

Behaviour of young Czechs on the digital network with a special focus on YouTube. An analytical study

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ABSTRACT

With the advent of the Internet, young people make up the largest percentage of the Czech population who spend the most time interacting with the digital network and the various tools it offers. In order to find out what activity they carry out within the digital network, this research was undertaken, which aims to find out how young Czechs spend their time when they are using the digital network. To this end, 27,177 young Czechs between the ages of 7 and 18 were sampled. ($n = 27,177$). Specifically, the aim was to find out which websites they spent the most time on, the types of social networks they used, the nature of the content they viewed, as well as whether they had suffered any kind of ill-treatment through the digital network. The results of the descriptive analyses allowed to elucidate that: (1): the young participants make use of visual social networks, such as Youtube; (2) most of the content they consume is linked to funny videos, challenges or gameplays; (3) It is of great concern that a large part of the sample has been the victim of verbal insults or cases of personal account theft or has been the victim of distribution of personal images without prior consent. Based on these results, it is intended to establish the focus on the possible consequences of these findings, especially in establishing prevention measures that confront the cyberbullying in view of the possible consequences.

1. Introduction

The advent of information and communication technologies (ICT) has brought about a major change in the way of life of young people today. According to Eurostat data (2015), four out of five young people use a computer and access the Internet daily. Likewise, there are more and younger people who use mobile devices, and addiction to these tools has been detected in several cases (Aznar, Kopecký, Romero, Cáceres, & Trujillo, 2020).

It is clear that the present generations are characterized by their obvious affinity to the Internet and the new media. Among the main reasons for this relationship is the interactivity and sociability that they provide, the possibility of creating new spaces of intimacy, customizing the messages, as well as providing unlimited access to any information in an immediate time (Finkelhor, 2014).

Today, young people are starting to make use of new media earlier and earlier. According to previous research results, systematic use of electronic media begins as early as age 7–11 (Lange, & Osiecki, 2014). The constant increase in the number of electronic devices, as well as the intuitive nature of the different current computer apps, means that

more and more young people are using these tools before (Jeske and Van Schaik, 2017).

In particular, people's social networks are the most successful medium for youth. These are virtual platforms through which information and communication between different people is managed. Likewise, in these virtual contexts people meet and relate to each other according to their social, economic, professional and even sexual interests (Dans, 2014). It is clear that the immersion of technology in the lives of young people has provided innumerable benefits. However, it is important to focus on the possible threats inherent in the use of these tools, since this is the sector of the population that is most vulnerable to the risks presented by the digital environment (Romero, & Aznar, 2019). This is the case with Internet addiction, which has been the subject of a great deal of research, which has managed to determine the connection between addiction to digital devices and how it influences the behaviour of young people, and even the appearance of depressive and anxiety disorders (Moreno, Gómez-García, López, & Rodríguez, 2020; Saquib, 2020; Tateno et al., 2019; Sánchez, Ruiz, & Sánchez, 2015; Hawi, 2012). Thus, the literature deepens the link between the feed-back that young people receive through social networks and the

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existing relationship with young people's self-esteem and self-concept (Romero, Campos, & Gómez-García, 2019).

By the other hand, Among the possible risks that are happening to the use of social networks, is the cyberbullying, being the most frequented in recent years (Kopecný, & Szotkowski, 2017; Álvarez, Berreiro, & Núñez, 2017). Rogers (2010) established a classification of which are the main conflicts that derive from this concept in the network (Kyriacou, & Zuin, 2015):

1. Flaming: sending angry, rude and vulgar messages about a person to an online group or person via email or other text messages;
2. Online harassment: repeatedly sending offensive messages via email or text to the other person;
3. Cyber-stalking: harassment that includes online threats of harm;
4. Denigration or trolling: sending harmful, untrue or cruel statements about a person to other people or posting such materials online;
5. Masquerading: pretending to be someone else and sending or posting materials about the person that makes the victim look bad;
6. Outing: sending or posting material about a person that contains sensitive, private or embarrassing information.

It is not only the experts who qualify and classify the risks of the network. According to Byrne and Trushell (2013), the actions that teenagers perceive as low risk would be: searching for information, reading online news articles. As average risk actions would be: access to pretentious mail, downloading games sell on craigslist. Finally, teenagers would distinguish as high-risk actions buying on unknown sites or playing online games among themselves (Cabero, & Marín, 2014).

In connection with this idea, another of the most popular activities among young people is the viewing of videos through Youtube (Aznar, Trujillo, Romero, & Campos, 2019). It is a digital platform that has specific audiovisual content on multiple topics created by different users who upload this content to the network (Caron, Raby, Mitchell, & Thewissen-LeBlanc, 2017). According to McRoberts et al (2016) he calls a specific risk associated with this material, which is the persuasion of young people to imitate the same behaviour they see in the videos. Thus, previous studies of an international nature determined that children and adolescents used to consume audiovisual content linked to four themes: sex, drugs, bullying and pregnancy (Montes, García, & Menor, 2018; Ahern, Sauer, & Thacker, 2015). This work also refers to how young people pay attention to the various preventive videos that institutions publish to try to reduce risks on the digital network (García, & Montes, 2020). It is not only the phenomenon of teenagers consuming and sharing a certain video, but they can become creators of audiovisual content themselves (Tolson, 2010). This is, for example, the case of the large number of young people who in recent years have devoted themselves to expressing their love of video games by making and watching videos of other people playing these devices: the so-called gameplays (Aleksić, 2018).

On the other hand, previous work has shown that one in four young people admit that they have seen something that has bothered them on the Internet. Similarly, a large percentage claim to have received unpleasant messages from Whatsapp (Lareki, de Morentin, Altuna, & Amenabar, 2017). Other existing risks were also detected, such as the sharing of personal passwords with outsiders, an attitude that has been observed to be prevalent among several young people who do not measure the risk of such an act (Happ, Melzer, & Steffgen, 2016). On the other hand, online activity exposes children and adolescents to a wide variety of criminal acts, such as exposure to deviant sexual content and identity theft (Smorti, Milone, González, & Rosati, 2019; Smaniotto, & Melchiorre, 2018). Studies have reported that young people who spend time online are exposed to a variety of sexual and violent material, including the risk of meeting dangerous people (Donoso, Rubio, & Vila, 2018).

In this sense, over the years, phenomena such as sexting have emerged, understood as an act of sending photos capturing nudity, that

is, through mobile phones or other electronic means. Studies on this subject shows that, at present, the number of young people who carry out this practice on the networks is rising exponentially (Gasso, Klettke, Agustina, & Montiel, 2019; Kopecný, & Szotkowski, 2017).

In view of this situation, it is of interest to know what activity young people carry out on the Internet: what kind of habits they have, what material they consume and of what nature.

2. Material and methods

2.1. Research identification

The *Czech Children in the Cyberworld* research has been conducted by the Centre for the Prevention of Risky Virtual Communication at the Faculty of Education of Palacký University Olomouc, in cooperation with O2 Czech Republic. It builds upon research projects on risky behaviour of children and adults in on-line environment, completed by the same team in 2015–2018, and particularly upon the following studies: *The risks of Internet communication IV* (2014) and *Sexting and risk behaviour of Czech Kids in Cyberspace* (2017), complementing these with new findings, unique in the Czech Republic. The analysis of dataset and interpretation of output was realized in cooperation with the research group AREA (HUM-672), from the Department of Didactics and School Organization of the University of Granada

The research has been funded by O2 Czech Republic under so called contractual research. No public funding or EU funding have been drawn.

2.2. Procedure

We chose anonymous on-line questionnaire as the primary research tool. It was distributed to primary/lower secondary schools in all regions within the Czech Republic, where data collection was then conducted. Data collection was conducted from 1st February 2019 to 1. May 2019. Evaluation and interpretation of partial outputs were completed in the following weeks. We used the Statistica software for detailed evaluation.

2.3. Participants

27 177 respondents aged 7–17 from all Czech regions participated in the research, and boys constituted 49,83% of the sample. Average age of all respondents was 13,04 years (median 13, modus 12, variance 4,34). The research sample is representative in the 11–17-year age categories, (by age and gender, correlation with data from the Czech Statistical Institute for 2018).

3. Results

3.1. Children and social networks

In on-line environment, children consume content of any kind – in this research, we focus on web sites and on-line services (particularly social networks) that children actively use, and on the other hand, we explore the video production watched, more or less regularly, by children.

3.1.1. Which websites do children visit most often?

Of course, we asked which websites our child respondents visit. We divided our respondents into two age categories – under 13 and those who have already reached or exceeded this age. We analysed each of the groups separately. We divided the research sample on purpose – with most on-line services, 13 is the threshold age for legal use of the particular service. However, we assumed that even children under 13 use these services and therefore are in breach of usage policies. This has been later confirmed (see below).

Notice: In our research, we don't take into consideration the age limit imposed by the Czech government under the GDPR regulations, likely to be 15 once the legislative process is completed. This process was finished in the May 2019 - from this date an age limit for using of online services including personal data processing is 15 years (without confirmation of parents) (see Tables 1 and 2).

As it is clear from the data above, the prevailing content types in both groups are social networks, followed by video content servers (YouTube) and on a positive note – third place in both age groups is taken by on-line encyclopaedias (Wikipedia etc.).

Risks captured by this research include the use of social networks by young children – 23% children from the entire research sample (51.75% children under 13) use social networks although they haven't reached the minimum age for such use. Also alarming is the use of video chatting services such as Omegle by children under 13 (7.5% children under 13 actively use Omegle and similar video chats).

3.1.1.1. Which specific social networks and other on-line tools do children actively use? With child respondents, YouTube dominates clearly¹, used by vast majority of Czech children (89.51%). Followed by Facebook, Facebook Messenger, Instagram as well as traditional e-mail or SMS.

The use of social networks grows gradually; over half of all respondents aged 11 use at least one of the social networks available. 80 percent of child respondents aged 16–17 actively use social networks (see Tables 3 and 4).

Since the last research focused on on-line services used by children (2017), we have got a new entry in the results: TikTok (formerly Musical.ly), actively used by more than one quarter of Czech children (28.48%).

Also interesting is to observe the age distribution of social networks that are dominating among child users. While children start actively using Facebook, Instagram and Snapchat at around the age of 12–14, TikTok is used at an earlier age of 10–11. This is caused by the nature of the service (sharing short videos with a music track), targeted particularly at child audience.

3.1.1.2. Facebook vs. instagram. If we look at Instagram and Facebook users under the age of 13, we find that the number of Instagram users in this age group outweighs Facebook. However, after 13 years of life, the number of Facebook users has been increasing, which may be due to various aspects: older children prefer a different type of content, not a purely visual approach, Facebook Messenger, etc. If we look at the development of the number of child users on Facebook in a longer time perspective, we can see a clear decrease - ie the transition of children to other types of social networks and services. Since 2012, the number of Facebook child users has decreased by about 20 percent and is still ongoing. However, this decline is not radical, steep, it does not apply that suddenly there is a year-on-year decline of perhaps 50 percent, children are leaving services gradually and just gradually getting used to trying more popular services.

3.1.1.3. Methodological problem – Facebook Messenger. Another problem is the perception of Facebook and Facebook Messenger from the perspective of children. Facebook Messenger (hereinafter referred to as Messenger) can be used in several ways - on the one hand, Messenger is integrated into the web form of Facebook, so it is part of it, so to be able to use it, we use Facebook. On the other hand, Messenger has been in the form of a separate mobile application and a separate website (www.messenger.com) since 2014, but it has the same/similar interface as on Facebook or Facebook embeds the Messenger interface. So if a

student uses Messenger in a web form via their Facebook account, they logically use both Facebook and FB Messenger. This is probably the case especially for older children who have become accustomed to using Facebook in a web form - for example, on a laptop or desktop home computer. In the research we asked children separately on FB Messenger - this is used by children about as often as Instagram. However, we do not know whether they have listed Facebook as the gateway to Messenger when choosing the service they use, but that would be speculation.

3.1.1.4. Which Internet search engines/browsers do children use actively? As for searching for information on-line, children use Google most often (84.08%). The second place, after a huge gap, is taken by Seznam.cz (the biggest Czech company focused on IT), used by 10% of Czech children. Bing search engine by Microsoft is barely used by Czech children (0.89%).

The domination of Google is also apparent in browsers – vast majority (70.63%) use Google Chrome to browse websites, followed, after a wide gap, by Safari (9.33%), Firefox (6.1%) and the Seznam.cz browser (6%). Microsoft Edge is used by less than 2% children.

3.2. Children and video content in on-line environment

Child Internet users are active consumers of video content from their early age. Therefore, we wanted to know what types of video they actively watch on video sharing servers and social networks – and what video content they encounter by accident (e.g. through context adds). In our research, we focused on the major services, i.e. Facebook, Instagram, YouTube, TikTok and Twitch.

We did not explore music production and music clips as such but rather videos actively created by youtubers, influencers and streamers. Therefore, music production is not listed as a separate category but it is rather included under most other categories.

We divided videos into several natural categories, however respondents were given the option to stray away from the provided categories and to define their own genre.

1. Funny videos (jokes, pranks)
2. Challenges
3. Let's play videos (recordings of computer games being played)
4. Vlogs
5. Fashion Haul videos
6. Unboxing videos
7. Food videos
8. Reaction videos (critical comments on other youtubers' videos)
9. Pornography/erotic videos
10. Videos showing violence (physical and mental, abuse, hate speech etc.)
11. Videos showing people with eating disorders (anorexia, extreme obesity)
12. Videos showing self-harm
13. Videos showing shocking and disgusting content (slaughterhouses, animals being killed)
14. Videos showing vandalism (destructing property)
15. Videos promoting terrorism
16. Videos focused on education (e.g. Khan Academy)
17. Videos focused on parkour/freerunning.

The video content leaderboards are dominated by various funny videos and jokes (pranks), ranked, with the exception of the Twitch streaming service, oriented on on-line game players) on the top for Facebook, Instagram, TikTok and other services (see Tables 5 and 6).

On YouTube, children actively consume all youtuber video content, whether it is various challenges, let's play videos, vlogs, fashion haul videos, unboxing videos, food videos or reaction videos. These are typical examples of youtuber production, including, among others,

¹ We classify YouTube both as a server primarily focused on sharing video content, and a social network as it allows individual users to create profiles and communicate with each other.

Table 1

What websites/Internet services are used by children under 13 (7–12) – summary data.

Website/Internet service	Total frequency (n)	Relative frequency (%)
Social networks	6106	51.75
Video sharing servers (e.g. YouTube, Vimeo, Stream etc.)	4850	41.10
On-line encyclopaedias (e.g. Wikipedia, CoJeCo etc.)	3578	30.32
Gaming related websites (on-line games, game manuals etc.)	3483	29.52
File storage (e.g. Hellspy, Ulož.to etc.)	2479	21.01
E-shops, second-hands, auction servers	1789	15.16
Streaming servers (e.g. Twitch etc.)	1307	11.08
Educational websites (Khan Academy, MOOC courses etc.)	901	7.64
on-line video chat services (e.g. Omegle, Ome.tv etc.)	890	7.54
News portals (e.g. Idnes.cz, Ihned.cz., Lidovky.cz etc.)	867	7.35
Pornography websites	335	2.84
Darknet websites	246	2.08
Violent content websites	162	1.37
Other	66	0.56
Not stated	1030	8.73

n = 11,800.

Table 2

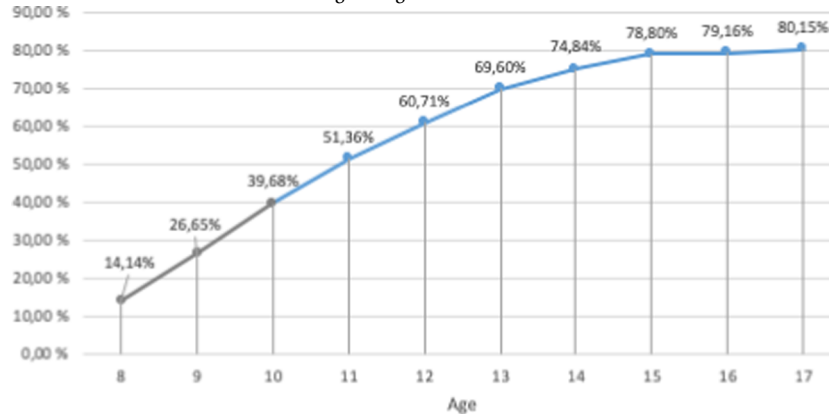
What websites/Internet services are used by children over 13 (13–17) – summary data.

Website/Internet service	Total frequency (n)	Relative frequency (%)
Social networks	11,282	75.61
Video sharing servers (e.g. YouTube, Vimeo, Stream etc.)	8343	55.91
On-line encyclopaedias (e.g. Wikipedia, CoJeCo etc.)	5853	39.23
E-shops, second-hands, auction servers	4265	28.58
File storage (e.g. Hellspy, Ulož.to etc.)	4192	28.09
Gaming related websites (on-line games, game manuals etc.)	3894	26.10
Streaming servers (e.g. Twitch etc.)	2970	19.90
Pornography websites	2698	18.08
News portals (e.g. Idnes.cz, Ihned.cz., Lidovky.cz etc.)	2581	17.30
Educational websites (Khan Academy, MOOC courses etc.)	1037	6.95
On-line video chat services (e.g. Omegle, Ome.tv etc.)	823	5.52
Darknet websites	608	4.07
Violent content websites	560	3.75
Other	29	0.19
Not stated	401	2.69

n = 14,921.

Table 3

Use of social networks in individual age categories.



n = 26,721, representative from 11 to 17.

product placement and other forms of advertisement.

As for harmful video content – the number of children purposefully searching for harmful content is relatively small. However, almost 12% children watch videos showing people with eating disorders, 8.7% videos showing various forms of violence, 8.6% videos containing self-harm, 8.6% videos showing shocking content (slaughterhouses, animals being killed etc.). Pornography on YouTube is watched by a minimum number of children (4%).

A very good news is that one fifth of children (22.04%) actively

watch educational videos on YouTube, such as the Khan Academy videos.






A great percentage of children also watch on-line videos focused on parkour/freerunning (44%), which can be seen as positive – these are sport activities requiring training, self-discipline, patience, self-control, etc. On the other hand, a range of these videos contain shots that are literally risky – parkour high above the ground (on factory chimneys, roofs), deep dives into a pool, etc.

Table 4
Which social networks do children use actively?

Social network/messenger/ service	Total frequency (n)	Relative frequency (%)
YouTube	24,325	89.51
Facebook	19,620	72.19
Facebook Messenger	18,746	68.98
Instagram	18,706	68.83
E-mail	17,925	65.96
SMS/MMS	17,114	62.97
WhatsApp Messenger	10,984	40.42
Snapchat	8699	32.01
TikTok	7741	28.48
Twitch	5740	21.12
Skype	5016	18.46
Pinterest	4907	18.06
Viber	3998	14.71
Tellonym	3571	13.14
Twitter	3328	12.25
Omegle	1200	4.42
Ome.tv	368	1.35
None	258	0.95
Lide.cz	251	0.92

n = 27,177.

Table 5
What videos do child users of social networks actively watch?

	Frequency (%)					
						Elsewhere
Funny videos (jokes, pranks)	5974(21.98)	10,438(38.41)	21,123(77.72)	4851(17.85)	1544(5.68)	862(3.17)
Challenges	1946(7.16)	4749(17.47)	18,210(67.01)	2797(10.29)	93(3.42)	633(2.33)
Let's play videos (recording of computer games being played)	980 (3.61)	1467(5.40)	16,641(61.23)	658(2.42)	4019(14.79)	834(3.07)
Vlogs	893(3.29)	3898(14.34)	15,579(57.32)	866(3.19)	570(2.10)	590(2.17)
Fashion Haul videos	1054(3.88)	3848(14.16)	9274(34.12)	892(3.28)	288(1.06)	816(3.00)
Unboxing videos	1012(3.72)	3632(13.36)	15,915(58.56)	932(3.43)	1006(3.70)	540(1.99)
Food videos	2531(9.31)	7000(25.76)	12,183(44.83)	1307(4.81)	674(2.48)	807(2.97)
Reaction videos (critical comments on other youtuber's videos)	990(3.64)	2448(9.01)	16,076(59.15)	1053(3.87)	1114(4.10)	495(1.82)
Pornography/erotic videos	574(2.11)	789(2.90)	1173(4.32)	499(1.84)	406(1.49)	4391(16.16)
Videos showing violence	918(3.38)	863(3.18)	2384(8.77)	417(1.53)	309(1.14)	1468(5.40)
Videos showing people with eating disorders	722(2.66)	1114(4.10)	3208(11.80)	488(1.80)	232(0.85)	1004(3.69)
Videos showing self-harm	811(2.98)	1334(4.91)	2356(8.67)	527(1.94)	352(1.30)	1139(4.19)
Videos showing shocking and disgusting content (slaughterhouses, animals being killed)	959(3.53)	1073(3.95)	2344(8.62)	418(1.54)	252(0.93)	1251(4.60)
Videos showing vandalism (destructing property)	1086(4.00)	1363(5.02)	4604(16.94)	504(1.85)	315(1.16)	919(3.38)
Videos promoting terrorism	749(2.76)	618(2.27)	1650(6.07)	377(1.39)	254(0.93)	1237(4.55)
Videos focused on education (e.g. Khan Academy)	908(3.34)	1219(4.49)	5990(22.04)	375(1.38)	257(0.95)	1568(5.77)
Videos focused on parkour/freerunning	1568(5.77)	3483(12.82)	11,988(44.11)	1537(5.66)	540(1.99)	782(2.88)
N/A	27,177(100)					

3.3. Children and cyber aggression in online environment

First, it has to be said that in the last year (2018), 41.29% children of our sample have experienced at least one form of cyber aggression, totalling to 11,221 incidents. As expected, classic verbal aggression dominates (experienced by approx. 27% Czech children), followed by account breach (12.64%) and misuse of a humiliating photo (12.25%) (see Table 7).

3.3.1. Other potentially or actually risk situations

For the first time, we focused on various kinds of risk situations that children face on-line. For instance, 13% respondents report that they have purchased products on the Internet and paid for it but it has never been delivered. Young Internet users actually fell victim to on-line fraud, the most frequent type of on-line crime.

Also, a range of children report their experience with various awkward situations when engaged in on-line gaming – for instance,

10% children report that their virtual character or item was stolen.

Interestingly, 7–13% children report that their parents have uploaded their photos or videos to the Internet, without consent. This is so called sharenting – excess on-line sharing of content picturing the child, by the child's parents.

Over 1100 respondents (4%) in our sample also report that someone has cloned their profile. Cloned profiles are often used to perpetrate the victim's on-line circles, e.g. on a social network: first, the attacker clones someone of your on-line friends and then asks you (from the cloned profile) to be added to your friends. Almost a half of users who have received a friend request actually added the cloned profile to their friend list. By doing this, the attacker gains access to profile information of your friends, that are otherwise hidden to the public.

4. Discussion

The behaviour of young Czechs regarding the use of the Internet in their lives continues to be a global concern for the research community. This research further demonstrates the affinity between social networks and young Czechs and their regular use of these tools from an early age (Finkelhor, 2014). However, they can lead to infringement of usage policies, as is the case with the first part of the sample (young people

from 7 to 12 years old), who are not allowed to use this type of device.

For this reason, this study aimed to find out which websites were most visited by young Czechs, with particular emphasis on the most widely used social networks and the nature of the content viewed. In this context, the sample obtained, which we consider representative, showed that young Czechs spend most of their time on the Internet visiting social networks and making use of them. Similarly, a large number of the subjects analysed stated that they spend much of their time on multimedia distribution platforms such as Youtube. In this case, a line is shown that coincides with previous studies that affirm the idea of the hegemony of Youtube in young people in other international contexts (Aznar, Trujillo, Romero, & Campos, 2019; Sánchez et al., 2015; Hawi, 2012).

On the other hand, taking into account the type of social network used by young people, it was observed that in addition to Youtube, social networks such as Facebook, Messenger or Instagram are ahead of others like Whatsapp or email. In the same way, the proliferation of

Table 6
What videos do children watch on YouTube?

	Total frequency (n)	Relative frequency (%)
Funny videos (jokes, pranks)	21,123	77.72
Challenges	18,210	67.01
Let's play videos (recordings of computer games being played)	16,641	61.23
Reaction videos (critical comments on other youtubers' videos)	16,076	59.15
Unboxing videos	15,915	58.56
Vlogs	15,579	57.32
Food videos	12,183	44.83
Videos focused on parkour/freerunning	11,988	44.11
Fashion Haul videos	9274	34.12
Videos focused on education (e.g. Khan Academy)	5990	22.04
Videos showing vandalism (destructing property)	4604	16.94
Videos showing people with eating disorders (anorexia, extreme obesity)	3208	11.80
Videos showing violence (physical and mental, abuse, hate speech etc.)	2384	8.77
Videos showing self-harm.	2356	8.67
Videos showing shocking and disgusting content (slaughterhouses, animals being killed)	2344	8.62
Videos promoting terrorism	1650	6.07
Pornography/erotic videos	1173	4.32

n = 27,177.

users that a novel social network such as Tik Tok has gained was observed. From this idea, it can be inferred that young Czechs bet on those social networks that provide mostly visual content, leaving in second place those that establish the focus on messages and information through the written channel (Caron, Raby, Mitchell, & Thewissen-LeBlanc, 2017).

By looking more closely at the content of the material displayed, the results show that the young Czechs mostly display content related to games, challenges or gameplays. These are videos which, a priori, are not problematic. However, there are more and more videos of this typology that cover the realization of risky challenges that can influence young people to do it, so it will be necessary to establish a preventive control in this typology of videos (Vera et al, 2019). Similarly, video game addiction could be another consequence of the excessive consumption of content associated with this type of device (Aleksić, 2018).

Finally, the aim was to find out whether young Czechs had experienced any situations in which they had been victims of cyber abuse, bad comments or casuistry of this nature. The results of the analysis of responses were that many of them had been at least verbally abused by the cyber community on occasion, even leading to humiliation and personal humiliation. To a lesser extent, but it is also pertinent to mention that some of the subjects analyzed had suffered situations of humiliation after having distributed and shared naked images of themselves or in situations that led to personal humiliation. In relation to this situation, there have been numerous cases in which the online accounts of young people on social networks have been stolen, and

therefore their content has been disseminated by other means, causing concern among the young victims of this incident. These are, therefore, cyberbullying cases that seriously infringe on the victim, and that can lead to worrying clinical diagnoses, such as depression, asymptomatic or suicide attempts (Young, Subramanian, Miles, Hinnant, & Andsager, 2017). Therefore, cyberbullying is a real threat that torments many young Czechs today. Based on this context, effective measures must be established to promote its prevention and eradication (Kopecký, & Szotkowski, 2017).

5. Conclusion

Children are very active in the on-line world and they use a large number of services, communication tools, instant messengers and social networks. However, they often use these in breach of the respective usage policies – for instance, over a half of children aged 7–12 (51.75%) use social networks although these are not designed for them and their usage policies only allow users aged 13 or above.

Good news is that one third of children actively use various educational resources, particularly on-line encyclopaedias (Wikipedia) and generally Google search with the intention to find specific information.

As for on-line tools, social networks and messengers used by children, YouTube dominates, followed by Facebook (gradually losing popularity among children), Facebook Messenger and Instagram. An alarming news is that the number of child TikTok (a social network/service) users grows rapidly, currently used by over one quarter of

Table 7
Selected forms of cyber aggression and on-line risks that children encountered.

Risk	Total frequency (n)	Relative frequency (%)
At least one of the forms of cyber aggression experienced last year:	11,221	41.29
Someone harmed me verbally through the Internet or a mobile phone (humiliated me, offended me, ridiculed me or otherwise embarrassed me verbally)	7383	27.17
Someone disseminated, through the Internet or a mobile phone, a photo intended to humiliate me, ridicule me or otherwise embarrass me	3330	12.25
Someone disseminated, through the Internet or a mobile phone, a private photo of myself	919	3.38
Someone disseminated, through the Internet or a mobile phone, a video intended to humiliate me, ridicule me or otherwise embarrass me	1768	6.51
Someone disseminated, through the Internet or a mobile phone, an audio footage intended to humiliate me, ridicule me or otherwise embarrass me	1038	3.82
Someone threatened me or intimidated me through the Internet or a mobile phone	2649	9.75
Someone blackmailed me through the Internet or a mobile phone (if I don't comply, they would harm me or someone close to me, etc.)	1580	5.81
Someone accessed, without my permission, my on-line account (e.g. e-mail, social network account etc.)	3435	12.64
Someone misused my on-line account to get me into trouble (e.g. harassed my friends in my name)	1350	4.97
Someone registered a fake social network profile in my name	1870	6.88

Czech children (28.48%). On the other hand, it is interesting that TikTok attracts very young children, often 10–12-year-old, while the number of active users aged 13+ decreases.

In relation to cyberbullying, the number of Tellonym child users is growing (currently used by approx. 13% Czech children) – Tellonym is a tool often used for cyber-bullying purposes on Instagram.

We dedicated a separate part of our research to on-line content consumption. For the video content analysis, we used Facebook, Instagram, YouTube, TikTok and Twitch. Children actively watch funny videos in particular, or various kinds of challenges, lets play videos, etc.

As for harmful content – this is watched by a few children, with the exception of videos showing people with eating disorders (11.80 % children watching these on YouTube), videos showing violence (8.77% children watching these on YouTube), videos showing self-harm (8.67% children watching these on YouTube) and videos showing shocking and disgusting content (8.62% children watching these on YouTube).

A very good news is the rate of watching educational content – one fifth of children watch this type of video on YouTube.

Monitoring risky behaviour in on-line environment constitutes a regular part of our research projects. We can be little optimistic about our research results because since our last survey in 2014, the rates of all observed cyber aggression forms have decreased. As expected, classic verbal aggression dominates (experienced by approx. 27% Czech children), followed by account breach (12.64%) and misuse of a humiliating photo (12.25%).

As a new element, we included the monitoring of various potential or actual risk situations, such as on-line fraud. 13% children report to have purchased a product on-line, paid for it, but the product has never been delivered – these respondents have probably fallen victim to on-line fraud. Interestingly, respondents also confirm the presence of so called sharenting – over 1900 children (7.8%) from our sample confirm that parents have uploaded a photo or video of them, without consent.

Finally, in reference to the limitations of the study, it could consist of the method through which the choice of the study sample has been carried out, being through convenience. On the other hand, as far as future lines of research are concerned, the need to continue knowing the attitudes and behaviour of young people from different contexts regarding the use of the Internet and its different platforms such as Youtube is advocated. It would be interesting to promote comparative studies between different countries to analyse possible contrasts and similarities between study populations.

In conclusion, knowing the attitudes of children and young people in the digital environment is of vital importance, with the aim that from the educational system are promoted functional policies that promote prevention and training to the many risks that occur to this medium and, therefore, young people can navigate through this platform safely and responsibly.

CRediT authorship contribution statement

Kamil Kopecký: Conceptualization, Formal analysis, Writing - original draft, Supervision. **Francisco-Javier Hinojo-Lucena:** Writing - review & editing, Supervision. **René Szotkowski:** Validation, Investigation. **Gerardo Gómez-García:** Methodology, Formal analysis, Investigation, Writing - original draft.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

Ahern, N. R., Sauer, P., & Thacker, P. (2015). Risky behaviors and social networking sites: How is YouTube influencing our youth? *Journal of Psychosocial Nursing and Mental*

- Health Services*, 53(10), 25–29. <https://doi.org/10.3928/02793695-20150908-01>.
- Aleksić, V. (2018). Early adolescents' digital gameplay preferences, habits and addiction. *Croatian Journal of Education*, 20(2), 463–500. <https://doi.org/10.15516/cje.v20i2.2583>.
- Álvarez, D., Barreiro, A., & Nuñez, J. C. (2017). Cyberaggression among adolescents: Prevalence and gender differences. *Comunicar*, 50(25), 89–97. <https://doi.org/10.3916/c50-2017-08>.
- Aznar, I., Kopecký, K., Romero, J. M., Cáceres, M. P., & Trujillo, J. M. (2020). Patologías asociadas al uso problemático de internet. Una revisión sistemática y metaanálisis en WOS y Scopus. *Investigación Bibliotecológica: archivonomía, bibliotecología e información*, 34(82), 229–253.
- Aznar, I., Trujillo, J. M., Romero, J. M., & Campos, M. N. A. (2019). Generación Niños YouTubers: análisis de los canales YouTube de los nuevos fenómenos infantiles. *Píxel-Bit. Revista de Medios y Educación*, 56, 113–128. <https://doi.org/10.12795/pixelbit.2019.i56.06>.
- Byrne, K., & Trushell, J. (2013). Education undergraduates and ICT enhanced academic dishonesty: A moral panic? *British Journal of Educational Technology*, 44(1), 6–19. <https://doi.org/10.1111/j.1467-8535.2012.01381.x>.
- Cabero, J., & Marín, V. (2014). Posibilidades educativas de las redes sociales y el trabajo en grupo. Percepciones de los alumnos universitarios. *Comunicar*, 42, 165–172. <https://doi.org/10.3916/c42-2014-16>.
- Caron, C., Raby, R., Mitchell, C., Thewissen-LeBlanc, S., & Prioletta, J. (2017). From concept to data: Sleuthing social change-oriented youth voices on YouTube. *Journal of Youth Studies*, 20(1), 47–62. <https://doi.org/10.1080/13676261.2016.1184242>.
- Dans, I. (2014). *Posibilidades educativas de las redes sociales*. Universidad de la Coruña.
- Donoso, T., Rubio, M., & Vila, R. (2018). Adolescence and gender violence 2.0: Concepts, behavior and experiences. *Educacion XXI*, 21(1), 109–134.
- Eurostat (2015a). Information society statistics-households and individuals. Retrieved from: http://ec.europa.eu/eurostat/statistics-explained/index.php/Information_society_statistics_-_households_and_individuals.
- Finkelhor, D. (2014). Commentary: Cause for alarm? Youth and internet risk research—a commentary on Livingstone and Smith (2014). *Journal of child psychology and psychiatry*, 55(6), 655–658. <https://doi.org/10.1111/jcpp.12260>.
- García, A., & Montes, M. (2020). Subject matter of videos for teens on YouTube. *International Journal of Adolescence and Youth*, 25(1), 63–78. <https://doi.org/10.1080/02673843.2019.1590850>.
- Gassó, A. M., Klettke, B., Agustina, J. R., & Montiel, I. (2019). Sexting, mental health, and victimization among adolescents: A literature review. *International Journal of Environmental Research and Public Health*, 16(13), 2364. <https://doi.org/10.3390/ijerph16132364>.
- Happ, C., Melzer, A., & Steffgen, G. (2016). Trick with treat e Reciprocity increases the willingness to communicate personal data. *Computers and Human Behavior*, 61, 372–377.
- Hawi, N. S. (2012). Internet addiction among adolescents in Lebanon. *Computers in Human Behavior*, 28(3), 1044–1053. <https://doi.org/10.1016/j.chb.2012.01.007>.
- Jeske, D., & Van Schaik, P. (2017). Familiarity with Internet threats: Beyond awareness. *Computers & Security*, 66, 129–141. <https://doi.org/10.1016/j.cose.2017.01.010>.
- Kopecký, K., & Szotkowski, R. (2017). Specifics of cyberbullying of teachers in Czech schools – A national research. *Informatics in Education*, 16(1), 103. <https://doi.org/10.15388/infedu.2017.06>.
- Kyriacou, C., & Zuin, A. (2015). Cyberbullying of teachers by students on YouTube: Challenging the image of teacher authority in the digital age. *Research Papers in Education*, 31(3), 1–19. <https://doi.org/10.1080/02671522.2015.1037337>.
- Lange, R., & Osiecki, J. (2014). *Teens and Internet*. Warszawa: Pedagogium.
- Lareki, A., de Morentin, J. I. M., Altuna, J., & Amenabar, N. (2017). Teenagers' perception of risk behaviors regarding digital technologies. *Computers in Human Behavior*, 68, 395–402. <https://doi.org/10.1016/j.chb.2016.12.004>.
- McRoberts, S., Bonsignore, E., Peyton, T., & Yarosh, S. (2016). Do It for the viewers!: Audience engagement behaviors of young YouTubers. *Proceedings of the 15th IDC international conference on interaction design and children* (pp. 334–343). <https://doi.org/10.1145/2930674.2930676>.
- Montes-Vozmediano, M., García-Jiménez, A., & Menor-Sendra, J. (2018). Teen videos on YouTube: Features and digital vulnerabilities. *Comunicar. Media Education Research Journal*, 26(1), <https://doi.org/10.3916/c54-2018-06>.
- Moreno, A. J., Gómez-García, G., López, J., & Rodríguez, C. (2020). Internet addiction in the web of sciences database: A review of the literature with scientific mapping. *International Journal of Environment Research and Public Health*, 17, 2753. <https://doi.org/10.3390/ijerph17082753>.
- Rogers, V. (2010). *Cyberbullying: Activities to Help Children and Teens to Stay Safe in a Texting, Twittering, Social Networking World*. Jessica Kingsley Publishers.
- Romero, J. M., & Aznar, I. (2019). Análisis de la adicción al smartphone en estudiantes universitarios. *Revista De Educación a Distancia*, 19(60), <https://doi.org/10.6018/red/60/08>.
- Romero, J. M., Campos, N., & Gómez-García, G. (2019). Follow me y dame like: Hábitos de uso de Instagram de los futuros maestros. *Revista interuniversitaria de formación del profesorado*, 94, 83–96. <https://doi.org/10.6018/reifop.17.3.204071>.
- Saib, J. (2020). Internet addiction among Saudi Arabian youth. *International Journal of Health Sciences*, 14(2), 1.
- Sánchez, J., Ruiz, J., & Sánchez, E. (2015). Usos problemáticos de las redes sociales en estudiantes universitarios. *Revista Complutense de Educación*. 26, 159–174. https://doi.org/10.5209/rev_rced.2015.v26.46360.
- Smarniotto, B., & Melchiorre, M. (2018). Quand la construction de la sexualité adolescente se confronte à la violence du voir pornographique. *Sexologies*, 27(4), 177–183. <https://doi.org/10.1016/j.sexol.2017.09.003>.
- Smorti, M., Milone, A., Gonzalez, J. G., & Rosati, G. V. (2019). Adolescent selfie: An Italian Society of Paediatrics survey of the lifestyle of teenagers. *Italian Journal of*

- Pediatrics*, 45(1), 62. <https://doi.org/10.1186/s13052-019-0653-7>.
- Tateno, M., Teo, A. R., Ukai, W., Kanazawa, J., Katsuki, R., Kubo, H., & Kato, T. A. (2019). Internet addiction, smartphone addiction, and Hikikomori trait in Japanese young adult: Social isolation and social network. *Frontiers in Psychiatry*, 10.
- Tolson, A. (2010). A new authenticity? Communicative practices on YouTube. *Critical Discourse Studies*, 7(4), 227–289. <https://doi.org/10.1080/17405904.2010.511834>.
- Vera, J. C., García, A. R., Miranda, G. R., Martínez, A. R., Meneses, M. E., Ramírez-de-la-Rosa, G., & Beer, D. R. (2019). Measuring critical reception in kids through consumption of risky challenges videos in YouTube. *International conference on human-computer interaction* (pp. 331–338). Cham: Springer.
- Young, R., Subramanian, R., Miles, S., Hinnant, A., & Andsager, J. L. (2017). Social representation of cyberbullying and adolescent suicide: A mixed-method analysis of news stories. *Health communication*, 32(9), 1082–1092. <https://doi.org/10.1080/10410236.2016.1214214>.