Czech children
in the cyberworld

How do they behave
and what threats
are they exposed to?

RESEARCH
REPORT

Univerzita Palackého
v Olomouci

O2

Contents

1. Introduction

The on-line world where children spend a huge amount of their free time is a great unknown for many parents and teachers. We have set on a quest into this world on behalf of them, in order to discover what children do in the on-line world, what risks and threats they face there, what video production they are interested in, but also whether they could have fallen victim to on-line fraud.

A separate part of the **Czech children in the cyberworld** research focuses on using mobile phones by children in the school environment. We were particularly interested in finding out how children spend their break time with (or without) mobile phones, what they do with their phones, whether mobiles can be misused in school and whether it actually happens, how many children have restricted access to mobile phones in school and how it is done.

The Internet provides a range of benefits – it helps with easier and faster communication, it provides entertainment, it offers education and work opportunities, it allows us to discover the entire world, it offers space and tools for self-fulfilment etc. On the other hand, the risks related to on-line services, particularly when used by children, should not be ignored.

Therefore, we ask all parents – follow actively your children's on-line world and try to familiarise yourselves with it as much as you can. Don't hesitate to invite your children to help you and ask them to guide you through the on-line world that they have grown up in. Build an intimate relationship with your children so they turn to you when they encounter a threatening on-line environment.

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2. About the research

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

3. Methods

3.1 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.

3.2 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 ČSÚ fur 2018). The majority of respondents came from the Moravskoslezský, Olomoucký and Středočeský regions.

Table 1. Age structure of the sample
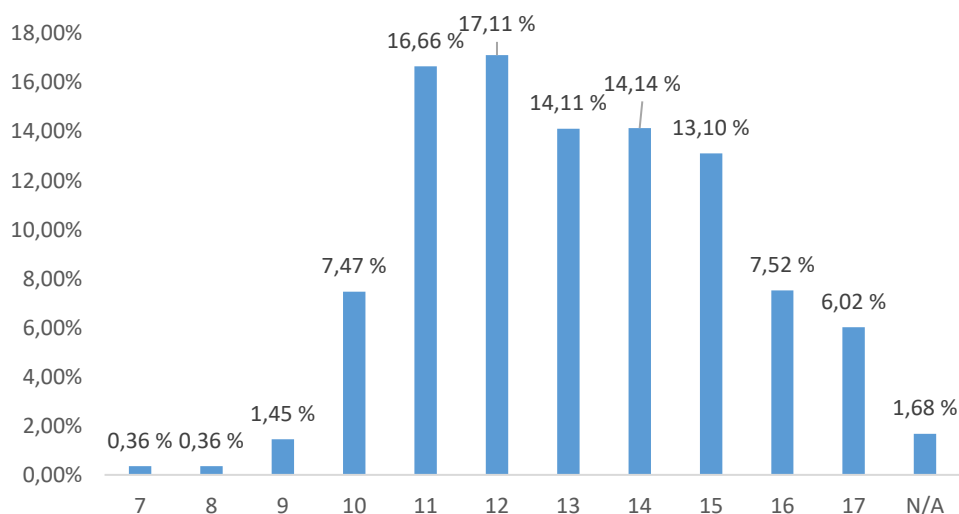
(n=27177)

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4. Results

4.1 Children as consumers of on-line content

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.

4.1.1 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).

NB: 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.

Table 2. 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 = 11800)

Table 3. What websites/Internet services are used by children over 13 (13-17) – summary data

Website/Internet service	Total frequency (n)	Relative frequency (%)
Social networks	11282	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 = 14921)

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).

4.1.2 Which specific social networks and other on-line tools do children actively use?

With child respondents, YouTube dominates clearly[1], 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.

Table 4. Use of social networks in individual age categories
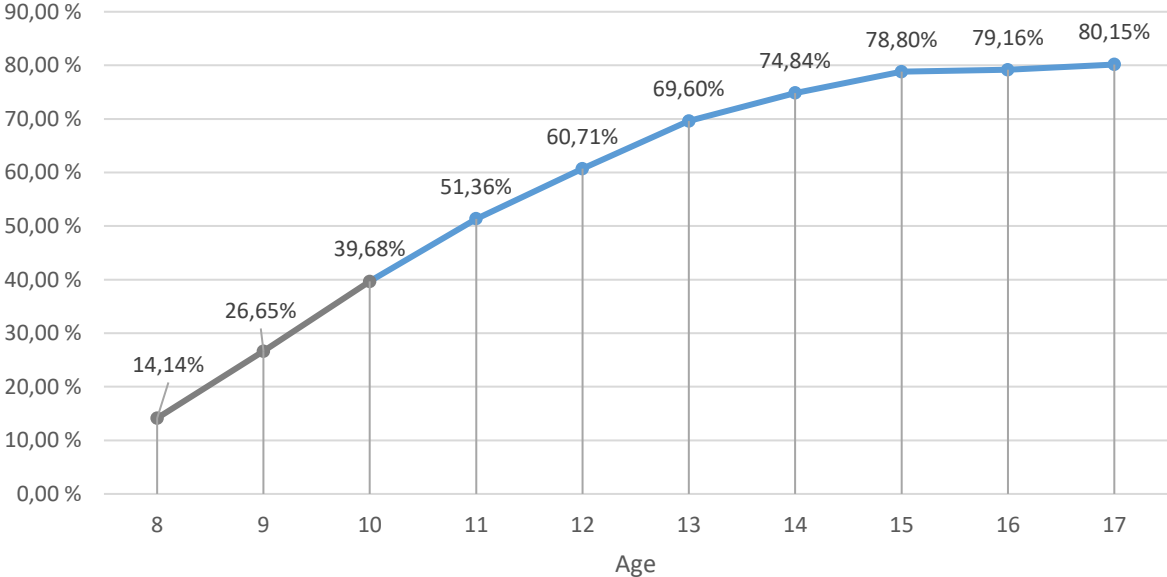
(n=26721).

Table 5. Which social networks do children use actively?

Social network/messenger/service	Total frequency (n)	Relative frequency (%)
YouTube	24325	89.51
Facebook	19620	72.19
Facebook Messenger	18746	68.98
Instagram	18706	68.83
E-mail	17925	65.96
SMS/MMS	17114	62.97
WhatsApp Messenger	10984	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=27177).

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.
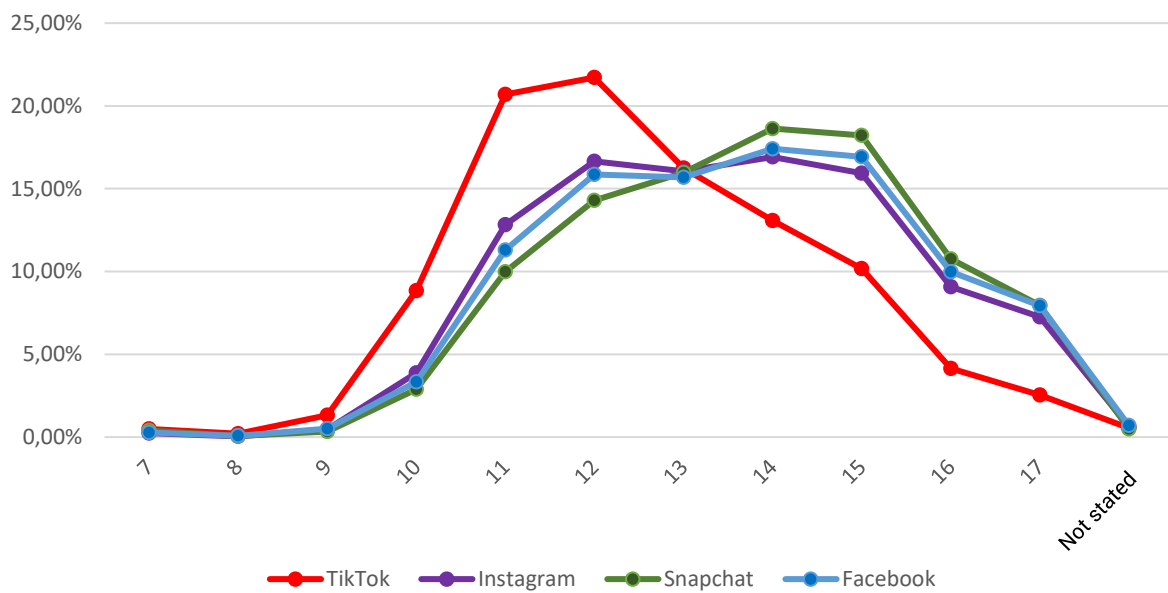
4.1.3 Which Internet search engines/browsers do children use actively?

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, 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.

4.2   Children and mobile phones

We have also focused on active usage of mobile phones by children. We wanted to know whether a child has a mobile phone with Internet access without the need of Wi-Fi connection (e.g. through 3G, 4G, LTE, etc.). **Over half of the children (59.1 %) confirmed that they have permanent Internet access in their mobile phone, not having to rely on Wi-Fi.**

The most frequent activity reported by children is making/receiving phone calls (72 %), followed by typing and sending messages on on-line services (Facebook Messenger, WhatsApp etc.) (66 %). The following place is taken by watching videos on YouTube and typing SMS messages.

Table 6. Most frequent activities on a mobile phone

Activity	Total frequency (n)	Relative frequency (%)
Making/receiving phone calls	19701	72.49
Typing and sending messages on on-line services (Facebook Messenger, WhatsApp, etc.)	18044	66.39
Watching videos on YouTube	17778	65.42
Typing and sending SMS/MMS messages	14735	54.22
Taking photos	14039	51.66
Playing games	13457	49.52
Listening to music or spoken audio (e.g. on Spotify, Apple Music, etc.)	12801	47.10
Searching for information (e.g. on Google)	10400	38.27
Watching favourite youtubers	9091	33.45
Browsing social networks (passive, reading posts)	8811	32.42
Rating content on social networks (liking, rating by emoticons – such as Hearts on TikTok or Instagram).	8608	31.67
Sharing photos and videos on social networks	7005	25.78
Watching videos on TikTok	5319	19.57
Making videos	4702	17.30
Using a mobile phone for educational purposes (educational apps/videos/content).	4580	16.85
Reading texts on a mobile phone (e.g. text documents, books, PDF files, etc.).	3969	14.60
Managing a social network account (managing own wall, managing photo albums and video albums, creating campaigns).	3900	14.35
Watching videos on Twitch	3588	13.20
Streaming videos (e.g. through Twitch or Facebook)	1818	6.69

(n=27177).

4.2.1 Mobile phones in schools

A question echoes strongly in the Czech Republic, as well as in other European countries, as to how to regulate the use of mobile phones by children in school. Whether to ban mobile phones during lessons and breaks or to limit the ban only to lessons and not breaks (see the opinion of the Czech School Inspectorate). Therefore, we asked children about their experience with mobile phone restrictions and how this issue is dealt with in the school they attend.

Table 7. Using mobile phones in school (from the children's perspective)

	Breaks	Lessons	Relative frequency (%)
	Allowed	Prohibited	53.30 %
	Prohibited	Prohibited	41.20 %
	Allowed	Allowed	2.48 %
	Prohibited	Allowed	1.09 %
	Not stated	Not stated	1.92 %

(n=27177).

The majority of children (53.3 %, 14 486 children) is allowed to use mobile phones during break time in school and disallowed during lessons. However, upon teacher's instruction, they are also allowed to use their mobile phones during lessons – a mobile phone becomes a learning aid/tool. Yet, a significant number of children (41.20 %, i.e. 11,198 children) must not use mobile phones in school at all, even during break time.

In relation to the use of mobile phones in school, we wanted to know how children actually spend their break time, and we asked what pupils do during break time. Looking at the overall summary of most frequent break time activities, we will find out that communication with peers dominates (85.24 %). However, we don't know how the actual communication goes, i.e. what pupils actually talk about. However, a clear difference in the way of spending break time is visible between schools with and without mobile phone restrictions.

Methodology comment: We divided the sample into two groups, to be compared to each other. Both groups include approximately the same number of respondents and when calculating percentage differences, we work with relative frequencies. Respondents were allowed to give multiple answers at the same time, i.e. the child is, for instance, allowed to use a mobile phone when walking on the school premises. The following results show an overview of the most frequent break time activities.

Table 8. The most frequent break time activities − schools where mobile phones are allowed during break time

Activities	Total frequency (n)	Relative frequency (%)
Playing games on my mobile phone	6216	41.00
Browsing social networks on my mobile phone	5898	38.90
Sitting on my chair, feeling bored	5110	33.70
Walking around the school premises	5018	33.10
Writing to someone on my mobile phone	4246	28.00
Listening to music on my mobile phone	4190	27.63
Watching my peers playing games/watching videos, etc. on their mobile phones	3364	22.19
Browsing websites on my mobile phone	2422	15.97
Watching YouTube videos on my mobile phone	2014	13.28
Reading a book	1690	11.15
Watching TikTok videos on my mobile phone	1270	8.38
Playing table tennis, table football etc. with my peers	691	4.56
Making videos on my mobile phone	635	4.19
Playing card games with my peers	564	3.72
Reading a magazine	431	2.84
Playing board games with my peers	295	1.95

(n=15162).

Table 9. The most frequent break time activities − schools where mobile phones are not allowed during break time

Activities	Total frequency (n)	Relative frequency (%)
Walking around the school premises	4329	38.66
Sitting on my chair, feeling bored	3892	34.75
Reading a book	1667	14.89
Playing table tennis, table football etc. with my peers	857	7.65
Playing card games with my peers	835	7.46
Reading a magazine	748	6.68

Watching my peers playing games/watching videos, etc. on their mobile phones	627	5.60
Playing games on my mobile phone	611	5.46
Browsing social networks on my mobile phone	595	5.31
Playing board games with my peers	536	4.79
Writing to someone on my mobile phone	488	4.36
Listening to music on my mobile phone	451	4.03
Browsing websites on my mobile phone	246	2.20
Watching YouTube videos on my mobile phone	196	1.75
Watching TikTok videos on my mobile phone	162	1.45
Making videos on my mobile phone	130	1.16

(n=11199).

In the research, we also differentiate between activities of children in the primary and lower secondary tier. The results are presented in the following charts.

Table 10. What do primary tier (7-11 year old) children do during break times

	Mobile phones during break time **ALLOWED**		Mobile phones during break time **DISALLOWED**	
Activity	**Total frequency (n)**	**Relative frequency (%)**	**Total frequency (n)**	**Relative frequency (%)**
Chatting with other pupils	1959	80.55	4146	87.88
Playing games on my mobile phone	930	38.24	92	1.95
Walking around the school premises	758	31.17	1557	33.00
Watching my peers playing games/watching videos, etc. on their mobile phones	686	28.21	164	3.48
Sitting on my chair, feeling bored.	670	27.55	1330	28.19
Listening to music on my mobile phone	364	14.97	56	1.19
Browsing social networks on my mobile phone	337	13.86	36	0.76
Reading a book	300	12.34	879	18.63
Watching TikTok videos on my mobile phone	279	11.47	60	1.27
Watching YouTube videos on my mobile phone	217	8.92	46	0.97
Writing to someone on my mobile phone	214	8.80	30	0.64
Playing table tennis, table football etc. with my peers	152	6.25	378	8.01
Reading a magazine	134	5.51	418	8.86
Browsing websites on my mobile phone	117	4.81	25	0.53

	Total frequency (n)	Relative frequency (%)	Total frequency (n)	Relative frequency (%)
Playing card games with my peers	111	4.56	453	9.60
Playing board games with my peers	102	4.19	365	7.74
Making videos on my mobile phone	92	3.78	22	0.47
Watching youtubers on my mobile phone	0	0.00	0	0.00
Not stated	**2432**		**4718**	

Table 11. What do lower secondary tier (12-15 year old) children do during break times

	Mobile phones during break time ALLOWED		Mobile phones during break time DISALLOWED	
Activity	**Total frequency (n)**	**Relative frequency (%)**	**Total frequency (n)**	**Relative frequency (%)**
Chatting with other pupils	7864	85.44	5785	88.15
Playing games on my mobile phone	3958	43.00	536	8.17
Browsing social networks on my mobile phone	3430	37.27	553	8.43
Sitting on my chair, feeling bored	3105	33.74	2546	38.79
Walking around the school premises	3247	35.28	2816	42.91
Writing to someone on my mobile phone	2316	25.16	446	6.80
Listening to music on my mobile phone	2573	27.96	408	6.22
Watching my peers playing games/watching videos, etc. on their mobile phones	2194	23.84	492	7.50
Browsing websites on my mobile phone	1272	13.82	224	3.41
Watching YouTube videos on my mobile phone	1188	12.91	155	2.36
Reading a book	960	10.43	805	12.27
Watching TikTok videos on my mobile phone	820	8.91	120	1.83
Playing table tennis, table football etc. with my peers	442	4.80	495	7.54
Making videos on my mobile phone	418	4.54	106	1.62
Playing card games with my peers	339	3.68	393	5.99
Reading a magazine	230	2.50	358	5.45
Playing board games with my peers	135	1.47	187	2.85
Watching youtubers on my mobile phone	0	0.00	0	0.00
Not stated	**9204**		**6563**	

The difference is obvious – where mobile phones during break time are allowed, activities related to mobile phones clearly dominate. **The top activity is playing games, preferred by over 40 % children in schools where mobile phones are allowed during break time. The second place is taken by using social networks (almost 39 %).** Also, a significant number of

children passively watch their peer's games or videos – 22 % more in schools where mobile phones are allowed, compared to schools that prohibit mobile phones.

Interestingly, approximately **one third (33 %) of children feel bored during break times (33 %)** regardless of mobile phones during break time being allowed or not. As for moving around the school premises – this is not influenced by mobile phones being allowed or restricted. In schools with a total mobile phone ban, approximately 6 % more children walk, compared to schools with mobile phones allowed.

Naturally, a mobile phone ban also affects the frequency of activities not directly related to mobile phones – reading, sport, non-virtual entertainment. **In schools where mobile phones are banned in break time, the number of children reading magazines during break time is almost 60 % higher than in schools where mobile phones are allowed. An increase is also obvious with reading books (+13.54 % for schools with a ban), playing board games (+65 %), playing card games (+43 %) and sport activities (+29 %).** Banning mobile phones during break time has, therefore, a real impact on the development of such activities.

Chart 2 **Selected non-mobile phone activities in both age groups**
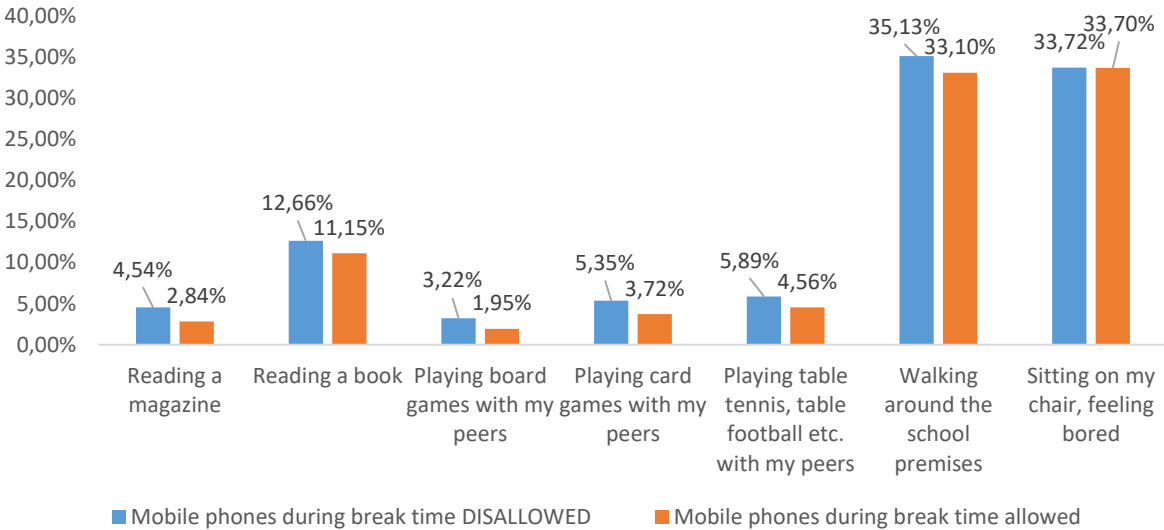
It has to be said though – **although mobile phones during break time might be banned by a school, some children don't comply. For instance, 5 % children play games on their mobile phones although gaming is not allowed, 5 % also use social networks regardless a ban in place, 4 % chat with other persons although this is not allowed, etc.** However, a significant decrease is present with all observed activities, in comparison with schools where mobile phones are allowed.

Taking photos/videos by peers without consent

In relation to mobile phone restrictions in school, it is often pointed out that a mobile phone in school might be misused, for instance to picturing peers without their consent. Therefore, we wanted to know how many children have experienced in school that someone made photos/videos of them without consent – during break time, lesson or a school event.

35.71 % children (9706 children in our sample) **confirmed that they have been photographed by a peer without consent and 22.5 % children** (6115 children in our sample) **confirmed that they have been videoed by a peer without consent**. It is clearly not a marginal issue.

4.3 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.

Table 12. What videos do child users of social networks actively watch?

	Facebook		Instagram		YouTube		TikTok		Twitch		Elsewhere	
	Frequency	(%)	Frequency	(%)	Frequency	(%)	Frequency	(%)	Frequency	(%)	Frequency	(%)
Funny videos (jokes, pranks)	5974	21.98	10438	38.41	21123	77.72	4851	17.85	1544	5.68	862	3.17
Challenges	1946	7.16	4749	17.47	18210	67.01	2797	10.29	930	3.42	633	2.33
Let's play videos (recordings of computer games being played)	980	3.61	1467	5.40	16641	61.23	658	2.42	4019	14.79	834	3.07
Vlogs	893	3.29	3898	14.34	15579	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	15915	58.56	932	3.43	1006	3.70	540	1.99
Food videos	2531	9.31	7000	25.76	12183	44.83	1307	4.81	674	2.48	807	2.97
Reaction videos (critical comments on other youtubers' videos)	990	3.64	2448	9.01	16076	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 (physical and mental, abuse, hate speech etc.)	918	3.38	863	3.18	2384	8.77	417	1.53	309	1.14	1468	5.40
Videos showing people with eating disorders (anorexia, extreme obesity)	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	11988	44.11	1537	5.66	540	1.99	782	2.88
N/A		**27177**		**27177**		**27177**		**27177**		**27177**		**27177**

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.

Table 13. What videos do children watch on YouTube?

	Total frequency (n)	Relative frequency (%)
Funny videos (jokes, pranks)	21123	77.72
Challenges	18210	67.01
Let's play videos (recordings of computer games being played)	16641	61.23
Reaction videos (critical comments on other youtubers' videos)	16076	59.15
Unboxing videos	15915	58.56
Vlogs	15579	57.32
Food videos	12183	44.83
Videos focused on parkour / freerunning	11988	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 = 27177)

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, 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.

4.4 Children and cyber aggression in on-line environment

Following *The risks of Internet communication I−IV* research projects, conducted by our research team in 2010-2014, we focused on various forms of cyberbullying among children.

We are not trying to separate children who have experienced cyberbullying (i.e. defined with respect to a time frame, reoccurrence, intensity, impact on the victim etc.), but we rather want to explore the most frequent forms of aggression that children face in on-line environment, and particularly to capture new forms of aggression and risky phenomena that we didn't cover in the previous research projects.

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 11221 incidents.

Table 14. Selected forms of cyber aggression and on-line risks that children encountered in 2018

Risk	Total frequency (n)	Relative frequency (%)	Research: Risks of Internet Communication 2014	Difference
At least one of the forms of cyber aggression experienced last year:	11221	**41.29**	45.81	-4.52
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**	34.33	-7.16
Someone disseminated, through the Internet or a mobile phone, a photo intended to humiliate me, ridicule me or otherwise embarrass me	3330	**12.25**	13.70	-1.45
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**	6.54	-0.03
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**	3.89	-0.07
Someone threatened me or intimidated me through the Internet or a mobile phone	2649	**9.75**	17.84	-8.09
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**	7.91	-2.1
Someone accessed, without my permission, my on-line account (e.g. e-mail, social network account etc.)	3435	**12.64**	34.80	-22.16
Someone misused my on-line account to get me into trouble (e.g. harassed my friends in my name)	1350	**4.97**	11.82	-6.85
Someone registered a fake social network profile in my name	1870	**6.88**	-	

(n=27177).

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 %).**

Table 15. Platforms where child-targeted cyber aggression (or an on-line risk) occurred

Platform (Social network, service)	Total frequency (n)	Relative frequency (%)
Facebook	6330	56.41
Facebook Messenger	4788	42.67
Instagram	3551	31.65
SMS/MMS	1281	11.42
YouTube	1124	10.02
E-mail	1065	9.49
WhatsApp Messenger	981	8.74
TikTok	859	7.66
Tellonym	732	6.52
Skype	612	5.45
Snapchat	558	4.97
Viber	341	3.04
Omegle	336	2.99
Twitch	273	2.43
Twitter	230	2.05
Steam	225	2.01
Lide.cz	177	1.58
Ome.tv	161	1.43
Pinterest	147	1.31
On-line games	105	0.94
Discord	67	0.60

(n=11221).

A vast majority of child-targeted attacks lasted less than 1 week (60 % incidents), while long-term child-targeted attacks are rare in the on-line environment.

Table 16. Incident duration (aggression, risk)

	Total frequency (n)	Relative frequency (%)
Less than 1 week	6735	60.02
1-2 weeks	1549	13.80
3-5 weeks	641	5.71
1-3 months	503	4.48
4-6 months	234	2.09
7-12 months	183	1.63
Over a year	759	6.76
Not stated	617	5.50

(n=11221).

Of course, we wanted to know who the attacker was, whether unbeknown to the child and hiding behind on-line anonymity, or a user the child knows in the real world. **Vast majority of attackers are the victim's peers** – classmates in almost 30 % cases, or former friends (16.40 %).

Only in 20 % cases, the attacker was a stranger. This includes common signs of aggression, e.g. within social networks or on-line games, commonly experienced by children.

Table 17. Who was the attacker/originator of the attack? (by relationship to the victim)

	Total frequency (n)	Relative frequency (%)
A classmate	3299	29.40
A former friend	1840	16.40
A pupil from another school	1619	14.43
A pupil from another class (within the same school)	1421	12.66
Someone I only know from the Internet	1318	11.75
A stranger	978	8.72
My ex boy/girlfriend I used to date	682	6.08
An adult I don't know (e.g. my peer's parent)	559	4.98
An adult I know (e.g. a family member)	286	2.55
A teacher who teaches me	245	2.18
A teacher who doesn't teach me (but works in the same school)	128	1.14

(n=11221).

For more than a half of the attacks (51.62 %), the attacker was an individual. In about one fifth of all cases, several people attacked at once. As for gender distribution, both girls and boys can be found among attackers.

Table 18. Who was the attacker/originator of the attack? (by gender)

Category	Total frequency (n)	Total frequency (n)
A boy (individual)	3891	34.68
A girl (individual)	2411	21.49
Gender unknown (attacker could not be identified)	2363	21.06
A mixed group (both boys and girls)	1262	11.25
Only boys (more than one boy)	741	6.60
Only girls (more than one girl)	484	4.31
Not stated	69	0.61

(n=11221).

4.5 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 if 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 heir 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.

Table 19. Selected risk situations experienced by children in the on-line environment

Risk situation	Total frequency (n)	Relative frequency (%)
I purchased products on-line, paid for it, but the products have never been delivered (fraud).	3625	13.34
Someone stole my virtual character, items etc. in an on-line game.	2841	10.45
Someone blocked my social network account (e.g. on Instagram, Facebook etc.).	2264	8.33
I opened a file from an unverified source and it infected my computer by a virus.	2120	7.80
My parents uploaded photos or videos of myself, without my consent.	1938	7.13
I honoured a request for forwarding an SMS confirmation code.	1603	5.90
Someone deleted my social network account (e.g. on Instagram, Facebook etc.).	1417	5.21
I installed a harmful app on my mobile and then found out that it has been collecting my personal data, etc.	1194	4.39
Someone cloned my profile (e.g. copied my name, photos and contact details).	1104	4.06
Someone made me give out my password.	1059	3.90
Someone set up my social network profile without my knowledge, although I didn't want to have an account on that network.	1040	3.83
Someone recorded me video chatting (e.g. on Skype, Omegle, etc.)	635	2.34
I won an on-line auction bid (e.g. on Aukro), paid for the product, but the product has never been delivered (fraud).	376	1.38

(n = 27177)

4.6 Children and personal meet-ups with Internet users

In our research, we don't primarily focus on on-line dating – this topic was covered in a separate research: *Sexting and risk behaviour of Czech Kids in Cyberspace.* Anyway, we wanted to know whether any more or less significant shift occurred in requesting real-life meet-ups.

26.77 % respondents (7274 children out of 27177) report to have received a real-life meet-up proposal from an Internet user (user not known from the real world). Almost 70 % of invited children actually turned up (5081 out of 7274). Of course, they could have been invited by another child, so these are not primarily meet-ups with on-line predators, but it is still a risky behaviour.

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 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 the research to children and mobile phones. **Over half of the children (59 %) confirmed that they have permanent Internet access in their mobile phone, not having to rely on Wi-Fi** (e.g. in school or a library)**.** They use their mobile phones most frequently to make/receive calls, type/send messages, watch YouTube videos, take photos, play games or listen to music.

We also focused on the break time and explored the impact of mobile phones being banned/allowed on their activities. **The majority of children (53.3 %, 14 486 children of our sample) is allowed to use mobile phones during break time in school and disallowed during lessons. Where mobile phones are allowed, the dominating activity is playing games on mobile phones (41 % children), using social networks (38.9 %) and feeling bored on the chair (33.70 %).** Interestingly, we can find approximately the same number of bored children in schools where mobile phones during break time are banned (34.75 %). **Where mobile phones are banned during break time, the dominating activity is walking around the school premises (38.66 %), sitting on a chair, feeling bored (34.75 %) and reading books (14.89 %), followed by sport activities and playing card games.**

Ban on mobile phones during break time affects a range of "non- mobile phone" activities. **In schools where mobile phones are banned in break time, the number of children reading magazines during break time is almost 60 % higher than in schools where mobile phones are allowed. An increase is also obvious with reading books (+13.54 % for schools with a ban), playing board games (+65 %), playing card games (+43 %) and sport activities (+29 %).**

It has to be said though – although mobile phones during break time might be banned by a school, some children don't comply.

Using mobile phones in school is also related to taking photos and videos of children without consent. **35.71 % children (9706 children in our sample) report to have been photographed by a peer without consent, and 22.5 % children (6115 children in our sample) report to have been videoed by a peer without consent.**

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, let´s 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.**

Internet dating is also included on a regular basis – **26.77 % respondents (7274 children out of 27177)** confirm to have received a real-life meet-up proposal from an Internet user (user not known from the real world). Almost 70 % of invited children actually turned up (5081 out of 7274). Of course, they could have been invited by another child, so these are not primarily meet-ups with on-line predators, but it is still a risky behaviour.

6. Quotes

The on-line world is often hidden from parents, and it is difficult to find your way in it. The Internet is really good for children and it provides benefits. On the other hand, it can expose children to various risky situations. It is primarily up to the parents to get interested in their children's world, to communicate with their children, to support them and to be ready to learn something from them. With young children below 13, parents should actively control the child's on-line activities – particularly save the child from risky situations that could cause severe harm. This year's research proves that many children under 13 use services that are not designed for them and could be even dangerous for them. This is the case of many social networks and on-line video chats. **Therefore, we ask all parents – follow actively your children's on-line world and try to familiarise yourselves with it as much as you can. Build an intimate relationship with your children so they turn to you when they encounter a threatening on-line environment.**

Doc. Mgr. Kamil Kopecký, Ph.D.
Centrum PRVoK, E-Bezpečí & Digidouopě
Faculty of Education of Palacký University Olomouc

Digital technology and on-line content constitute an indivisible part of our lives, including children who are surrounded by these from an early age. The Internet and digital technologies provide many benefits, serving as a source of information. Therefore, they have an educational, but also entertaining, relaxing and socialising role. It is, however, important to use it in an optimal way, and this requires particular competences and awareness as the cyberspace bears its specific traits and a wide range of risks. The data of our research, conducted this year with children aged 7-17, confirm, in many areas, the risks related to uninformed (spontaneous) use of technologies. Children often face negative phenomena related to risky behaviour on-line, e.g. many signs of cyber aggression, fraud, the consumption of inappropriate on-line content, etc. To eliminate risks related to using digital technologies, we should therefore build on profound education and prevention. This is a vital role for an informed parent who is the first link in the chain of educational institutions and who has, in this respect, the greatest impact on the child until a certain age.

PhDr. René Szotkowski, Ph.D.
Centrum PRVoK, E-Bezpečí & Digidouopě
Faculty of Education of Palacký University Olomouc

The fact that children spend a significant part of their lives in the virtual world of the Internet, is not unbeknown to us, the adults. We must admit, however, that not always we know or even guess where exactly children are in the on-line world and what they do there. How and with whom they entertain themselves. And that is not good. We should try to familiarise ourselves with this new world and to know how it works. Only this way, we can become our children's partners and particularly guides that they need there as well as in the real life. We are happy to be able, thanks to this research, to look into the secrets of our children's world. It shows that there are many dark corners and more are emerging. I believe that these new findings help us to get closer to our children and to protect them more effectively. Their safety is our priority and we are happy that our prevention and education efforts, complemented by the "O2 Chytrá škola" programme, help to improve the situation in the riskiest areas, such as cyberbullying.

PhDr. Marie Mališková
CSR manager, O2 Czech Republic

The research results suggest that on-line risks and negative phenomena are still live and will probably be so for a long time to come. The age threshold in using the cyberspace (in any possible way) is lowering. It is not only about sexual predators attacking children, but it can also be about various forms of fraud and inappropriate or antisocial behaviour. Children don't have to be necessarily the victims; often they are the initiators or even offenders in on-line crime. Information technologies and the Internet constitute an indivisible part of today's youngsters' lives. Our society should face this phenomenon and be able to react in a good and appropriate way, both in the area of prevention and also in the realms of crime. It is good to adapt to the current development, not only to criticise it, because such approach only takes us backwards. In the near future, we will also have to deal with the question of mobile phones in school – children always want to communicate "live", and this is a controversial topic with no clear solution.

Kpt. Bc. Pavel Schweiner
The department of cybercrime, Olomouc, KŘPOL

7. About the Centre for the Prevention of Risky Virtual Communication

The Centre for the Prevention of Risky Virtual Communication by the Faculty of Education of Palacký University Olomouc (hereafter "PRVoK") is a certified university department oriented on risky on-line communication of children and adults. It is focused particularly on cyberbullying, cyberstalking, cybergrooming, hoax and spam, sexting, on-line social engineering, the risks of sharing personal information on social networks, disinformation and fake news in the public domain and other dangerous communication phenomena.

In research, PRVoK conducts both fundamental and applied research (including contractual research). It looks, for instance, into risky communication of children and sexual abusers, risky sharing of personal information across communication platforms, specific forms of cyber attacks though web cameras (webcam trolling), it reveals fake profiles, identifies fraudulent e-shops and business proposals, identifies attackers, supports victims, etc.

In the areas of research, education and intervention, PRVoK cooperates with a range of companies, namely Google, Seznam.cz, O2 Czech Republic, Vodafone, Allegro Group, ESET, but also with the Czech Police, the National Bureau for Cybersecurity, the CZ.NIC association and other institutions. Th Centre is also supported by the Czech Ministry of Education, Youth and Sports and the Czech Ministry of the Interior.

Apart from research, the Centre also delivers E-Bezpečí ("e-safety", www.e-bezpeci.cz), a nation-wide project on education and prevention in risky on-line behaviour. It also provides a counselling clinic for victims of Internet attacks (www.napisnam.cz), linked to Linka bezpečí (a helpline), the Czech Police, OSPOD (the National Child Protection Authority) and other specialised institutions.

For more details, visit www.prvok.upol.cz.

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