%20safer%20internet%202014_web.pdf

Šmahel, D., & Blinka, L. (2012). Excessive internet use among European children. Children, risk and safety on the internet: Research and policy challenges in comparative perspective191, 204.

Tőkés, Gy. (2014). Oportunităţi online şi tipuri de utilizatori online în rândul tinerilor din românia. Revista Romana de Sociologie, 25.

O'Connell, R. (2003). A typology of child cybersexploitation and online grooming practices. accessed: 20.08.2016,
http://image.guardian.co.uk/sys-files/Society/documents/2003/07/17/Groomingreport.pdf

O'Keeffe G. S., & Clarke-Pearson K. (2011). The impact of social media on children, adolescents, and families. Pediatrics.127(4): 800-804.

Vasiu, I., Vasiu, L. (2011). Criminalitatea în cyberspaţiu. Editura Universul Juridic. Bucureşti.

Velicu, A., Mascheroni, G. şi Ólafsson, K. (2014). Riscuri și oportunități în folosirea internetului mobil de către copiii din România. Raportul proiectului Net Children Go Mobile. București: Ars Docendi.

Walker, J., & Moak, S. (2010). Child's play or child pornography: the need for better laws regarding sexting. *ACJS Today*, *35*(1), 3-9. accessed: 10.05.2016,
http://www.acjs.org/pubs/uploads/ACJSToday_February_2010.pdf

Willard, N. (2004) An Educator's Guide to Cyberbullying and Cyberthreats. accessed: 11.05.2016, http://cyberbully.org/docs/cbcteducator.pdf

Wollis, M. A. (2011). *Online Predation: A Linguistic Analysis of Online Predator Grooming* (Doctoral dissertation). accessed: 14.05. 2016,
http://dspace.library.cornell.edu/bitstream/1813/23125/2/Wollis,%20Melissa%20-%20Research%20Honors%20Thesis.pdf