

Adiktologie

PROFESSIONAL
JOURNAL FOR
THE PREVENTION,
TREATMENT OF,
AND RESEARCH
INTO ADDICTION

N° 3–4

ORIGINAL ARTICLE

At-risk Adolescents in the Czech Republic

Zemanová, V., Dolejš, M.

REVIEW ARTICLE

Problem Opioid Use in the Czech Republic from a Historical Perspective: Times are Changing but Opioid Pharmaceuticals Remain

Malinovská, J., Mravčík, V.



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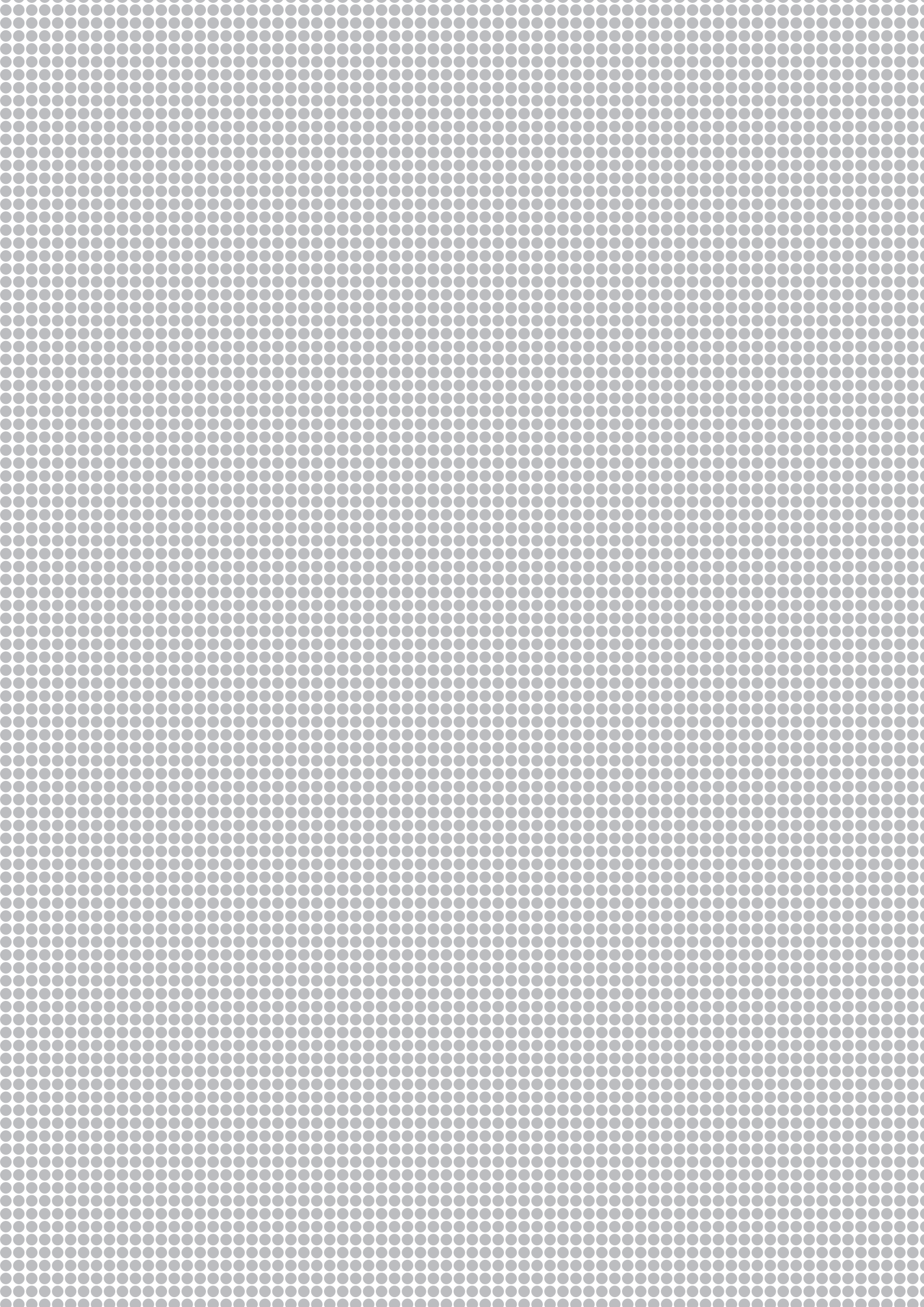
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Original research, scholarly reviews, policy analyses, editorials, commentaries, and book reviews aim to stimulate and support internationally relevant and quality communication between science and prevention, clinical, and decision making practices. Journal continually supports translation of science to practice and policy.

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The Farmington Consensus 1997 and 2017. Times change, values remain

For the title of this editorial I originally wanted to be inspired by the name of Erich Maria Remarque's famous book *All Quiet on the Western Front* and titled it *All Quiet on the Research Front*. Fortunately, I rejected this idea. I also remember another book by this author, namely *Heaven Has No Favourites*. However, I rejected this idea, too.

In fact, I just wanted to point out that the current version of the Farmington Consensus, 2.1, may not be a significant change for someone who is a professional in publishing addiction science, on the one hand, and, on the other hand, that it applies to all those who seek to publish in peer-reviewed journals. The authors of this important document themselves state that over the last twenty years there have been major changes in the publishing of addiction science.

What are the changes between 1997 and 2017? The Farmington Consensus was released in 1997 by a group of editors of addiction journals who met in Farmington and more recently received strong support as a standard for academic publishing in addiction science from the International Society of Addiction Journal Editors (ISAJE), established in 2001. It is evident that the ISAJE and the individual editors are behind the extension of these ethical principles and their effective present application. We are happy that the *Adiktologie* journal is a proud member of the ISAJE and can play a role in the dissemination of these principles in the Czech Republic.

Opting for a very technical approach, I used Microsoft Word to compare the 1997 and 2017 versions. Such a comparison allows us to see that a number of paragraphs have been added to the 2017 version and many have been extended. Some extensions are rather technical and make the previous information more specific. It is certainly important for teams of authors to understand the way in which authorship is defined, as implied by the statement "*all listed authors on a paper should have been personally and substantially involved in the work leading to the paper*". Another very important point is the greater emphasis that is placed on ensuring the ethics of scientific work. From my point of view, there is also a growing demand for research ethics, which is ensured through the approvals granted by the relevant ethics committee. Stating that "*authors should give an assurance that ethical safeguards have been met, including protection of human and animal rights*," the Consensus is not explicit about the ethical committee. Nevertheless, to prepare the ethical committee proposal and go through the process of obtaining a positive ethical committee decision for a research project seem to be an absolute standard for publication.

The 2017 version of the Farmington Consensus addresses the qualifications of, and what is expected from, editors and editorial boards. Attention is paid to the expertise of the board members and their active involvement in the

work of editorial and/or review boards. As suggested in paragraph 7.2, photographs, too, are becoming a standard feature of editorial board web pages. The leading journals in the field, e.g. *Addiction*, have been following this recommendation fully.

Much attention is focused on publishers' obligation to demonstrate their transparency in all publishing operations and adhere to the high ethical standards established by organisations of journal editors.

The remarkable development in addiction research and publishing addiction science experienced over the last two decades inevitably had to be reflected in the professional rules that define this area. This is exactly what the 2017 version brings. Authors, editors, and publishers are increasingly expected to declare their ethical approaches, especially with regard to funding, and do their jobs even better than before. With the development of technology, their work is more visible, but at the same time, it involves greater responsibility than before. Because of the different ways of financing research and the interests of different stakeholders in our field, the demands on all those involved are enormous.

Most researchers should not find it too difficult to fulfil all the expectations of the new version of the Farmington Consensus. Being acquainted with this crucial document, the vast majority of them are fully aware of the rules, understand them, and do their best to comply with them.

The recent version of the Farmington Consensus is also a commitment for the publishers, editors, and reviewers of the *Adiktologie* journal. We are happy to be able to bring quality research to our readers while respecting the above principles and are committed to working hard in the forthcoming years as we pursue addiction science as a great passion and pleasure rather than ordinary work.

Prague 7 May 2019

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REFERENCES

<http://www.isaje.net/farmington-consensus.html>



Infectious and Other Somatic Comorbidity in People who Inject Drugs – Results of a Cross-sectional Survey

MRAVČÍK, V., MLADÁ, K., DRBOHLAVOVÁ, B.

National Institute of Mental Health, Klecany, Czech Republic

Citation | Mravčík, V., Mladá, K., Drbohlavová, B. (2018). Infectious and Other Somatic Comorbidity in People who Inject Drugs – Results of a Cross-sectional Survey. *Adiktologie*, 18(3–4), 141–150.

BACKGROUND: Problem drug use is associated with increased somatic comorbidity, including infectious diseases. **METHODS:** A cross-sectional questionnaire study on a sample of problem drug users (PDUs) recruited from low-threshold programmes in Prague was carried out at the end of 2013. The questionnaire focused on drug use, risk behaviour, somatic symptomatology and comorbidity, health seeking behaviour. Descriptive analysis and multivariate linear regression analysis were performed. **RESULTS:** The sample consisted of 240 PDUs, 188 of whom (78.3%) were male, aged 18–64, mean age of 34.8 ± 8.4 years. Methamphetamine was the primary drug for 48.3% of the sample and opioids for 47.9%. Injecting drug use in the past 12 months and 30 days was reported by 96.7% and 95.0%. The self-reported lifetime prevalence of hepatitis C was 63.7%, of HIV 0.9%. HCV was the most frequent diagnosis received from a medical doctor

(59.6%), followed by dental problems (54.6%) and an abscess at an injection site (39.6%). In the past 12 months, 58.8% had sought health care outside low-threshold drug services, and 29.2% had been taken to hospital by an ambulance (half of them repeatedly). The symptoms of somatic problems were more prevalent in users of heroin, in women, and in non-Czech nationals and their frequency increased with the frequency of the injecting and sharing of injecting equipment. **CONCLUSIONS:** Infectious blood-borne diseases transmitted via needle sharing, infectious lesions at an injection site, other skin disorders, and dental problems represent the most prevalent somatic comorbid disorders in people who inject drugs. The need for health care of somatic comorbidity is significant and the specific characteristics of this patient group need to be addressed when providing care.

Keywords | Somatic Comorbidity – Infectious Diseases – Problem Drug Use – Drug Injecting – Methamphetamine – Buprenorphine – Health Care – Symptoms

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● 1 BACKGROUND

An established relationship exists between drug use and health problems, including somatic disorders. Somatic comorbidity represents a greater public health burden than drug use or addiction itself. Infectious diseases, gastro-intestinal diseases, and external causes of morbidity and mortality, i.e. overdoses, accidents, and suicides, are prevalent among illicit drug users' morbidity and mortality (Lim et al., 2012; Degenhardt & Hall, 2012). Worldwide, the greatest amount of the harm caused by illicit drugs is due to opioids and amphetamine-type drugs – 46% of the public health burden caused by drugs is attributed to opioid addiction and 13% to amphetamine addiction. The public health burden related to illicit drugs is highest in the developed countries of Europe, North America, and Australia. The greatest contribution to the morbidity and mortality caused by illicit drugs is made by HIV, HCV, and suicides (Degenhardt et al., 2013).

The relationship between injecting drug use and a high prevalence of blood-borne infections is well known and described, especially in HIV, HCV, and HBV. People who inject drugs (PWID) are one of the key at-risk groups (European Monitoring Centre for Drugs and Drug Addiction, 2009). Especially in HCV, parenteral transmission is the main transmission route, which means that the main HCV transmission pattern in developed countries is injecting drug use (Alter, 2007; Urbánek, 2010).

Injecting drug use means repeatedly damaging the integrity of the skin, the main protective barrier of the human body, by unsterile and contaminated injecting equipment. The injecting technique, type of needles and syringes, purity of drugs, amount of acid used to dissolve drugs (heroin), and injection site all play a role, as do other health and social factors (Finnie & Nicolson, 2002; Hope et al., 2008). Risk factors for the prevalence of harm and diseases related to injecting drug use that were found were female gender, older age, unstable dwelling and homelessness, longer and more frequent injecting use, sharing needles and paraphernalia, application by subcutaneous or intramuscular injecting, an unusual injection site (hands, loins, lower limbs), the application of the drug in a form other than a powder or crystal, not disinfecting the injection site, not washing one's hands before application, and experience with overdosing or with providing sex for money (Murphy et al., 2001; Dwyer et al., 2009; Salmon et al., 2009; Hope et al., 2010; Phillips & Stein, 2010).

A recent systematic review of infectious comorbidity associated with injecting drug use comprised 33 studies (Larney et al., 2017). Skin and soft tissue infections were the most frequently reported lifetime disorders (6–69%). Female gender, a higher frequency of injecting, and application by intramuscular or subcutaneous injection were linked to a higher prevalence of skin and subcutaneous infections at the injection site. Disinfecting the injection site proved to be a protective measure that leads to a lower risk of infections. Other frequent diseases were infectious endocarditis (life-

time prevalence 0.5–2%), sepsis (2–10%), bone and joint infections (0.5–2%), and thromboembolism (3–27%).

Staphylococcus aureus and *Streptococcus pyogenes* were typical agents of infections at an injection site (Ebright & Pieper, 2002; Gordon & Lowy, 2005). As to the type of skin and soft tissue disorders, apart from frequent acute infections at an injection site (mostly abscesses), a fifth to a quarter of PWID experienced a chronic wound, including varicose ulcers (Smith et al., 2014; Coull et al., 2014). This increased prevalence of varicose ulcers, multiple times higher than in the general population, is probably caused by phlebotrombosis resulting from multiple applications by injecting into the femoral vein (Senbanjo et al., 2012; McColl et al., 2001).

PWID are exposed to an elevated risk of acute systemic infections, such as pneumonia (e.g. Marks et al., 2013) or left- and right-sided infectious endocarditis, which are mostly caused by *Staphylococcus aureus* (Akinosoglou et al., 2013; Fernandez Guerrero et al., 2009; Miro et al., 2002; Hobstová, 2010).

Infections by sporulating bacteria associated with a serious clinical progress and high fatality, which also occur in Europe, are a special topic. They include e.g. anthrax, tetanus, botulism, necrotising fasciitis, and other clinically serious acute infections of soft tissues, usually caused by *Clostridium novyi* or *histolyticum*, or invasive systemic infections caused by *Bacillus cereus* (Ebright & Pieper, 2002; McGuigan et al., 2002; Brett et al., 2005; Lonergan et al., 2004; Palmateer et al., 2013).

Injecting crushed and dissolved pills of medical drugs represents a very specific risk. For instance, previous contact with saliva during the preparation of a drug or the injecting application of a tablet that was in contact with the oral cavity can cause infection with *Candida* and *Candida endophthalmitis*, a very serious acute local infection that might result in blindness (Hirsbein et al., 2008). Injecting tablets that contain talcum powder causes pulmonary talcosis, which might lead to emphysema and shortness of breath (Marchiori et al., 2010; Klochan et al., 2013). Badly dissolved pieces of tablets might cause embolisation during intentional or unintentional injecting application into arteries (Lim et al., 2009).

In problem drug users (PDUs), oral health is usually compromised, mostly through dental caries and parodontosis (Robinson et al., 2005; Saini et al., 2013; Laslett et al., 2008; Murphy et al., 2014). In methamphetamine users, the incessant motor activity of the jaw contributes to fractures of the teeth and significant decay, which is called “meth mouth” (e.g. Wang et al., 2014, De-Carolis et al., 2015).

Overdoses constitute a significant cause of morbidity and mortality among PDUs. Martins et al. (2015) published a systematic review of 169 studies of the prevalence of unintentional drug overdoses in 1980–2013. Wide variability in the lifetime prevalence of non-fatal overdoses was found. The lifetime prevalence of a situation where drug users witnessed an overdose was from 50% to 96% (mean 73%, median 70%). The lifetime prevalence of personal experience

with a non-fatal overdose was from 17% to 68% (mean 45%, median 47%). The drugs most frequently associated with non-fatal overdoses were cocaine, prescription opioids, and heroin, while the risk of an overdose was higher in men and homeless persons or users with a low social and economic status in general. The most important factor that increases the risk of an overdose is a temporary decrease in tolerance, e.g. after abstinence during time spent in prison or in in-patient treatment. The risk is highest in the first (two) weeks after discharge from prison or another type of regime where the individual interrupted their use of the drug (Farrell & Marsden, 2008). A long history of drug use, a high degree of addiction, polydrug use (using more types of drugs in parallel), and social isolation increase the risk of an overdose (Best et al., 2003).

PDUs are at greater risk of accidents while intoxicated and of violent injuries and deaths. In particular, users of central stimulants (cocaine/crack, amphetamine-type drugs) are at greater risk of accidents, including traffic accidents, which is associated with excitement and aggressive and violent behaviour (Best et al., 2003). A systematic review of studies from emergency departments showed that the most frequent injuries in drug users were violence-related, including those associated with involvement in organised crime and other injuries, including traffic accidents (Vitale & van de Mheen, 2006).

In November 2013, a cross-sectional study among clients of low-threshold programmes for drug users in Prague was carried out. It aimed at analysing somatic comorbidity, the associated treatment needs, and barriers to treatment in active PDUs. The study comprised three parts: (1) a cross-sectional questionnaire study focused on health complications and barriers to the use of health services, (2) two focus groups with PDUs, and (3) an anamnestic and somatic examination of selected PDUs by a doctor. The results of the third part, which simulated a general preventive examination by a general practitioner on a sample of 40 PDUs, were published elsewhere (Mravčík et al., 2016).

This article summarises somatic comorbidity data from the questionnaire study and does not include analysis of questions about barriers to treatment and focus groups, which will be presented separately.

● 2 METHODS

A cross-sectional questionnaire survey on a sample of 240 clients of four low-threshold programmes in Prague was carried out. The respondents were recruited from the drop-in and counselling centre STAGE 5 of the Progressive organisation (55 clients), the low-threshold centre of the Drop In organisation (62 clients), and the contact centre (56 clients) and streetwork programme (67 clients) of the SANANIM organisation. Participation was voluntary and the respondents were mostly recruited by programme workers (no random sampling was organised). The respondents were interviewed in private, separately from the rest of the

programme (in a separate room or in an ambulance parked near the premises, or in an open space near the ambulance). They received a meal coupon worth CZK 70 (about EUR 2.6) as an incentive.

Data was collected by means of the PAPI method (a face-to-face interview with a paper questionnaire). The questionnaire consisted of 209 items and the questions covered the following areas:

- social and demographic characteristics, drugs used, risk behaviour, previous testing for HIV, HAV, HBV, and HCV and the results, previous experience with addiction treatment,
- involvement in needle and syringe programmes, previous diagnoses, and treatment of selected somatic diseases – the questions were taken from the Example questionnaire for bio-behavioural surveys in people who inject drugs (EMCDDA, 2013),
- Health Section of the Opiate Treatment Index (OTI Health), which contains eight groups of questions about general health problems, problems related to injecting drug use, circulatory and respiratory problems, reproductive and excretory problems, gynaecological problems, musculatory and skeletal problems, and neurological and digestive problems (Darke et al., 1991),
- the Barriers to Treatment Inventory, a tool to measure barriers to the use of addiction treatment (Rapp et al., 2006); 38 of the original 59 questions were used (the results concerning barriers to treatment are described in another article),
- the respondents' own experience with the use of health care services when treating somatic problems.

The questionnaire was tested in a cognitive interview with four PDUs. The data was analysed in IBM SPSS Statistics v. 23 and Stata IC 14. Descriptive analysis and multiple linear regression were carried out, with the total score in OTI Health (number of positive symptoms) being used as the dependent variable and social and demographic variables (gender, age, education, two variables about housing – who they live with and the character of the housing, economic situation, nationality), primary drug, injecting use history, frequency of primary drug use in the last month, injecting use in the last month, and lifetime sharing of injecting equipment being used as the independent variables.

● 3 RESULTS

3.1 Social, demographic, and user characteristics

Of the 240 participants, 188 (78.3%) were males, 52 (21.7%) females. The age range was from 18 to 64, with the mean age being 34.8 ± 8.4 years (males 18 to 64, mean age 35.8 ± 8.4 ; females 19 to 49, mean age 31.4 ± 7.7 years). A total of 116 persons (48.3%) were homeless, 53 (22.1%) lived in temporary housing, and 26 (10.8%) in an institution. The majority (69.6%) were unemployed. Secondary education

without a diploma was the most frequent type (48.3%) of education, followed by primary education (30.4%). Only nine respondents were foreigners (eight Slovaks and one Hungarian). *Table 1* shows the proportions of the sample by primary drug. Methamphetamine (called pervitin in Czech) was the most frequent primary drug, reported by 48.3%, followed by opioids (mostly buprenorphine from the black market or heroin) in 47.9% and other drugs in 3.8% of the sample.

Drug	Number	Percentage
Pervitin	116	48.3
Buprenorphine	80	33.3
Heroin	22	9.2
Methadone	12	5.0
Opium	1	0.5
Other drugs	9	3.8
Total	240	100.0

Table 1 | Respondents by primary drug

In total, 150 respondents (62.5%) reported using two drugs at the moment and 60 (25.0%) three. A total of 198 respondents (82.5%) reported using pervitin, 101 (42.1%) buprenorphine, and 44 (18.3%) heroin. Cannabis use was reported by 46 people (19.2%), for seven of whom it was the primary drug; five respondents (2.1%) said they used new synthetic drugs, probably cathinones (called Funky or Magico).

Injecting drug use at some point in their lifetime was reported by 237 respondents (98.8%). 232 (96.7%) reported it in the last year, 228 (95.0%) in the last month, and 222 (92.5%)

reported current injecting drug use. The length of time they had been using their primary drug ranged from one to 43 years (mean 11.1 ± 7.6 years). A total of 230 respondents (95.8%) used their primary drug at least once a week; 174 (72.5%) used it daily. Application with a used needle or syringe at some point in their lifetime was reported by 116 of the 237 respondents (48.9%). Receptive sharing of needles/syringes in the last month was reported by 35 people (15.4%) out of those who had injected in the last month.

A total of 78 clients (32.5%) had participated in an opiate substitution programme at some point and 58 (24.2%) were in such a programme at the time of the interview; 133 (55.4%) had experience with a different type of programme for drug users – 30 (12.5%) outpatient programmes, 79 (32.5%) detoxification programmes, 82 (34.2%) a psychiatric hospital, 43 (17.9%) a therapeutic community, and 35 (14.6%) treatment in prison.

A total of 220 respondents (91.7%) had participated in a needle and syringe programme in the last month; 54 (22.5%) had purchased injecting equipment in a pharmacy. People who reported injecting drug use in the last month said that they usually had about 50 sterile needles and syringes at their disposal every month.

3.2 Examination and treatment of somatic illnesses

Lifetime prevalence of testing for HIV was reported by 219 respondents (79.2%–0.9% reported a positive result), 215 (89.6%) for hepatitis A (16.3% reported a positive result),

Disease	People with diagnosis		Health care provided or medicines prescribed for people with diagnosis		
	n	% (N=240)	yes (%)	no (%)	yes but refused treatment (%)
HCV	143	59.6	60.8	30.8	7.7
Parodontosis or dental caries	131	54.6	42.0	45.8	8.4
Abscesses at injection site	95	39.6	77.9	17.9	0.0
Pneumonia	81	33.8	82.7	14.8	1.2
HBV	71	29.6	63.4	33.8	1.4
Abscesses elsewhere	40	16.7	75.0	20.0	2.5
Urinary tract infection	32	13.3	71.9	28.1	0.0
Liver cirrhosis	24	10.0	54.2	41.7	4.2
Heart attack	14	5.8	85.7	7.1	0.0
Endocarditis or sepsis	13	5.4	92.3	7.7	0.0
Gonorrhoea	10	4.2	90.0	10.0	0.0
Cancer	9	3.8	66.7	0.0	22.2
Syphilis	8	3.3	62.5	37.5	0.0
Cerebral stroke	4	1.7	75.0	25.0	0.0
Tuberculosis	3	1.3	100.0	0.0	0.0
HIV	2	0.8	50.0	50.0	0.0

Table 2 | Diseases diagnosed in respondents by doctors at any time in their life

General health problems		Cardio-respiratory problems		Musculo-skeletal problems	
fatigue/loss of energy	75.8	persistent cough	18.8	joint pains/stiffness	47.1
poor appetite	35.8	coughing up phlegm	50.0	broken bones	12.5
weight loss/underweight	50.8	coughing up blood	4.6	muscle pain	52.1
trouble sleeping	51.7	wheezing	39.2	Neurological problems	
fever	35.8	sore throat	26.3	headaches	60.4
night sweats	45.0	shortness of breath	35.8	blackouts	8.8
swollen glands	15.0	chest pains	28.3	tremors (shakes)	32.9
jaundice	26.3	heart flutters/racing	42.1	numbness/tingling	40.0
bleeding easily	20.4	swollen ankles	23.8	dizziness	20.0
tooth problems	54.6	Genito-urinary problems		fits/seizures	14.2
eye/vision problems	40.4	painful urination	15.8	difficulty walking	35.8
ear/hearing problems	15.8	loss of sexual urge	20.8	head injury	10.4
cuts needing stitches	10.8	discharge from penis/vagina	7.5	forgetting things	51.3
Injecting-related problems		rash on/around penis/vagina	1.7	Gastro-intestinal problems	
overdose	16.3	Gynaecological problems (women only)		nausea	34.2
abscesses/infections from injecting	16.7	irregular period	53.8	vomiting	22.9
dirty hit (made them feel sick)	24.2	miscarriage	15.4	stomach-aches	35.4
prominent scarring/bruising	10.8			constipation	29.2
difficulty injecting	40.0			diarrhoea	24.6

Table 3 | Prevalence of symptoms in the last month by OTI Health groups, in % (N=240)

213 (88.8%) for HBV (32.9% reported a positive result), and 226 (94.2%) for HCV (63.7% reported a positive result). The most frequent diagnosis that the respondents had received from a doctor was HCV (59.6%), followed in decreasing frequency by dental problems, abscesses at an injection site, pneumonia, HBV, abscesses elsewhere, urinary infections, and liver cirrhosis. The other selected diagnoses were reported by less than 10% of the respondents. Most respondents said that they had received health care for all the diseases, except for dental and parodontal problems, for which only 42.0% received treatment; 60.8% had received treatment for HCV, 77.9% for abscesses at an injection site, and 82.7% for pneumonia – *Table 2*.

In the past 12 months, 141 respondents (58.8%) had sought health care in a medical facility – 100 of those (70.9%) were always examined/treated, 31 (22.0%) were usually examined/treated, and 10 people (7.1%) were examined/treated in half the cases or fewer. 96 respondents (69.1%) were treated in an outpatient setting and 46 (32.6%) were hospitalised. In the past 12 months, 70 respondents (29.2%) had been taken to hospital in an ambulance, 32 (13.3%) of them twice or more often.

3.3 Prevalence of symptoms of a disease

Table 3 shows a detailed list of prevalence of symptoms in the last month according to OTI Health in eight defined groups of diseases.

Table 4 shows the prevalence of problems as the total number of reported symptoms in each group in the whole sample expressed as the proportion (%) of the theoretical maximum of symptoms in each group (the measured number of symptoms in each group multiplied by the sample size).

Group of problems	Theoretical maximum of symptoms	Reported number of symptoms	%
Musculo-skeletal problems	720	268	37.2
General health problems	3120	1148	36.8
Gynaecological problems (women only)	104	36	34.6
Neurological problems	2160	657	30.4
Cardio-respiratory problems	2160	645	29.9
Gastro-intestinal problems	1200	351	29.3
Injecting-related problems	1200	259	21.6
Genito-urinary problems	960	110	11.5

Table 4 | Prevalence of symptoms in each group of problems of OTI Health

Independent variable	Category	Coefficient	p-value	95% CI	
Gender	male	reference cat.			
	female	3.43	0.017*	0.62	6.25
Age	18-24 years	reference cat.			
	25-34 years	0.63	0.789	-4.02	5.28
	35-44 years	1.35	0.607	-3.82	6.53
	45 and more years	1.52	0.617	-4.48	7.53
Education	primary	reference cat.			
	secondary without diploma	-1.50	0.231	-3.95	0.96
	secondary with diploma	-2.78	0.100	-6.09	0.54
	tertiary	2.86	0.712	-12.39	18.10
Lives with...	alone	reference cat.			
	parents	4.63	0.065	-0.29	9.56
	alone with child(ren)	-10.56	0.186	-26.24	5.12
	a partner	-0.78	0.605	-3.75	2.19
	a partner and child(ren)	1.54	0.628	-4.72	7.80
	friends	-1.94	0.211	-4.99	1.11
	other	-4.80	0.086	-10.29	0.69
Economic situation	regular employment	reference cat.			
	retired/in household	3.44	0.413	-4.84	11.73
	unemployed	1.37	0.478	-2.42	5.16
	irregular/temporary employment	-0.51	0.828	-5.14	4.12
	other	7.98	0.043	0.25	15.70
Type of housing	stable housing	reference cat.			
	temporary housing	0.38	0.847	-3.47	4.23
	in institution	1.54	0.510	-3.05	6.12
	homeless	1.94	0.332	-1.99	5.87
Nationality	Czech	reference cat.			
	other	7.07	0.009*	1.78	12.36
Primary drug	heroin	reference cat.			
	pervitin	-6.37	0.003*	-10.53	-2.20
	other opioids than heroin	-5.56	0.016*	-10.06	-1.06
	other	-8.64	0.014*	-15.52	-1.76
Drug use length	0-4 years	reference cat.			
	5-9 years	0.59	0.725	-2.71	3.89
	10-14 years	0.73	0.697	-2.97	4.43
	15 or more years	0.88	0.694	-3.52	5.27
Frequency of use in the last month	never	reference cat.			
	1x/week	2.57	0.439	-3.97	9.12
	2-6x/week	4.26	0.173	-1.89	10.42
	daily	6.68	0.028*	0.74	12.62
	more than once a day	7.21	0.019*	1.22	13.20
Injecting in the last month	no	reference cat.			
	yes	4.44	0.297	-3.93	12.80
Lifetime needle sharing	no	reference cat.			
	yes	2.62	0.025*	0.33	4.91
Constant		5.30			

Note: Coefficient represents a change in the OTI Health score in the category compared to the reference category (e.g. with similar values of other variables, users who have shared a needle will score 2.62 points higher than those who have never shared a needle). The minimum score was 0, the maximum was 35, and the mean 11.48. *Significant differences compared to the reference category at the 0.05 level are in bold.

Table 5 | Results of linear regression analysis with OTI Health total score as independent variable

3.4 Regression analysis of dependence of somatic symptoms on sociodemographic and drug use characteristics

Table 5 shows the results of multiple linear regression analysis in which the total score of OTI Health is the independent variable (significant results are provided in bold). The analysis showed that the prevalence of health problems was significantly higher in heroin users, in daily or more frequent daily users, in users who share their injecting equipment, in women, and in people with other than Czech nationality.

● 4 DISCUSSION

The respondents in our study have most often had experience with somatic treatment of infectious diseases, mostly blood-borne infections such as HIV and viral hepatitis, infections at an injection site, other skin defects, or serious acute systemic infections caused by unsterile injecting application, usually contaminated by commensal microflora. Dental problems such as tooth caries are also very frequent.

Although the reported symptoms were many, the highest proportion of PDUs in our survey complained about musculoskeletal problems and pains and general health problems such as fatigue, weight loss, or trouble sleeping, which might be symptoms of various diseases and various organ system disorders.

The reported symptoms appeared significantly more often in users of heroin as a primary drug, in women, and in foreigners, and increased with the frequency of application and with lifetime experience with sharing needles. These results are compliant with the findings about the risk factors of somatic comorbidity from other studies. A higher incidence of abscesses among injecting heroin users than among methamphetamine or cocaine users was also reported in Denver, Colorado, USA (Phillips & Stein, 2010). Our findings also correspond to those of another study among PWID in Prague (Švůgerová, 2015) that found that injecting heroin and buprenorphine users in the Czech Republic apply these drugs more often and more regularly and use more injecting material than pervitin users. On the other hand, the type of drug used was not found to be a significant factor for a higher risk of acquiring HCV in a previous national bio-behavioural survey (Zábranský et al., 2006).

The increased prevalence of somatic comorbidity in women and foreigners might be associated with lower access to health care as a result of stigmatisation, marginalisation, and legal, family, and economic factors (e.g. Scheppers et al., 2006; Greenfield et al., 2007).

The results of a cross-sectional study with a medical examination carried out in parallel (Mravčík et al., 2016) are quite similar to the results of the questionnaire survey. After an anamnestic and physical examination, the most frequent pathological findings were impaired oral health and skin lesions and the most frequent diagnoses were (chronic) HCV,

conditions after HAV and HBV, chronic tooth decay, an incomplete set of teeth, and chronic and purulent skin defects.

Our results also confirm the results of a survey on a sample of patients hospitalised at the infection centre for drug users at the Motol University Hospital in Prague. Between 2002 and 2005, 436 drug users were admitted, mostly for acute or chronic viral hepatitis (59%) and for skin and soft tissue infections (15%) (Hobstová & Vitouš, 2007). Another study, aimed at low-threshold programme workers in Prague, showed that most often, professionals had to deal with skin infections in their clients, especially small purulent abscesses and varicose ulcers (Spřurová, 2013).

The relationship between injecting drug use and infections at an injection site is obvious. Their etiology is associated with repeated skin damage along with unsterile and unhygienic drug application. An abscess at an injection site is the most frequently cited symptom. It is a localised collection of pus which might, however, be mistaken for a wound or a red lump (Coull et al., 2014), so the prevalence of abscesses might be overestimated. The high prevalence of infections and skin defects among PWID might also be related to a low standard of hygiene – the population of homeless people has to deal with an increased prevalence of scratches and folliculitis, foot mycosis, bacterial skin infections (ecthyma, impetigo), or scabies (Badiaga et al., 2005).

Half of the women in our study had had an irregular period “in the past few months” and up to 15% reported having had an interruption of a pregnancy. The issue of sexual and reproductive health in female drug users represents a specific area which includes addiction, infectological, psychiatric, and psychosocial topics along with gynaecological and often obstetrical and pediatric topics (Huber & Seelbach-Gobel, 2014; Metz et al., 2012). Therefore, comprehensive and multidisciplinary care for female drug users during pregnancy and motherhood is highly important and beneficial (Gyarmathy et al., 2009).

Our results have shown that the need for, and use of, somatic health care by PDUs are great: almost 60% of the respondents have sought medical care in a health care facility (drop-in centres excluded), of whom one third were hospitalised. About one third were taken to hospital in an ambulance, which shows that the problems were acute or that the users only called for medical care when the problems were severe. It should be remembered that it is estimated that there are over 16 thousand PDUs in Prague (Mravčík et al., 2017).

Quite a high proportion of the clients said that they actually received health care in the case of health problems, but not so in the case of dental care. A low level of use of dental care by PDUs has already been described. Factors such as the perceived low severity of dental problems compared to other priorities (e.g. the need to obtain drugs), a chaotic lifestyle, self-medication, and fear of the treatment or of an injection play a role (Robinson et al., 2005).

Barriers to the use of health care by drug users are a general phenomenon which deserves to be studied. The barriers exist on the side of both patients and medical workers and the treatment system. A delay in the provision of care and problems with continuity of care, gaps in financing regimes, fears about related diseases, fears patients have about the side-effects of the treatment, a reluctance to change drug use habits or fear of going back to drugs, a severe social situation and difficulties in social functioning, a lack of counselling and information about treatment, or the stigmatisation of drug users are all factors that can raise barriers. Therefore, the treatment of drug users requires a specific, comprehensive, multidisciplinary approach (Rapp et al., 2006; Mravčík et al., 2013; Mravčík et al., 2014). A separate paper will focus on the barriers to treatment in our sample in more detail.

● 5 LIMITATIONS

This questionnaire survey was designed as a cross-sectional study, so causality needs to be considered only hypothetically. The results are influenced by information bias because they come from self-reported data which was not verified or confirmed in any way.

● 6 CONCLUSIONS

Problem (especially injecting) drug use is a predictor of multiple somatic comorbidities. In our survey, we found that somatic health status was most often conditioned by

infectious blood-borne diseases transmitted during needle sharing, infections at injection sites, and other skin defects, and less often by acute systemic infections such as pneumonia, uroinfections, or sepsis. The dental conditions of PDUs are also poor and female users often suffer from gynaecological problems. A higher rate of somatic symptoms was found in heroin users, users who use daily or more than once daily, users who share injecting equipment, women, and foreigners. This indicates the association of somatic comorbidity with a higher intensity and more risky application of drugs, but probably also with poorer access to health care on the part of some user subgroups. The specific risks and needs of PDUs should be taken into account when providing health care to this group.

LIST OF ABBREVIATIONS

PAPI: Paper-and-pencil interview

HAV: Hepatitis A virus

HBV: Hepatitis B virus

HCV: Hepatitis C virus

OTI: Opiate Treatment Index

PDU: Problem drug user

PWID: People who inject drugs

Ethics approval and consent to participation: The study was fully anonymous. All the participants provided their oral informed consent prior to participating in this study.

Consent to publication: Not applicable.

Availability of data and material: The datasets generated and analysed during this study are not publicly available. For further information on the data used in this study, please contact the corresponding author.

Authors' contributions: VM drafted the design and initial manuscript. KM performed the statistical analysis. BD provided substantial revisions of the manuscript. All the authors have read and approved the final manuscript.

Declaration of interest: The authors declare that they have no competing interests. All the authors are researchers at the National Institute of Mental Health in Klecany, Czech Republic. VM is the head of the National Monitoring Centre for Drugs and Addiction and Associate Professor at the Department of Addictology, First Faculty of Medicine, Charles University.

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At-risk Adolescents in the Czech Republic

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BACKGROUND: Youth drop-in centres (YDICs) represent the only social service for adolescents. The employees of these centres focus on the personal development of their clients so as to help them succeed and pass safely from childhood into adulthood. They provide them with support and help them with difficult life situations. In order for YDICs to achieve their goals, the employees have to know the people they work with in depth. The basic question of our research was therefore: “What risk activities do they indulge in?” **AIMS:** The aim of this work is to provide information about the results of nationwide research focused on the prevalence of risk behaviour among clients of YDICs and a comparison with the data obtained in the context of research on risk behaviour amongst adolescents carried out in the Czech Republic and Slovakia. **METHODS:** We used the Prevalence of Risk Behaviour among

Adolescents method (VRCHA) to screen out risk behaviour. **PARTICIPANTS:** The testing was carried out on a representative sample of adolescents (499 respondents) aged 11–15 years who were using the services of YDICs. **RESULTS:** We examined the prevalence of risk behaviour within three factors – abuse, delinquency, and bullying (from the point of view of the victim). Using the VRCHA method, we analysed the prevalence values of specific risk activities. We compared the data from the respondents aged 11–15 with the population standards created by Dolejš et al. (2014) and with the results of a replication study (Dolejš, Zemanová, & Vavrysová, 2017) and data from a standardization study carried out in Slovakia (Čerešník & Gatíal, 2014). **CONCLUSION:** The results indicate that the clients of YDICs aged 11–15 years score higher than the current Czech and Slovak populations in 99% of the items that were monitored.

Keywords | Risk behaviour – Adolescence – Youth Drop-In centers – VRCHA

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● 1 INTRODUCTION

Adolescence is a period in human life which represents an enormous emotional as well as intellectual growth that can only be compared with the period from birth to the age of two (Stephenson, 2012). In the course of adolescence, a complex physical, moral, and mental transformation occurs (Dolejš et al., 2014a). What changes is the quality as well as the efficiency of intellectual activity, approaches, self-formation, interests, aspirations, and values (Čačka, 2000). Adolescence is, among others, also characterized by the fact that various risk behaviours may turn up for the first time or develop slowly. In comparison to adults, adolescents display risk behaviour much more often (Steinberg, 2008). Adolescence is thus a phase of life which is accompanied by various risk factors that may lead to a partial (but sometimes fatal) distortion of the individual's development. That is why it is no wonder that the prevention of risk behaviour is one of the priorities, for example, within the context of public health policy and the school system. Society therefore tries, with manifold activities and interventions, to provide support and protection against various risk factors to adolescents. One of the tools for protecting and developing an individual is youth drop-in centres (YDICs), which, together with field programmes or, for example, contact centres, count among the group of social prevention services. These services strive to prevent social exclusion and the creation and spread of undesirable social phenomena (Bednář, 2009). In particular, YDICs provide professional support and help to non-organized and socially endangered children and young people whose life is marked by a number of difficult events (such as family disintegration), conflicting social situations (e.g. delinquent behaviour), and negative experiences (e.g. neglect, parents' addictions). In order to enhance the quality and increase the professionalism (as well as effectiveness) of drop-in services, we believe it is essential to know those who we focus our services on. It is necessary to continually ask questions and conduct research. Research is, above all, the one tool that can effectively interconnect real-life practice with theory and can contribute to spreading clear ideas about the work of the employees of YDICs (Baláž, 2011). This is the only way to make professional decisions about adequate and appropriate methods, forms of intervention, and other means of preventive work. This is also the only way to escape from the usual point of view that a YDIC is a place where the employees merely "play table football" with the adolescents and to strengthen the position of YDICs as a professional social service in Czech society.

David Oldfield (1996), the head of the Center for Creative Imagination under the Foundation for Contemporary Mental Health in Washington D. C. (*The Midway Center for Creative Imagination*) and the creator of the programme called *The Journey*, which is designed for adolescents from various environments and backgrounds, including adolescents from institutional facilities, perceives adolescence as a "necessary crisis" which needs to be overcome. In Chinese a crisis is expressed by means of the sign *wēijī*, or rather two signs, of which one expresses danger and the other good opportunities (Špatenková, 2009). In order for the above-stated

"necessary crisis" to be a contribution for adolescents, we believe that it is necessary to work with adolescents in a targeted way by means of preventive activities, whether at the level of primary, secondary, or tertiary prevention. The period of adolescence may thus represent, in our view, an opportunity to learn a number of important life lessons.

● 2 THEORETICAL BASIS

2.1 Risk behaviour

Risk behaviour is perceived by the majority of the population as inappropriate and dangerous both for the person indulging in such behaviour and for their surroundings (Dolejš, 2010). Adolescents may, as a result of certain risk forms of behaviour, even jeopardize their own future (Wolff & Crockett, 2011) and, on top of that, affect their way to responsibility (Zimmerman, 2010), which represents one of the signs of a successfully completed journey from adolescence to adulthood. In the professional literature, many definitions of risk behaviour may be found. Dolejš (2010, 9), who has been pursuing this phenomenon for a long time, defines it as "*behaviour on the part of an individual or a group that causes a demonstrable increase in social, psychological, health, developmental, physiological, and other risks for an individual, their surroundings, and/or society*". Macek (2003) considers risk behaviour to be demeanour that is a direct or indirect cause of an impairment of the health of an individual, other people, or the environment. Sobotková (2014, 40) perceives "*risk behaviour as an umbrella concept for the following descriptions – problematic, asocial, delinquent, anti-social, and dissocial behaviour*". Risk-type behaviour in adolescents often stems from the current problems of the individual. By taking addictive substances or indulging in aggressive behaviour or other forms of risk behaviour, adolescents frequently try (unknowingly) to solve their acute problems, which may be insufficient self-confidence, failure at school, etc. (Machová & Kubátová, 2009). Various manifestations of risk behaviour may thus disguise socialization deficits and social handicaps, or rather obstacles and worries which count among the everyday parts of an adolescent's life, whereas society may interpret them as ignoring and violating social standards (Klíma, 2004). Understanding risk factors and processes is very important from the point of view of the identification of those "at-risk young people" who most often require a timely intervention. We must not, however, forget about the meaning of the protective factors and processes in resilience, which may provide suitable intervention tools for those who have the greatest need (Machová & Kubátová, 2009). In order to be able to prevent the consequences of risk behaviour effectively or, at least, to lessen them, it is essential to understand the psychological mechanisms that form the basis of the relationship between the personality and the risk behaviour (Maslowsky et al., 2011). Risk behaviour might be classified into various forms or activities. The list of these is, however, not agreed on by all authors. For example, Kann et al. (2014, 1) and YRBSS (The Youth Risk Behaviour Surveillance System) perceive the following six categories as being the main forms of risk behaviour:

1) behaviour contributing to unintentional injuries and violence; 2) the use of tobacco products; 3) the use of alcohol and other addictive substances; 4) sexual behaviour leading to unintended pregnancy and sexually transmitted diseases (including HIV); 5) unhealthy dietary behaviour; 6) lack of physical activity. Dolejš (2010) divides this phenomenon of risk behaviour into the following groups – abuse and/or taking legal and illegal substances; criminality; bullying, hostility and aggressive behaviour; risky sexual behaviour; problems at school and wrong-doing; extremist, hazardous, and sectarian activities; other forms of risk behaviour. This latter concept is the one that we followed in our research.

Over the last five years (2014–2018), risk behaviour has become the leading theme of tens of thousands of varied studies. This statement can be documented by e.g. the search results within the EBSCO database of electronic journals, where 75,228 results come up for the key expression “risk behaviour”. Later in this paper, we will mention the results of several studies which have a partial interconnection with Czech adolescents. At the same time, however, these studies have an international overlap because adolescents from the Czech Republic are compared with their counterparts in other countries within the context of the prevalence of selected types of risk activities.

In 2014, an international cross-sectional study, “Health Behaviour in School-Aged Children” (further only as HBSC), was conducted in 44 countries, with the results for the Czech Republic being compared with those from Slovakia, Hungary, Poland, and Ukraine in a specialized bulletin (Madarasová Gecková, Dankulincová, Sigmundová, & Kalman, 2016). It was discovered that Czech adolescents have more frequent experience with tobacco as well as marijuana when compared with the study average. The Czech students who were surveyed also disclosed that they had repeated experience with getting drunk. From the point of view of bullying and aggressive behaviour, it was detected that over the last year 23% of the 13-year-old boys and 6% of the 13-year-old girls had been involved in fights. Experience with sexual intercourse was reported by 23% of the 15-year-old boys and 24% of the 15-year-old girls. Altogether 5055 Czech adolescents aged 11–15 years were tested within the framework of the HBSC study.

As a rule, the Czech Republic takes part in the European School Survey Project on Alcohol and Other Drugs (ESPAD). The last data collection within the ESPAD validation study was conducted in 2016, and, among other things, confirmed a decreasing tendency in the field of the use of addictive drugs. The same conclusion was reached by Martin Dolejš and his colleagues within their research projects (2014, 2107) focusing on the prevalence of risk behaviour. The authors found out that the first contacts and experiments with addictive drugs are postponed to a higher age. At the same time, however, aggressive and hostile behaviour within the adolescent population is on the increase, as are various forms of theft (Dolejš et al., 2017). From the point of view of the prevalence of risk behaviour in 16-year-old adolescents, it was ascertained from the above-mentioned ESPAD

validation study that 27.4% of the students had smoked in the previous 30 days; 13.3% smoked daily, 4.5% smoked 11 cigarettes a day or more; 40.6% drank five or more glasses of alcohol on each occasion on which they drank in the previous 30 days, and drinking excessive doses at least once a week was admitted by 12.5% of the students; 32.0% of the students had tried hemp products; 24.4% had used hemp products in the last 12 months (Mravčík, 2017).

In adolescence, the brain becomes more and more sensitive to social and emotional rewards. In this period, however, the neural development which helps to balance the ability to control impulsive behaviour is not yet completed. This development is completed only in the last years of adolescence, or even later. This fact can be compared with a certain “abyss of maturing” which leads to an increase in the susceptibility of adolescents to impulsive risk behaviour, which is confirmed by another international research study conducted by Dolejš and Čerešník (2015), which showed that impulsivity as a personality trait has a close relationship to all forms of risk behaviour (delinquency, the use of alcohol and non-alcoholic drugs, bullying, and others). Impulsive individuals find it difficult to think about the consequences of their risk behaviour. According to Zimmerman (2010), the decisive aspect in this context is whether the adolescent perceives the risks (as well as benefits) – if the benefits prevail then it is highly probable that the adolescent might turn to risk behaviour.

Adolescents suffer from built-in risks in many areas of their lives. What can be perceived as unacceptable behaviour may mean a way in which adolescents cope with the challenges and developmental tasks of this period of their lives. It is therefore important to be receptive to the potential problems faced by adolescents and provide them with solutions without condemnation and reproach. As stated by Bret Stephenson (2012, 41), “*with some encouragement and leadership, young people can utilize the opportunity that is offered to the maximum*”.

2.2 Drop-in facilities for children and young people

Drop-in facilities for children and young people – often called drop-in clubs – represent a relatively new social service whose roots date back to the '90s of the 20th century (Čechlovský, 2005). From the point of view of legislation, this service was only anchored in 2006 by Act No. 108/2006 Coll., on social services as a service falling into the category of social prevention services provided only in an outpatient form or in a combination of outpatient and streetwork forms. This is the only type of social service designed directly for adolescents. More accurately, YDICs are designed for children and young people aged 6-26 years who are endangered by an unfavourable social situation or by the consequences of their own behaviour. These consequences may jeopardize not only themselves but also their environment. In real-life practice, drop-in centres are visited by social groups and individuals who show episodic occurrence

of socially deviant behaviour (e.g. the young unemployed, truants, etc.), as well as adolescents who frequently use alcohol or experiment with addictive substances (tobacco, marijuana) or are already addicted to them (Klíma, 2004). The general objective of this type of service is to improve the quality of life of children and young people by preventing or reducing the social and health risks that relate to their way of life. YDIC workers strive to create conditions that would allow their unfavourable social situation to be resolved and help them to orientate themselves better in their social environment. This service may be provided anonymously. The YDIC mission is to accompany children and young people through the period of maturing, provide them with information, and offer professional support and help in difficult life situations and thus prevent their possible failure and social exclusion. YDICs strive to make a positive change in their lifestyle and create the conditions for their integration into society (Pojmoslovi YDIC, 2008).

Until 2010, there was no such thing in the Czech Republic as a single comprehensive monitoring research project that could provide collective data on YDICs or on their clients. A change was only brought about by the establishment of co-operation between the professional association of experts and providers of drop-in services the Czech Streetwork Association and the research agency Millward Brown, which, in that year, launched a five-year research study with the aim of mapping the way services were provided by means of YDICs and detecting the effective factors in granting the successful provision of services to clients and the operation of the clubs (Dohányosová & Krajhanzl, 2011). So far, only the results of the first four years of the research are available. They show that the most frequent client of a YDIC is a boy at the age of 15 (girls make up 40% of the clients, on average) who attends a middle school and prefers to spend his free time talking to friends (from school). The most frequent forms of risk behaviour among adolescents visiting YDICs include the use of addictive substances (e.g. cigarettes daily – 49%, marijuana 1–3 times a week – 9%) and aggressive and risky sexual behaviour. More than a quarter of YDIC clients have experience with a probation officer for young people, failure at school, and repeating a class and bullying outside the club. Approximately 10% of the adolescents from YDICs had experienced staying in a refuge, sexual abuse, and child abuse, while less than 30% struggle with conflicts with parents and teachers (Millward Brown ČR, 2014).

The initial design of YDICs in the Czech Republic was influenced by the German experience (Čechlovský, 2005). The developmental tendency in both countries seems to be going in a similar direction even today – gradually, the professionalism of the services provided is increasing. At the same time it holds true that YDICs represent a place where clients are given the opportunity to take over responsibility for themselves as well as others in a safe environment. Here, children and young people have a chance to deal with the consequences of their conduct (Rauschenbach et al., 2010) and develop their personal and key social skills, such as independence, initiative, and the ability to facilitate their own self-education and cooperation with others, as well

as communication skills (Jugendministerkonferenz: Weimar, 2001). YDIC centres do not have a precise equivalent in other countries, and yet we might often find centres for the prevention of aggressiveness and youth drop-in centres for children without a home or what are known as “children of the street”, which operate on analogous working principles to our YDICs. It results from the research that these centres advocate reducing the occurrence of preliminarily terminated school attendance among adolescents, inter-generational and inter-ethnic conflicts, and the use of addictive substances and mitigation of the spread of sexually transmitted diseases. Young people may master skills that will help them solve their problems effectively and independently (Morrel-Samuels et al., 2013).

● 3 METHODOLOGY

3.1 Research questions

We set two basic research questions as part of our research study. How do the prevalent values of selected forms of risk activities differ in clients of drop-in centres for children and young people from adolescents attending middle schools and grammar schools (with six- or eight-year academic programmes)? How do the results of YDIC clients within the scope of delinquency, bullying, and abuse perceived with the VRCHA method differ from those of adolescents attending middle schools and (six- or eight-year) grammar schools?

3.2 Research group

At the point in time when the data collection was conducted in the Czech Republic, there were 239 drop-in centres for children and young people registered at the Ministry of Labour and Social Affairs of the Czech Republic. They were regularly visited by 34,405 clients, out of whom 33,066 were children and young people up to the age of 18.

When compiling the selective set of YDICs, we first set the fundamental selection criterion – membership of the Czech Streetwork Association (CAOW) as a guarantee of the prime quality of the services provided. Consequently, we set the target of including YDICs from all regions of the Czech Republic into the research. That is why, in the following step, we expressed the percentage division of all registered YDICs in individual regions. On the basis of the individual proportions, we calculated the necessary number of YDICs for every region and as a result and with respect to the above-stated requirement, we addressed other facilities which were not members of CAOW. On the grounds of data acquired from the Register of Social Services, we compiled a comprehensive list of YDICs, which we divided into groups on the basis of their region of operation. We then randomly selected three facilities from each missing region and addressed them. We required each facility to get 15 clients to fill in a set of tests. However, in the end and after mutual agreement, we sent smaller numbers of questionnaires to

certain facilities because of their lower visit rate in the period in question. The total number of questionnaires was 570, and the return rate was 88% (i.e. 499 questionnaires). Altogether, we addressed 103 facilities, 41 of which decided to cooperate, i.e. 17% of the basic group.

The research group consisted of 499 YDIC clients, which corresponds, according to our calculations, to 1.5% of the total population of adolescents taking advantage of YDIC services. Altogether, 257 boys (52%) and 213 girls (43%) aged 8–25 years and attending these facilities were tested (29 respondents (6%) did not indicate their sex), while the average age of the YDIC clients was 14.8 years ($SD \pm 2.63$).

It is quite common not to be able to obtain all the required data for a certain facility (Hendl, 2006) and that is why we had to cut 15 adolescents (3%) out of the total number of YDIC respondents because it was not possible to evaluate their sets of tests.

The resulting data was compared with the Czech standards created by Dolejš et al. (2014), which originated on the basis of data acquired from a comprehensive national study which examined 4198 students aged 11–15 attending selected types of schools in the Czech Republic, of whom 1964 were boys and 2170 girls (for the purposes of this article, we refer to this study as the standard study). Further on, we compared the results with data acquired within a project realized in the 2016/2017 academic year in which 2437 adolescents from middle schools and (six- and eight-year) grammar schools participated (this study is referred to as the replication study) (Dolejš, Zemanová, & Vavryšová, 2017). We also compared the results with the outcomes of an international research study conducted by Čerešník and Dolejš (2015) which involved 1704 Slovak adolescents (837 boys and 867 girls).

3.3 Methods

We assume, on the basis of our previous professional experience, that it is often difficult for YDIC clients to keep their attention focused for a long time. That is the reason why, in the course of compiling the set of tests, we targeted diagnostic tools which are, with regard to their content, as concise and understandable as possible. In other words, we selected tools for which we assumed that adolescents would be able to fill in the questionnaire within a short span of time. Another significant factor in the selection was, however, the quality of the methods applied (i.e. their reliability, the internal consistency of individual items, their suitability for use for the given target group, etc.). On the introductory page of the set of tests, we asked the respondents to fill in basic data, such as their age, month and year of birth, sex, and school year. The instructions for administration were also given at the beginning of every questionnaire. The psycho-diagnostic methods that were applied included the following – Satisfaction With Life Scale-Child – SWLS-C (Gadermann et al., 2010; Zemanová & Dolejš, 2013), Occurrence of Risk Behaviour in Adolescents – VRCHA (Dolejš & Skopal, 2013), and

the Rosenberg Self-esteem Scale – RŠS (Rosenberg, 1965; Blatný & Osecká, 1994).

In the next section, we will only describe in more detail the VRCHA method, which played a fundamental role for the data used in this article.

3.3.1 Occurrence of Risk Behaviour in Adolescents (VRCHA)

The Occurrence of Risk Behaviour in Adolescents (VRCHA) was created by Dolejš and Skopal in 2013 when they were searching for interconnections between risk behaviour (the use of marijuana, thefts, and bullying) and certain personality traits in adolescents (self-esteem, impulsivity, or extraversion). The primary experimental version provided information on the prevalence of various forms of risks, which enabled the authors to carry out subsequent mathematical statistical analyses. The springboard for the origin of an independent VRCHA method was 40 items, while the consequent correlation and factor analyses narrowed their number to 18 final items. At the same time, Dolejš and Skopal also identified within this set of items three fundamental factors, which they called abuse, delinquency, and bullying (Dolejš et al., 2014a).

The “ABUSE” scale comprises seven items which focus on the (ab)use of addictive substances (alcohol, cigarettes, and marijuana). The factor is supplemented with a question regarding sexual intercourse, where factor analysis showed significant interconnections between individual items (Dolejš et al., 2014a). The factor load of individual items ranges within the region of 0.34 up to 0.73. The correlation of items towards the total factor score is within the region of $r = 0.33$ up to 0.84 (Dolejš & Orel, 2017). Another factor is “DELINQUENCY”, which also consists of seven items. Here, the respondents are questioned about the issue of stealing money or things, damage to other people’s property, and falsification of their parents’ signatures (Dolejš et al., 2014a). The last factor that is identified is “BULLYING”, which comprises four items. They focus on physical and verbal maltreatment and cyber-bullying. If an adolescent answers these questions positively, he or she is obviously a victim of maltreatment by his/her schoolmates (Dolejš et al., 2014a).

The administration of this instrument takes up approximately 10 minutes. This is what is called a “pencil-and-paper” method. The answers to the individual items are selected by the respondents from yes/no options. Each positive answer counts for one point, whereas there are no points for a negative answer. The overall score may then range between 0 and 18 points. This is then a sum of the positive answers to all the items in the questionnaire. The abuse scale comes between 0 and 7 points, just like the delinquency scale. In the bullying section, respondents may gain from 0 up to 4 points. Again, this is a sum of the points for each positive answer to questions relating to the given factor. The reliability of such a method is, according to the Cronbach’s alpha, between 73 and 84 (Dolejš & Orel, 2017). As already stated above, population standards for adolescents aged

RESEARCH PROJECT	Abuse	Delinquency	Bullying	Overall score
Dolejš, Skopal, Suchá et al. (2014) – normative study N = 4183; Age = 12.99 years (SD+/-1.24)	.75	.67	.53	.81
Dolejš, Zemanová, and Vavryšová (2017) – replication study N = 2745; Age = 13.41 years (SD ± 1.31)	.80	.73	.55	.84
Čerešník and Gatál (2014) – population of Slovak adolescents N = 1706; Age = 12.45 years (SD+/-1.49)	.76	.73	.55	.83
Zemanová and Dolejš (2015) – population of YDIC clients N = 499; Age 14.8 years (SD ± 2.63)	.88	.88	.48	.81

Table 1 | Internal consistency of VRCHA questions (Cronbach's alpha)

11–15 years living in the Czech Republic were obtained with this method in 2014 by Dolejš et al. A review of the internal consistency of the method applied in the selected research studies is shown in *Table 1*.

3.3.2 Technical and aesthetic aspects of administration

The data collection in the individual YDICs was ensured by local employees who were instructed in advance how to administer the questionnaires by means of an email/phone call and an accompanying letter. The accompanying letter, including the details of a contact person, was always enclosed in the envelope with the printed-out questionnaires. Data collection from respondents from the general population was conducted by visiting schools. We sent, in advance, printed-out forms to all the participating schools, together with the informed consent of the legal representatives of individual students, a description of the set of tests, and information on the purpose of the research. All the filled-in questionnaires from YDIC clients, as well as from students, were marked with a code to facilitate their better checking.

Within the process of cleaning the data, we discarded those questionnaires that could not, for various reasons, be included in the evaluation (e.g. a significant part of the questionnaire was missing, obviously falsely answered questions or, in general, questionnaires that were filled in with a great degree of negligence, etc.). We approached the cleaning and checking process rather strictly in order to achieve a validity of the research that was as high as possible, even if we risked a reduced number of respondents in the group that was monitored. That is, we share the same opinion as Hendl (2006, 78), who states that “*the results of a statistical analysis are as good as the input data*”.

Participation in the research project was 100% voluntary; each respondent had the right to terminate or interrupt their cooperation at any time. Nobody was forced to take part in the project. In the case of middle school students below 15 years of age, we requested their legal representatives to sign an informed consent to the child's participation in the research. Further, we paid attention to the privacy and personal data protection of individual research participants, i.e. participation in the research was strictly anonymous, and we did not ask the respondents for any information that might lead to their identification. All the respondents

were, at the same time, informed about the purpose of the research and who would have access to the data provided.

Throughout the course of the entire survey, the research team was especially particular about the fact that the data that was acquired was not accessible to any unauthorized people and was only used for the original purposes it was provided for.

3.4 Methods of data processing and analyses

Prior to conducting statistical analyses, we first digitalized all the data that had been acquired by creating a data sheet in the Excel 2013 program in Microsoft Office 2013. We compiled the data matrix according to Hendl (2006), so that there was a description of a single object on each line of the table and data for one variable in each column. Subsequently, we cleared and checked the electronic data and transferred it into the STATISTICA 12 statistical program, which was used for the final analyses. At first, we detected the distribution of rough scoring in the given variables. The rate of reliability of the individual methods, as well as the factors themselves, was detected by means of the Cronbach's alpha coefficient.

● 4 RESULTS

The prevalence of risk behaviour was examined within three factors – abuse, delinquency, and bullying (from the point of view of the victim). From the mutual relations between the overall score marked as “overall score” and the three monitored variables it follows unambiguously that both the delinquency and abuse factors have the closest relation to the overall score. The factor of bullying has a less close relation to the two other factors (see *Table 1*).

By means of the Occurrence of Risk Behaviour method (VRCHA), we analysed the prevalent values of the specified risk activities in the sample who were examined, focusing on adolescents aged 11–15 who visit YDICs.

The data obtained from the respondents was compared with the population standards created by Dolejš et al. (2014) for students in the same age cohort in secondary education,

Items of the VRCHA method	Population	Population	Population	YDIC
	11–15 years CR	11–15 years CR	10–15 years SR	11–15 years
	(2014)	(2017)	(2014)	(2015)
	N = 4198	N = 2437	N = 1706	N = 278
	Yes	Yes	Yes	Yes
Factor ABUSE				
Drinking alcohol (last 30 days)	31.19%	31.19%	21.04%	44.60%
Smoking, use of marijuana or hashish (lifetime)	10.86%	8.51%	9.00%	38.49%
Smoking cigarettes (last 30 days)	10.88%	8.35%	12.20%	47.48%
Sexual intercourse (lifetime)	5.55%	5.15%	6.10%	27.34%
Smoking more than five cigarettes (per day)	3.04%	2.53%	3.60%	37.77%
Drunkenness connected with problems with walking and talking, vomiting, and amnesia (last 30 days)	3.93%	3.07%	4.90%	16.18%
Abuse of medicine (lifetime)	8.95%	7.35%	8.60%	16.19%
Factor DELINQUENCY				
Have you ever forged your parents' signatures? (lifetime)	29.87%	33.72%	24.70%	48.56%
Theft of money from parents/other people	11.89%	13.12%	17.00%	26.62%
Truancy (lifetime)	8.30%	8.68%	12.00%	26.98%
Theft of a certain thing (lifetime)	23.31%	27.53%	25.40%	34.89%
Damage to other people's property for fun (lifetime)	14.96%	15.07%	16.30%	30.94%
Theft as a result of certain activities (lifetime)	7.36%	8.27%	6.60%	34.53%
Shoplifting (lifetime)	10.71%	11.59%	10.80%	33.45%
Factor BULLYING				
Intentional physical maltreatment (lifetime)	25.16%	20.39%	20.80%	38.49%
Victim of rude and vulgar insults from schoolmates (last 30 days)	17.61%	18.73%	35.80%	32.01%
Maltreatment or ridiculing on the Internet (last 30 days)	7.12%	6.31%	8.40%	15.83%
Maltreatment by schoolmates (last 30 days)	11.68%	12.00%	13.80%	16.90%

Table 2 | The prevalence of risk activities in a representative sample of Czech and Slovak students (Skopal et al., 2014; Čerešník & Gatíal, 2014; Dolejš, Zemanová, & Vavrysová, 2017, Zemanová & Dolejš, 2015), and YDIC clients

Note: Population aged 11–15 in the Czech Republic (2014) – standard study by Dolejš et al. on the population of Czech adolescents aged 11–15 years; Population 11–15 years ČR (2017) – standard study by Dolejš, Zemanová, and Vavrysová on the population of Czech adolescents aged 11–19 years (selection of respondents: 11–15-year-olds from middle schools and grammar schools, not published); Population 10–15 years SR (2014) – standard study by Čerešník and Gatíal conducted in Slovakia; YDIC 11–15 years (2015) – standard study by Zemanová and Dolejš on the adolescent population, or rather YDIC clients aged 11–15 years

with the data collected by Čerešník et al. (Dolejš & Čerešník, 2015), and also with the results of the research conducted by Dolejš, Zemanová, and Vavrysová in 2017 (Dolejš et al., 2017). The particular percentage distribution of individual risk activities can be found in *Table 2*.

It follows from the results that the YDIC clients aged 11–15 get higher scores than the general Czech population in 100% of all the risk activities that were monitored and the Slovak population in 94.4% of them, while the Slovak middle school students had more experience (by 3.79%) with verbal aggressiveness than the adolescents attending YDICs. This is a very interesting result as YDIC clients are regarded as an at-risk population. The respondents in Čerešník and Gatíal's study (2014) were selected from the general Slovak population of middle school and grammar school students.

Furthermore, we discovered that the YDIC clients smoke more than five cigarettes a day, i.e. 12 times more often

than the general population of Czech adolescents. Marijuana use also occurs more often among the YDIC clients – experimenting with this addictive substance was confirmed by 38.49%; in the population of Slovak students, 9.00% had had this experience, in the Czech population 10.88% in the normative study and 8.35% in the reciprocal study.

It is obvious, then, that a drop occurred between the normative and reciprocal studies, not only for this item but also for all the items focusing on the field of the use of addictive substances. On the other hand, the tendency in the items focusing on delinquency was the opposite. Verbal aggressiveness in the form of rude and vulgar insults within the last 30 days was confirmed by 17.61% of the respondents in the normative study and the results in the replication study show a level that is one per cent higher. Physical maltreatment was confirmed by 11.68% in the first study and 12.00% in the second study. However, we can probably see a decrease in the number of victims on social networks –

7.12% in 2014 and 6.31% in 2017. Although the prevalence of drunkenness in the last 30 days (including problems with walking and talking, vomiting, or memory lapses) dropped from 3.93% to 3.07% in the Czech adolescents, it is still an alarming fact because this affects, in per capita terms, more than 10 thousand adolescents from the entire population of students in the Czech Republic (Dolejš et al., 2014; Dolejš et al., 2017). In the YDIC clients, this monitored activity was four times more frequent and reached the level of 16.19%.

The most frequent experience confirmed by the YDIC clients in the age group that was monitored is in the area of falsification of their parents' signatures, equalling 48.56% of the total number. Immediately after this comes smoking cigarettes in the last 30 days, with a value of 47.48%. The imaginary third position is occupied by the prevalence of use of alcohol in the last 30 days, with a value of 44.60%. The level of 30% was exceeded in eight items, with the highest values being achieved in the items focusing on experience with marijuana and self-harming (both identically 38.49%). A total of 37.77% of the YDIC clients aged 11–15 smoked more than five cigarettes a day. The ascertained value is more than alarming, especially if we take into account that this is, according to some authors, a highly risky behaviour with regard to the possible problems or physical addiction (e.g. Dolejš, 2010). There even exists some evidence that *“smoking in adolescents in any form (cigarettes, hookahs), even if the duration of the exposure is relatively short, plays an important role in forming lung tumours in the young generation”* (Bajčiová et al., 2011, 283). Verbal aggressiveness in the last 30 days in the form of vulgar insults had been experienced by 32.01% of the clients, physical maltreatment by 16.90%. A third of the YDIC clients had had experience with various thefts, problems with the police, and damage to other people's property.

Other frequently occurring forms of risk behaviour among the YDIC clients were truancy (26.98%) and experience with sexual intercourse (27.34% of the respondents). On top of that, 50% of this number were respondents who had not even reached the age of consent, 15 years of age!

When comparing the YDIC clients with the values obtained from the normative, reciprocal, and Slovak studies, we

found out that the YDIC clients reach statistically significant values in all factors, as well as in the overall score for risk behaviour. The difference in the total risk rate is 2.99–3.29 points, in the abuse factor 1.43–1.64 points, in delinquency 1.19–1.22 points, and in bullying 0.25–0.46 points (for more details, Table 3). The YDIC clients aged 11–15 years behave in a much more risky way than their contemporaries from the general Czech and Slovak populations.

From our further findings it follows that 44% of the adolescents aged 11–15 who use YDIC services gain more points for the abuse factor than the average value plus one standard deviation in the general population of the same age group. When comparing other factors, we reached the values of 41% in delinquency and 28% in bullying. From the point of view of the overall score, this includes 47% of the adolescents from YDICs. It is thus obvious that the clients of drop-in centres for children and young people are highly at-risk individuals.

In Table 4, we present a comparison of girls and boys (YDIC clients aged 11–15 years) regarding the occurrence of individual risk forms of behaviour, together with data on the population standards. Boys reach higher values in all the factors that were monitored, as well as in the overall score (YDIC clients). We may also state that boys are more susceptible to thefts and aggressiveness, have problems with the police more often, and play truant more often. Compared with the standard from our results, no statistical significance was deduced regarding the item concerning the falsification of parents' signatures. In all the groups that were compared, girls use medicine without having a health reason to do so more often. In our research, it was not confirmed, compared with the standard, that girls would use more tobacco products or that they would reach higher values in the score for abuse. The YDIC clients reach values for the total risk rate in the VRCHA questionnaire that are twice as high. Slovak adolescents may serve as an example – 2.90, with Czech adolescents getting even slightly less – 2.56, and YDIC clients – 6.02 (Čerešník & Gatíal, 2014; Skopal, Dolejš, & Suchá, 2014).

Furthermore, we observed whether the occurrence of risk behaviour grows with age by means of the total risk result-

VRCHA method	Population 11–15 years CR (2014)	Population 11–15 years CR(2017)	Population 10–15 years SR (2014)	YDIC 11–15 years (2015)
	M	M	M	M
Abuse	0.85	0.64	0.66	2.28
Delinquency	1.14	1.17	1.12	2.36
Bullying	0.69	0.57	0.78	1.03
Overall VRCHA score	2.68	2.38	2.53	5.67

Table 3 | Mean values in the VRCHA questionnaire factors for YDIC clients, students according to the standard and replication studies, and Slovak standardization study with an age 11–15 arithmetic mean

Note: Population aged 11–15 in the Czech Republic (2014) – standard study by Dolejš et al. on the population of Czech adolescents aged 11–15 years; Population 11–15 years ČR (2017) – standard study by Dolejš, Zemanová, and Vavrysová on the population of Czech adolescents aged 11–19 years (selection of respondents: 11–15-year-olds from middle schools and grammar schools, not published); Population 10–15 years SR (2014) – standard study by Čerešník and Gatíal conducted in Slovakia; YDIC 11–15 years (2015) – standard study by Zemanová and Dolejš on the adolescent population, or rather YDIC clients aged 11–15 years

Items in the VRCHA method	Population 11–15 years CR (2014)			Population 11–15 years CR (2017)			Population 10–15 years SR (2014)			YDIC 11–15 years (2015)		
	CH	D	p	CH	D	p	CH	D	p	CH	D	p
Drinking alcohol (last 30 days)	0.32	0.31	0.539	0.34	0.29	0.007	0.24	0.19	0.011	0.45	0.44	0.932
Smoking, use of marijuana or hashish (lifetime)	0.11	0.11	0.220	0.07	0.06	0.70	0.11	0.07	0.006	0.41	0.30	0.442
Smoking cigarettes (last 30 days)	0.09	0.12	0.002	0.09	0.08	0.072	0.13	0.11	0.382	0.49	0.46	0.684
Sexual intercourse (lifetime)	0.07	0.05	0.008	0.06	0.04	0.01	0.08	0.04	0.001	0.40	0.17	0.001
Smoking more than five cigarettes (per day)	0.02	0.04	0.031	0.02	0.02	0.958	0.03	0.04	0.31	0.35	0.40	0.463
Drunkenness connected with problems with walking and talking, vomiting, and amnesia (last 30 days)	0.04	0.04	0.575	0.03	0.03	0.745	0.06	0.04	0.01	0.20	0.13	0.148
Abuse of medicine (lifetime)	0.07	0.11	0.001	0.06	0.09	0.005	0.09	0.08	0.393	0.10	0.21	0.013
Factor ABUSE	0.71	0.77	0.13	0.66	0.64	0.569	0.75	0.56	0.002	2.40	2.18	0.384
Have you ever forged your parents' signatures? (lifetime)	0.25	0.34	0.001	0.29	0.38	<0.001	0.22	0.27	0.02	0.46	0.50	0.521
Theft of money from parents/ other people	0.13	0.11	0.04	0.13	0.13	0.91	0.19	0.15	0.01	0.28	0.26	0.75
Truancy (lifetime)	0.09	0.08	0.288	0.09	0.08	0.30	0.15	0.09	<0.001	0.33	0.22	0.36
Theft of a certain thing (lifetime)	0.30	0.17	0.001	0.33	0.23	<0.001	0.33	0.19	<0.001	0.41	0.30	0.052
Damage to other people's property for fun (lifetime)	0.21	0.09	0.001	0.19	0.11	<0.001	0.22	0.10	<0.001	0.39	0.25	0.01
Theft as a result of certain activities (lifetime)	0.11	0.04	0.001	0.11	0.05	<0.001	0.09	0.04	<0.001	0.43	0.27	0.01
Shoplifting (lifetime)	0.13	0.08	0.001	0.13	0.10	0.09	0.14	0.08	0	0.38	0.30	0.16
Factor DELINQUENCY	1.23	0.92	0.001	1.26	1.09	0	0.24	0.18	<0.001	2.68	2.09	0.02
Intentional physical maltreatment (lifetime)	0.25	0.26	0.001	0.19	0.21	0.14	1.33	0.92	0	0.35	0.42	0.23
Victim of rude and vulgar insults from schoolmates (last 30 days)	0.19	0.16	0.003	0.21	0.17	0.01	0.39	0.33	0.01	0.31	0.33	0.67
Maltreatment or ridiculing on the Internet (last 30 days)	0.06	0.08	0.108	0.06	0.07	0.15	0.09	0.08	0.46	0.14	0.17	0.49
Maltreatment by schoolmates (last 30 days)	0.11	0.12	0.688	0.12	0.12	0.85	0.15	0.13	0.30	0.14	0.19	0.27
Factor BULLYING	0.62	0.61	0.828	0.58	0.57	0.87	0.86	0.71	0	0.94	1.11	0.18
OVERALL Risk Behaviour SCORE	2.56	2.30	0.002	2.50	2.29	0.05	2.90	2.17	<0.001	6.02	5.38	0.21

Table 4 | Items in the VRCHA Questionnaire – Abuse, Delinquency, Bullying Factors, and Overall Score – indicating the occurrence of certain risk behaviours amongst girls and boys and the significance level

Note: Values highlighted in grey mark the detected statistical significance. “CH” = boys, “D” = girls, “p” = minimum level of statistical significance Population aged 11–15 in the Czech Republic (2014) – standard study by Dolejš et al. on the population of Czech adolescents aged 11–15 years; Population aged 11–15 years CR (2017) – standard study by Dolejš, Zemanová, and Vavryšová on the population of Czech adolescents aged 11–19 years (selection of respondents: 11–15-year-olds from middle schools and grammar schools, not published); Population 10–15 years SR (2014) – standard study by Čerešník and Gatial conducted in Slovakia; YDIC 11–15 years (2015) – standard study by Zemanová and Dolejš on the adolescent population, or rather YDIC clients aged 11–15 years

ing from the VRCHA method (Figure 1). We found out that in the general Czech and Slovak populations of adolescents aged 11–15 years, the occurrence of risk behaviour increases gradually with the age of the respondents, with the Slovak population seeming to be at greater risk. The tendency of the prevalence of risk behaviour to increase with age in adolescents visiting YDICs is virtually identical to that in the general Czech and Slovak populations, the “only” difference

being that the clients of the drop-in facilities behave in a much more risky way. It may therefore be summarized that the adolescents in all the groups that were surveyed gradually behave in an increasingly risky way from the age of 11 to 15 years.

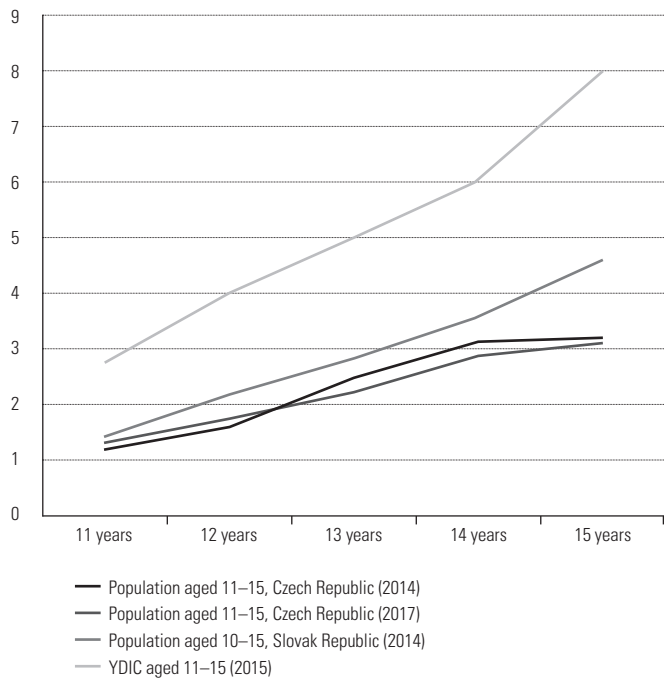


Figure 1 | Development of overall risk in age cohorts according to the VRCHA questionnaire

Note: Population aged 11–15 in the Czech Republic (2014) – standard study by Dolejš et al. on the population of Czech adolescents aged 11–15 years; Population 11–15 years ČR (2017) – standard study by Dolejš, Zemanová, and Vavryšová on the population of Czech adolescents aged 11–19 years (selection of respondents: 11–15 year-olds from middle schools and grammar schools, not published); Population 10–15 years SR (2014) – standard study by Čerešník and Gatial conducted in Slovakia; YDIC 11–15 years (2015) – standard study by Zemanová and Dolejš on the adolescent population, or rather YDIC clients aged 11–15 years

● 5 DISCUSSION AND CONCLUSIONS

Drop-in facilities for children and young people represent a relatively young type of social service which is the only service, within the entire spectrum of social services provided in the Czech Republic, designed directly for adolescent individuals. YDICs might, in brief, be characterized by a metaphor as a “waiting room for adulthood”. The employees of these facilities guide adolescents through the period of maturing and provide them with support and assistance in difficult life situations. They strive to help the young people to go successfully through the labyrinth of adolescence leading to adulthood. In order for their activity to be effective, of prime quality, professional, and leading to the set goals, it is necessary to know the addressees of such services well and keep asking the question “Who is the typical YDIC client?”

The fundamental finding of our research conducted in clients of drop-in centres for children and young people all over the Czech Republic is that this social service is used by young people who are at high risk. A reliable indicator of this finding was, above all, the comparison of adolescent YDIC clients aged 11–15 with the population standards for young people in the same age cohort (according to Dolejš et al., 2014). In all the factors covered by the VR-

CHA tool (abuse, delinquency, and bullying from the point of view of the victim, as well as in the overall score), YDIC clients reach statistically significantly higher values than the general population of adolescents, i.e. their behaviour is much more risky. In particular, the YDIC adolescents outstrip the general adolescent population aged 11–15 in all the forms of risk behaviour that were monitored, often by even more than 30%. The most frequent forms of risk behaviour in this target group are falsification of parents’ signatures (48.56%), smoking cigarettes in the last 30 days (47.48%), and drinking alcoholic drinks in the last 30 days (44.60%). Another startling fact is the rate of experience with a non-legal addictive substance (marijuana) in this age cohort of clients (38.49%). This is especially true when we take into account the results of a 38-year-old study which proved that the participants in this longitudinal research who had already started using marijuana before their 18th birthday still showed reduced intelligence and ability to perceive and sustain attention even 20 years later (Meier et al., 2012). It was also proved that 27.34% of the YDIC clients have experience with sexual intercourse. That is why we may declare that more than a quarter of the YDIC clients are in danger of negative consequences for their further psychosexual development (Weiss, 1998). At the same time, it is necessary to highlight the fact that half of these “experienced” clients have not yet reached the age of consent to sexual intercourse, 15 years of age. YDIC adolescents are also very often regular smokers who smoke more than five cigarettes a day. Other items in the VRCHA method where the YDIC clients “beat the record” of 30% are activities relating to: various thefts, damage to other people’s property, problems with the police, self-harming, and vulgar and rude insults from schoolmates. From the perspective of gender differences within the group of adolescents that was examined, it was confirmed that boys are more susceptible to risk activities. This confirms the outcomes of various research studies (e.g. Dolejš et al., 2010, 2014a; Zimmermann, 2010) which state that boys are more predisposed to risk behaviour, especially in the field of factors contributing to delinquency. These findings are only valid, however, for younger adolescents. It seems that the differences between girls and boys are wiped out in the later stages of adolescence.

The results obtained within our research provided us with a response to the question of what the most frequent risk activities indulged in by the addressees of social services provided in drop-in centres for children and young people are. All the above-stated findings are perceived as beneficial to developing social work with young people within YDICs. Working extensively with their clients, the employees of these facilities have relatively precise information about the areas in which a given individual shows the highest tendency to take risks. That is why they can focus their preventive operations on this target group. The data acquired from our research can also provide a substantial basis for the conception and realization of “evidence-based” preventive programmes which are based on scientific evidence (whether in the context of primary, secondary, or, in some cases, even tertiary prevention).

In respect to the truly high (even alarming) occurrence of risk behaviour in this target group, we believe that we clearly managed to justify the provision of drop-in services for children and young people. Risk behaviour may disturb the individual's way to responsibility and adulthood. YDIC employees thus strive to minimize these risks and other social deficits and social handicaps of their clients. They make an effort to ensure the development of their personality in the right direction and attempt to lead them successfully on their "heroic path" from childhood to adulthood. We assume, however, that it is important at present to develop methods applied when working with clients and to enhance the professionalism of employees so that the set aims can be achieved. On the grounds of the experience with the tools applied in our research, we believe that we managed to compile an efficient set of screening tools that might be utilized in the everyday operation of YDICs. They might represent a suitable starting point for compiling targeted preventive programmes within the given facility (so that they are "tailor-made"). We are, however, aware of the fact that it is essential to elaborate thoroughly on the possible methodology of such a method for working with clients. As stated by Dolejš (2010, 14): "The evaluation of an adolescent on the basis of deviations from certain 'population averages' might be misleading and highly risky with respect to possible harm done to him/her. Inaccurate, false, and low-quality diagnostics may lead to inadequate steps." When dealing with young people who are at high risk, it is essential to assume an attitude that is free of confrontation or condemnation because such an approach is especially promising for streetwork with young people (Baer & Peterson, 2002 in Zimmerman, 2010). We would like to compile a set of methodological guidelines for social workers concerned about how to apply these methods in real-life practice in YDICs. Another source of inspiration for preventive work with YDIC adolescents may be the starting points of the Unplugged programme, which is based on the principle of the comprehensive impact of the social environment, interactivity, and the incorporation of themes of personal skills and normative convictions. The programme is designed especially for children aged 12–14 years (more details about the Unplugged programme can be found, e.g., at www.adiktologie.cz). Other suitable approaches for comprehensive work with adolescents are, in our opinion, the Path of a Hero concept developed by the American psychologist and psychotherapist Bret Stephenson, who worked for over 20 years with at-risk young people in the USA (more can be found at www.adolescentmind.com) or The Journey by David Oldfield, which has already been mentioned. Both concepts work with inner transformational rituals (from childhood to

adulthood) which lead the inner imagination of adolescents through five phases of a heroic journey and provide them with a full experience of initiation. Both programmes have been used successfully with adolescents from various environments, including adolescents from youth educational centres and psychiatric institutions. They highlight that the structure of transformational rituals corresponds not only with the structure of mythological stories but also with the developmental issues that are faced by all adolescents.

In order for the response to the question "Who are the typical YDIC clients?" to be complete we recommend undertaking research in future that would focus on specifying other psychological variables, especially impulsivity in adolescents, which has been proved to have a close relation with the occurrence of risk behaviour. This relation has been detected throughout various studies (Dolejš et al., 2014; Skopal et al., 2014; Dolejš & Orel, 2017).

It follows from the results of our research that drop-in facilities for children and young people succeed in capturing individuals at high risk and working on their personal development in order for them to pass safely from childhood to adulthood. Our research fulfilled our aim and, on the basis of the results, we are able to define the target group of YDIC clients more precisely. We have thus found the answer to the question of who the typical user of the YDIC services is from the point of view of risk activities.

Authors' contributions: Vanda Zemanová and Martin Dolejš jointly proposed the form of the study and its design. Vanda Zemanová conducted the background literature search and conducted the preparation of the data collection, as well as the data collection itself. Furthermore, she drafted the initial version of the manuscript. Martin Dolejš worked on the data assembly and cleaning, conducted the statistical analyses, and assisted in the data interpretation and preparation of the manuscript. Both authors contributed to the article and approved the final form of the manuscript.

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Resilience, Authenticity, Emotionality, and Vulnerability to Alcohol Dependence among Slovak University Students

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AIM: The aim of this study was to explore direct and indirect relationships between resilience, authenticity (authentic living, self-alienation, accepting external influences), following and ignoring positive and negative emotions and vulnerability to alcohol dependence of university students. **METHODS:** AUDIT (The Alcohol Use Disorder Identification Test) (Barbor et al. 2001), The Connor-Davidson resilience scale (Connor, Davidson, 2003), The Following Affective States Test, Gasper, Bramesfeld, 2006), The Authenticity scale (Wood et al., 2008). **SAMPLE:** 334 of university students from Slovakia participated (mean age = 22.15; SD = 1.41; 35.5% women, 64.5% men). **RESULTS:** Direct positive

relationships of vulnerability to alcohol dependence and following of positive emotions and self-alienation were found. Negative relationships of vulnerability to alcohol dependence with authentic living were found. Indirect effect of resilience (mediated by authentic living, self-alienation, accepting external influences, ignoring of negative emotions) as well as an indirect effect of authentic living (mediated by following of positive and negative emotions) and indirect effect of ignoring of positive emotions (mediated by self-alienation) was detected. **CONCLUSION:** Highlighting the significant role of authenticity, resilience and emotional states in relation to vulnerability to alcohol dependence.

Keywords | Resilience – Authenticity – Emotionality – Vulnerability to alcohol – Slovak university students

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● 1 INTRODUCTION

University students have been shown to engage in drinking more frequently than their working peers (Mekonen et al., 2017). Furthermore, their drinking typically shows a riskier pattern, such as bingeing, which is often followed by negative consequences and problems (Petruželka et al., 2018). These problems have a negative effect on their mental and physical health and may cause problems in their personal development and hinder their personal growth (Davoren et al., 2018). Recreational drug use in the previous adolescent stage may, in some individuals, be replaced by alcohol use as a coping strategy for dealing with difficult life tasks, situations, or negative emotions. This type of alcohol use is often heavy and directly linked to emotional problems with potentially serious consequences, such as developing an addiction. Alcohol dependency is a risk factor for serious disability or premature death among young people. It has been estimated that approx. 14–20% of university students fulfil the criteria for alcohol use disorder, with a certain variability across different continents and countries (Mekonen et al., 2017; Podstawski, Wesołowska, & Choszcz, 2017). Understanding the inner mechanisms of alcohol use in relation to selected variables – resilience, authenticity, and emotionality – can contribute to reducing the risks and enhance the potential for the healthy development of young adults. Thus, the main goal of this study is to explore the relationship between vulnerability to alcohol dependence and selected intrapersonal factors: resilience, authenticity (authentic living, self-alienation, and acceptance of external influence), and following or ignoring emotional states.

● 2 THEORETICAL BACKGROUND

Resilience, authenticity, and subjective emotional state were selected as relevant intrapersonal factors in relation to alcohol use among university students.

The psychological constructs of resilience, authenticity, and emotional state used in this study are understood in terms of a capacity that is important for the development of healthy behaviours which may be protective with regard to alcohol use and enhance personal development.

Resilience as a complex and dynamic multidimensional construct is based on the interaction between neurobiological, social, and personality factors (Southwick et al., 2014). It is usually understood in terms of a trait or a capacity to cope or bounce back after facing a complicated situation, particularly if it threatens one's stability, vitality, or growth. Resilience is also understood in terms of positive adaptation when overcoming difficulties or facing adversity or risks. Despite this considerable variety in terminology, it is important to emphasize not the restrictive parts of the process but the potential resources and focus on the opportunities to use internal and external resources and personal strengths in everyday functioning. The significant protective character of resilience in relation to vulnerability to alcohol dependence among adolescents has been supported

by many authors, e.g. Long et al. (2017), Martz et al. (2018), Schulenberg et al. (2017), and Rudzinski et al. (2017). For example, it was found that the protective effect was not linear, but the highest risk was still predicted by a low level of resilience. Furthermore, resilience was found to produce significant relationships with other constructs of positive psychology such as life satisfaction, emotional well-being, self-esteem, autonomy, self-efficacy, and positive relationships as well as positive emotionality, and an inverse relationship with negative emotionality was found (Robinson, Larson, & Cahill, 2014). At the same time the interactive effect of protective and risk factors (on the level of an individual and the environment) plays a crucial role in the process of resilience (Mansfield et al., 2016). In particular, it has been suggested that resilience may mediate or moderate the sensitivity of unfavourable factors from the environment.

Authenticity is a result of satisfaction of important psychological needs, e.g. autonomy, competence, and relationships, and is closely related to living in line with one's values and experiencing a feeling of meaningfulness (Smallenbroek, Zelenski, & Whelan, 2017). Authenticity is an integral part of well-being, especially in relation to the eudaimonic aspects of well-being, such as one's ideals (Schmader & Sedikides, 2018). In general, people usually report the feeling of being authentic (experiencing a state of authenticity) in situations in which they feel competent, and in situations which are interesting, engaging, fun, safe, and filled with positive emotions, relaxation, compassion, pride, and excitement. On the contrary, inauthenticity tends to be connected more with the context of unpleasant situations, problems, pressure to conform to the standards and expectations of others, failing to adhere to one's personal norms or the norms of significant others, and situations of loneliness and isolation connected to experiencing fear, apprehension, sadness, and anxiety (Sedikides et al., 2018).

In Western culture, authenticity is connected to expressing both the positive and the negative. According to humanistic psychology, authenticity as a trait reflects the congruence between three levels of personality (Wood et al., 2008). The first aspect of authenticity, self-alienation, is the congruence between the first level, consisting of ongoing internal experiences, and the second level, consisting of the symbolization of these experiences; conscious processing. This process is never perfect because some experiences can be suppressed, biased, altered, unprocessed consciously, or processed in a biased way leading to psychopathology. The second level is authentic living, which concerns the congruence between the conscious level of the processed experience and the third level, the actual behaviour. Authentic living reflects the contact with the authentic true self in its unbiased symbolic form. Life in most situations is experienced in line with one's own values, ideas, and feelings. The third level of authenticity is accepting external influences. The influence of significant others is expressed by accepting some experiences and situations in the form of introjected material. Sedikides et al. (2018) showed that there is an association between authentic living and self-esteem, autonomy, self-efficacy, personal strength, resilience,

meaningfulness, and positive affectivity. On the other hand, self-alienation and acceptance of external influence have been connected with a higher level of anxiety and a higher level of negative affectivity. According to Bryan and Baker (2017), authenticity helps to level the negative influence of loneliness on the problems related to alcohol, physical symptoms, depressive symptoms, and anxiety symptoms. The significance of authenticity and a lower level of alcohol use or abstinence was found by Conroy de Visser (2015).

Following one's own emotional states and bringing them into awareness constitutes an important part of the process of self-regulation (Gross, 2014). Gasper and Bramesfeld (2006) identified different causes for the tendency to monitor one's own emotional states. On the basis of two basic motivational principles, the behavioural activation system and the behavioural inhibition system, as functions of the central nervous system of organisms (Pinto et al., 2011), following positive emotional states is related to identifying the presence of something rewarding, while the tendency to follow one's own negative emotional states is related to identifying signals of threats and a consequent effort to avoid the threatening situation. Gasper and Bramesfeld (2006) outline four independent dimensions when addressing the following of one's affective state. They found that following one's own positive feelings intensifies the search for situations related to experiencing positive emotions and following one's negative feelings centres the focus of the individual on his/her negative affective experiences. These tendencies develop over long-term periods. While in some situations following one's negative emotions can serve as a good defence strategy, following positive emotions may be harmful. The strategies of ignoring one's emotional states predict distancing oneself from sensitive stimuli (Gasper & Bramesfeld, 2006). The relationship between emotional states and alcohol use is complex (Bresin, Mekawi, & Verona, 2018). Kashdan et al. (2015) found that experiencing, following, and describing negative emotions was related to lower consumption of alcohol. Bowker and Rubin (2009), on the other hand, demonstrated that there are positive relationships between emotional self-awareness and alcohol use and at the same time showed that the internalized problems of people with a tendency to self-exploration (self-awareness) showed associations of self-awareness with anxiety, depressive states, and sensitivity to social rejection. The explanation can be found in the work of Burnkarant and Page (1984), who distinguish between two processes of self-awareness with experiencing different emotions and different levels of adaptation and maladaptation. These two processes differ in their relation to psychological health. Monitoring as a process of self-awareness when one's emotional state comes into awareness without being evaluated is credited with a certain neutrality and accompanied by a feeling of well-being and good mood (Creswell, 20017), which corresponds with the construct of mindfulness. However, in contrast self-reflection, pondering, and self-exploration which contains an evaluative component are often accompanied by experiencing feelings of guilt.

The goal of this study was to explore the direct and indirect relationships between alcohol dependence, resilience, authenticity (authentic living, self-alienation, and acceptance of external influence), and the following or ignoring of emotional states.

● 3 METHOD

3.1 Sample

In this study, 334 third-year university students from Slovakia participated (mean age = 22.15; SD = 1.41; 35.5% women, 64.5% men) studying at the Technical University in Košice (76.7%) and at Pavol Jozef Šafárik University (23.3%). Prior to the data collection, posters inviting students to participate in a prevention programme for university students were advertised on web pages and via online university information systems, as well as on campus information boards. They signed an informed consent regarding their participation in the research. The data was collected via an online questionnaire. The participation was voluntary and anonymous and the project was approved by the Ethics Committee of UPJŠ.

3.2 Measures

The measures used in the online survey which were not already available in the Slovak language were translated by following the procedure of back-translation (Squires, 2013).

Alcohol use was measured by the AUDIT (the Alcohol Use Disorder Identification Test; Babor et al., 2001). This is a 10-item measure consisting of three factors. The first three items assess alcohol consumption, the next three items assess dependence symptoms, and the remaining items assess problems related to alcohol use. For the purposes of this study only the items assessing alcohol dependence (AD) were used. Each item was rated on a five-point scale with a maximum score of 12. A total score of four or more (AD-4) suggests a possible problem with alcohol dependence. The Cronbach's alpha for AD was 0.71.

The Connor-Davidson resilience scale Resilience (Connor & Davidson, 2003)) consists of 10 items and individual items are evaluated on a five-point scale, with a higher score indicating a higher level of resilience. A single factor structure was confirmed in our sample ($\chi^2 = 95.278$; d.f.=35; $p=0.000$; RMSEA=0.074; GFI=0.941; AGFI=0.908; RMR=0.041; CFI=0.932). The Cronbach's alpha was 0.83.

The Authenticity scale (Wood et al., 2008) consists of three subscales: Self-alienation (SA), Authentic Living (AU), and Acceptance of External Influence (EX). Individual statements are evaluated on a seven-point Likert type scale, with a higher score indicating higher self-alienation, authentic living, and external influence, respectively. The original three-factor structure of the measure was explored by a confirmation factor analysis and this structure was sup-

ported in the study sample ($\chi^2 = 94.191$; d.f.=51; $p=0.000$; RMSEA=0.052; GFI=0.953; AGFI=0.926; NFI=0.9303; CFI=0.966. The Cronbach's alphas were SA=0.81, AU=0.68, and EX=0.83.

The FAST measure of following one's affective state (the Following Affective States Test; Gasper & Bramesfeld, 2006) consists of four individual sub-scales: Following Positive Emotions (FPE), Following Negative Emotions (FNE), Ignoring Positive Emotions (IPE), and finally Ignoring Negative Emotions (INE). All 16 items are answered on a seven-point scale, with a higher score indicating a higher level of the measured construct on each sub-scale. In the sample the original four-factor structure was supported by a confirmatory factor analysis ($\chi^2 = 190.305$; d.f.=98; $p=0.000$; RMSEA=0.055; GFI=0.928; AGFI=0.900; CFI=0.924, CMIN/DF=1.042.). The Cronbach's alphas were FPE=0.74, FNE=0.79, IPE=0.68, and INE=0.65.

3.3 Statistical analysis

Prior to the statistical analysis, confirmation factor analysis of the main methods had been carried out to confirm the theoretical factor structure of each measure in AMOS 21. Descriptive statistics and group comparisons were performed in SPSS 21 by using t-tests and chi-square tests. The associations between the variables were analysed by using Pearson correlation analysis. Structural equation modelling (SEM) was performed in AMOS 21. Students with more than 40% of their data missing were excluded from the analysis (4.8%). The final sample consisted of 318 university students (mean age = 22.15; SD = 1.41; 35.2% women). SEM analysis was conducted by using the entire sample. The total sample size was lower than 400 and the criteria used followed the recommended thresholds for indexes SRMR (Standardized Root mean Square Residual) ≤ 0.08 ; GFI (Goodness of Fit Index) ≥ 0.90 ; AGFI (Adjusted Goodness of Fit Index) ≥ 0.90 ; CFI (Comparative Fit index) ≥ 0.95 ; RMSEA (the Root Mean Square Error of Approximation) < 0.08 , PCLOSE (Closeness of fit tests) ≥ 0.50 (Byrne, 2010). The statistical significance of the indirect effects within the models was tested by the bootstrap resampling method.

● 4 RESULTS

The descriptive statistics (*Table 1*) show significant statistical differences between the men and women in the alcohol dependence factor, with the men getting significantly higher scores. The percentage of respondents reaching the threshold for dependence was higher among the men (11.2%) when compared with the women (3.6%). Gender differences were further observed in following positive emotions, with women scoring higher, and in ignoring positive emotions, which was higher among men. In the other variables, no significant differences were found.

The correlation analysis conducted between all the variables that were measured is displayed in *Table 2*. The high-

est positive association with alcohol dependence was found with self-alienation and with external influence. Negative correlations were found with authentic living and resilience.

In line with the theoretical assumptions, a structural model was designed and tested. A direct effect of all the variables that were measured – resilience, components of authenticity (authentic living, self-alienation, and acceptance of external influence), and following or ignoring positive and negative emotional states in relation to alcohol dependence – was expected.

The model (*Figure 1*) consisted of nine latent variables, of which one was exogenous (resilience) and eight were endogenous variables. Alcohol dependence (AD) had the role of an outcome variable. Covariances were added to the model and allowed only within factors. A chi-square test did not show sufficient representativeness of the model ($\chi^2 = 1325.945$, df.=758; $p=0.000$). However, other indexes suggested a good fit of the model CMIN/DF (χ^2 test/ degrees of freedom) =1.75, PCFI= 0.796, RMSEA=0.049, PCLOSE= 0.696, SRMR=0.083, reaching an acceptable level. The modified model explained 21.7% of the variance in AD.

Statistically significant regression coefficients in the modified structural model which included all the variables that were studied showed positive associations of alcohol dependence with self-alienation ($\beta=0.103$; S.E.=0.033; $p=0.002$) and with following positive emotions ($\beta=0.214$; S.E.=0.077; $p=0.005$) and significant negative associations with authentic living ($\beta=-0.138$; S.E.=0.062; $p=0.027$). Further significant associations in the model were: a positive association between resilience and authentic living ($\beta=2.150$; S.E.=0.401; $p=0.000$); a negative association between resilience and self-alienation ($\beta=-1.695$; S.E.=0.033; $p=0.000$); a negative association of resilience with external influence ($\beta=-1.287$; S.E.=0.320; $p=0.000$); positive associations between resilience and ignoring negative emotions ($\beta=1.074$; S.E.=0.290; $p=0.000$); a negative association between following negative emotions and authentic living ($\beta=-0.421$; S.E.=0.073; $p=0.000$); a positive association between following positive emotions and authentic living ($\beta=0.375$; S.E.=0.064; $p=0.000$), and positive associations between ignoring positive emotions and self-alienation ($\beta=0.441$; S.E.=0.115; $p=0.000$).

On the basis of the findings, indirect effects were tested: the mediating role of authenticity (AU, SA, EX) and INE in the relationship between RES and AD, the mediating role of following positive and negative emotional states (FNE, FPE) in the AU-AD relationship, and the mediating role of self-alienation in the IPE-AD relationship. An indirect effect of resilience on alcohol dependence (mediators) $p=0.37$ (lower 95% CI = -0.709; higher 95% CI = -0.092) was found with a decreasing level of the total effect. An indirect effect of authentic living in relationship with alcohol dependence (mediators SNE, SPE) $p=0.005$ (lower 95% CI = 0.018; higher 95% CI = 0.217) was found with a decreasing total effect. An indirect effect of ignoring positive emotions in relationship with alcohol dependence (mediator self-alienation) $p=0.001$

	Women (N=112)		Men (N=206)		t	df	sig.
	Mean/%	SD	Mean/%	SD			
AD	0.60	1.52	1.13	1.81	-2.760	263	0.009
AD-4	3.6%		11.2%				0.020
AU	22.79	3.87	21.96	3.94	1.812	231	0.072
SA	10.34	5.13	11.45	5.74	-1.762	251	0.089
EX	11.74	5.05	12.05	5.29	-.510	237	0.616
FPE	17.19	3.88	15.94	4.30	2.643	248	0.011
FNE	9.29	5.42	8.83	5.10	.739	216	0.453
IPE	7.13	4.81	9.08	4.39	-3.584	210	0.000
INE	14.94	4.82	15.64	4.59	-1.256	218	0.204
RES	25.81	6.09	26.76	6.27	-1.314	233	0.193

AD – AUDIT, AD – alcohol dependence, AD-4 – threshold for alcohol dependence (reaching a score of 4 or higher), AU – authentic living, SA – self-alienation, EX – external influence, FPE – following positive emotions, FNE – following negative emotions, IPE – ignoring positive emotions, INE – ignoring negative emotions, RES – resilience

Table 1 | Descriptive statistics and gender comparisons in measured variables

	AD	AU	EX	SA	FNE	FPE	INE	IPE	RES
AD	1								
AU	-.209**	1							
EX	.112*	-.298**	1						
SA	.244**	-.304**	.491**	1					
FNE	.105	-.258**	.380**	.454**	1				
FPE	.039	.346**	-.038	-.184**	-.359**	1			
INE	-.074	.237**	-.125*	-.158**	-.227**	.463**	1		
IPE	.075	-.107	.014	.237**	.231**	-.325**	-.171**	1	
RES	-.127*	.422**	-.211**	-.289**	-.374**	.297**	.255**	-.062	1

*p<0.05; **p<0.01

AD – AUDIT, AD – alcohol dependence, AD-4 – threshold for alcohol dependence (reaching a score of 4 or higher), AU – authentic living, SA – self-alienation, EX – external influence, FPE – following positive emotions, FNE – following negative emotions, IPE – ignoring positive emotions, INE – ignoring negative emotions, RES – resilience

Table 2 | Correlation analysis between alcohol dependence and the factors of authenticity, following emotions and resilience

(lower 95% CI = 0.023; higher 95% CI = 0.128) was found with an increasing total effect.

● 5 DISCUSSION

The goal of this study was to explore the direct and indirect effects between vulnerability to alcohol dependence and selected psychological variables. The percentage of respondents reaching the threshold score for vulnerability to alcohol dependence in the whole sample reached 7.4%. The findings from the first and third waves of the longitudinal study SLICE (Students Life Cohort in Europe) conducted in the years 2011/2014 regarding vulnerability to addiction conducted on a sample of 2939 first-year university students from five different countries showed that the highest prevalence of alcohol dependence among university students at the baseline was found among the Czech,

Lithuanian, and Slovak students, followed by Germany and Hungary. The prevalence of alcohol dependence two years after the baseline collection showed a decreasing tendency. The order of the individual countries was similar, with the highest rates being among the Czech (27.9%), Lithuanian (29.1%), and Slovak university students (24.7%) (Orosova et al., 2015). Our findings correspond with the findings of other studies (Eze et al., 2017; Podstawski, Wesołowska, & Choszcz, 2017).

In this study, statistically significant relationships were found between following positive emotions and alcohol dependence. Similarly, Ashton et al. (2017) found in a sample of 29,836 participants from 21 countries that the capacity of alcohol to reduce negative emotions and increase positive emotions was the main reason for alcohol consumption. This was demonstrated across different age groups, regardless of gender, education, or cultural context. They found

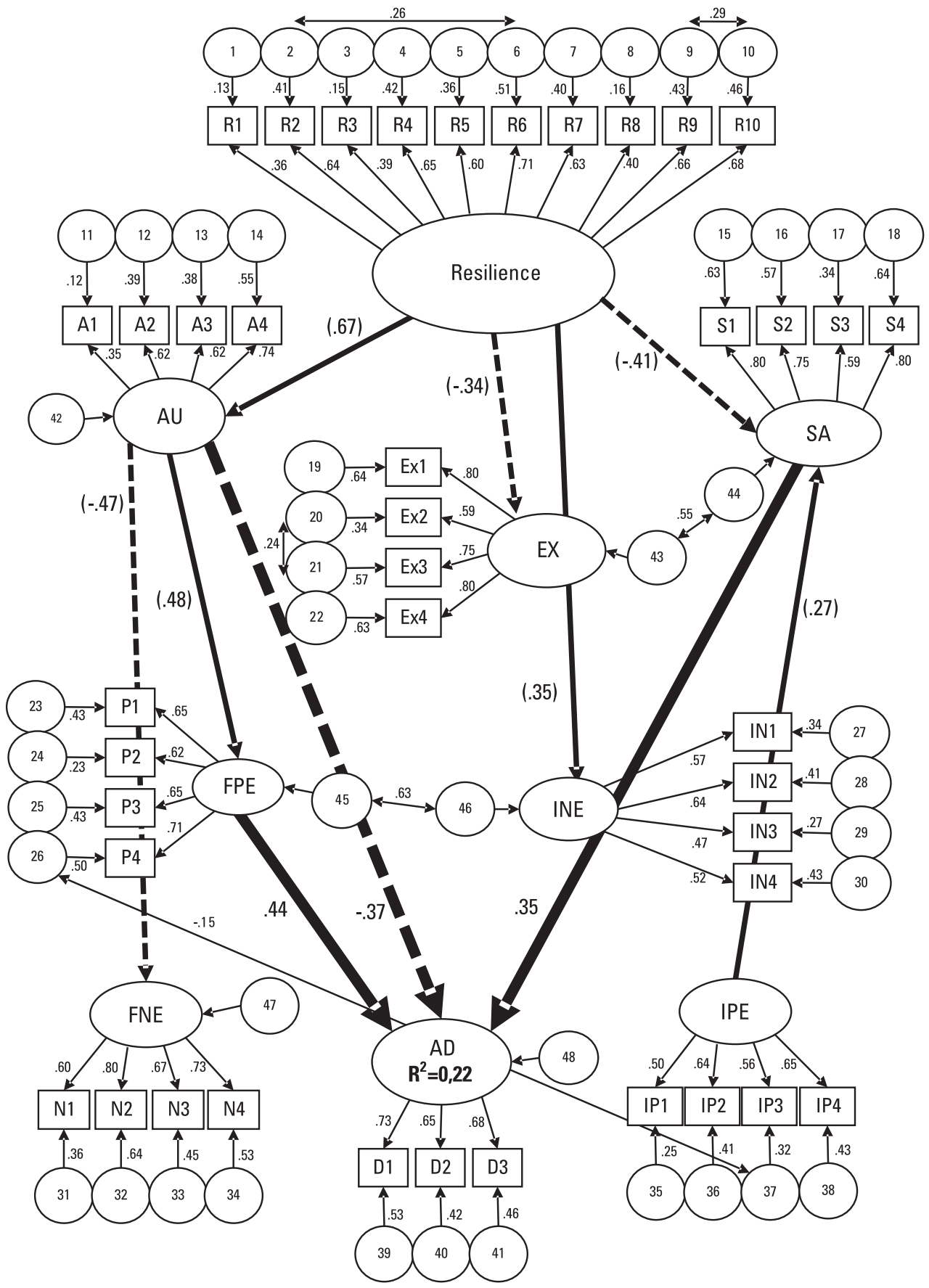


Figure 1 | Path diagram for the model (N=334)

that with an increasing consumption of alcohol, the intensity of experiencing positive as well as negative emotions increased as well. For those individuals who belonged in the category of alcohol dependence, it was found that they showed a tendency to experience a higher level of energy, confidence, and sexual attraction, regardless of the type of alcohol consumed, and a six-times more intensive presence of aggressive states or crying bouts (Ashton et al., 2017). There was a lower level of tiredness after alcohol use among those with dependence symptoms in comparison to a low-risk group. This is in line with the developing tolerance to the sedative effect of alcohol. Choosing alcohol to elicit negative emotions (hard liquor) may be done in the hope that it might help to fill an emotional void. Alternatively, alcohol may reduce the strength of defence mechanisms and induce a superficial quasi-authentic contact with one's real emotional life (Hollet et al., 2017).

In this study, the level of authenticity in authentic living was found to be both directly as well as indirectly negatively related to alcohol dependence. Vulnerability to alcohol dependence is largely determined by genetic and environmental factors. It has been estimated to be about 50% (Almli et al., 2013) and in the case of alcohol consumption it plays a strong role in the strengthening of automatisms and habits. Focusing on the ongoing processes may help to stop impulsive behaviours, habits, and automatisms and strengthen willpower mechanisms, as well as conscious decision-making processes, which could constitute a starting point for triggering self-regulation (Creswell, 2017).

This study showed a trend whereby a higher level of authentic living as an expression of individuality, independence, and freedom from outside pressure was related to low alcohol consumption or abstinence (Thomaes et al., 2017; Sedikides et al., 2018). In our research a direct and positive relationship, as well as a mediating role of self-alienation, was found in relation to alcohol dependence. A weak or defensive contact with one's inner psychological processes can help to explain the mechanism of filling an emotional void by using alcohol, which is usually very accessible and triggers emotions instantly.

Furthermore, an indirect relationship was found between resilience and alcohol dependence in which the individual dimensions of authenticity (authentic living, self-alienation, and external influence), as well as ignoring negative emotions, played mediating roles. This finding provides support for resilience as a variable which may reduce the risk of developing alcohol dependence (Joyce et al., 2018). However, ignoring the negative, on the one hand, can be related to alcohol dependence in the event that an individual does not, or does not want to, register (or suppresses) signals indicating danger, risks, or unpleasantness. By suppressing negative experiences, positive experiences may also become suppressed or unregistered. This may be the reason why individuals may start focusing on emotional experiences elicited by alcohol use, which has a relaxing effect, relieves stress, and elicits feelings which the individual accepts. On the other hand, the strategy of ignoring one's feelings may

signify a deeper strategy of distancing oneself from sensitive material. In this study, a higher level of authentic living, a lower level of self-alienation, a lower acceptance of external influence, and ignoring negative emotion solidify the structure of resilience and serve as a protective umbrella by using authenticity as its source.

This study presents direct and indirect relationships between resilience, authenticity (authentic living, self-alienation, and accepting external influences), the following of positive and negative emotions, and alcohol dependence. Direct positive relationships with alcohol dependence were found with the following of positive emotions and self-alienation. Negative relationships with authentic living were found and an indirect effect of resilience was detected (mediated by authentic living, self-alienation, accepting external influences, and ignoring negative emotions), as well as an indirect effect of authentic living (mediated by following positive and negative emotions) and an indirect effect of ignoring positive emotions (mediated by self-alienation).

The fact that the model explained 21.7% of the variance in AD can be attributed to the inclusion of intrapersonal variables only. Future research could benefit from the inclusion of intrapersonal as well as environmental factors, such as the accessibility of alcohol, living conditions, and relationships, which might increase the percentage of the explained variance.

The limitations of this study lie in its using a university sample, which is inevitably a limiting factor with regard to the generalizability of the findings. Furthermore, only self-reported data was used, and this limitation has to be acknowledged in the interpretation.

In future research, the authors intend to use the data from the follow-up measurements to address the problem further. A final limitation of this study is the focus on vulnerability to alcohol dependence rather than addiction.

● 5 CONCLUSION

To sum up, this study has identified both the aspects which are related to vulnerability to alcohol addiction and those which are potentially protective and require the individual to be motivated. Vulnerability factors can be seen in self-alienation and distancing oneself from one's own experiences, which are suppressed, distorted, and unprocessed on the conscious level, leading to poor contact with one's inner experience and resulting in a lack of sources supplying positive experience. One of the problems discussed in this paper is that emotionality may be filled by the emotions elicited by alcohol use. In some cases, this can be seen in alienation from one's own values, ideas, and feelings, accompanied by a lack of perceived control over one's own life and generally poor authentic living. Resilience may provide an important source of authenticity (authentic living, low self-alienation, and low external influence). Resilience (at the most general level), authenticity (medium level), and

emotional states (the most specific level) are perceived in terms of interconnected resources of human potential.

Prevention focused on resilience and its sources of authenticity and emotionality can contribute to protecting individuals from vulnerability to alcohol dependence by activating their controlling and inhibiting self-regulation processes and helping them to live their life in accordance with their own ideas and needs and boosting their personal growth.

Authors' contribution: Beata Gajdošová designed the study and proposed the design of the manuscript, conducted a literature review, prepared a summary of related work on the topic and wrote the initial version of the manuscript. Beata Gajdošová and Jozef Benka performed statistical analyses and provided the interpretation of the results. Jozef Benka participated in the translation of the

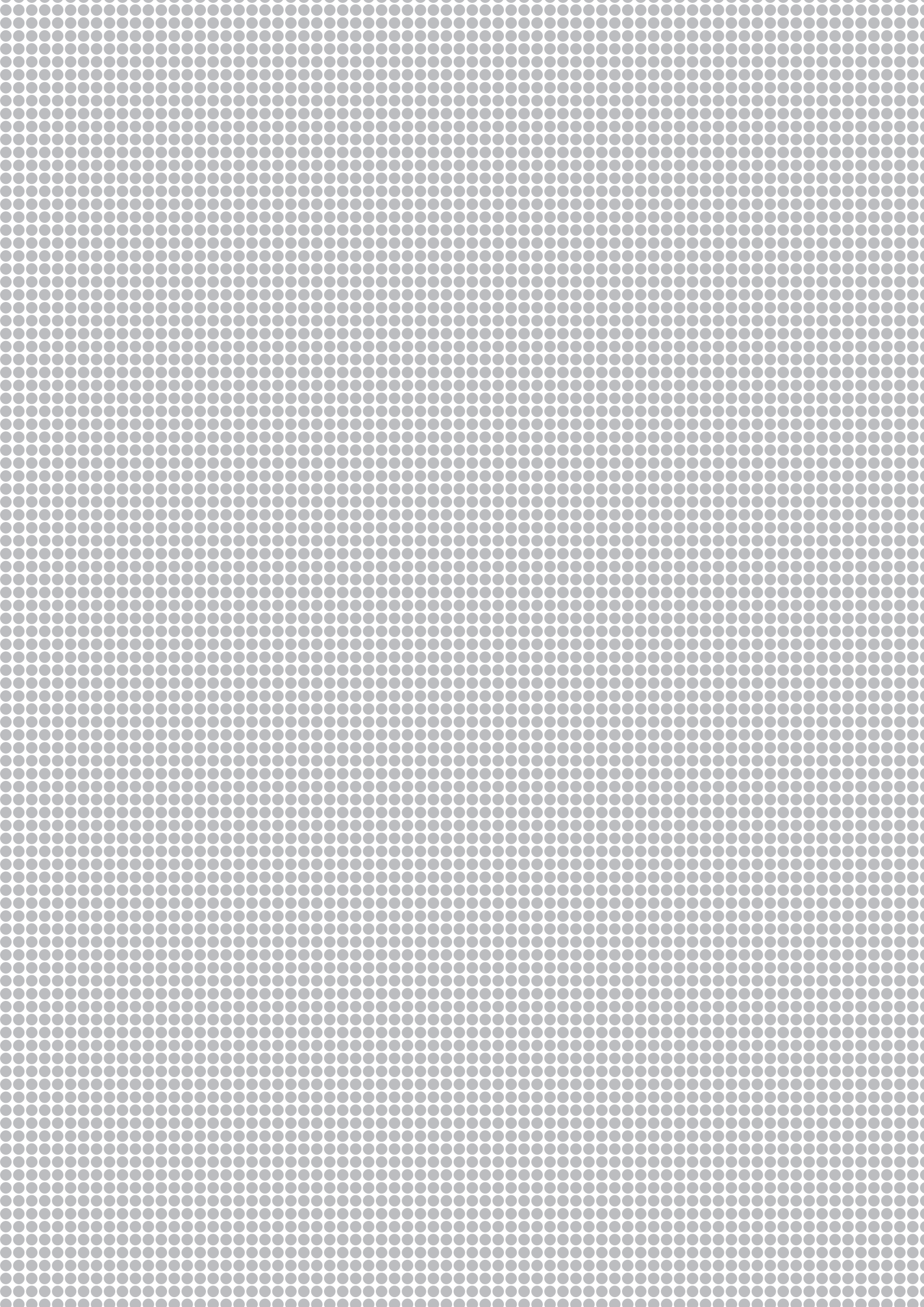
measures used in the study and contributed to the writing of the manuscript. Olga Orosová contributed to the writing of the manuscript. All the authors contributed to the article and approved the final version of the manuscript.

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Screening of Hazardous and Harmful Alcohol Consumption in a Primary Health Care Setting and in a General Population Survey

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AIMS: The major goal of the study is to evaluate the ability of the Czech versions of the AUDIT-C and ASSIST screening instruments to identify hazardous and harmful drinkers in a general population sample and in a sample of patients in primary health care. **METHODS AND SAMPLE:** Two large datasets were analysed. The first was based on the application of the AUDIT-C to a general population sample (N=926; age range 30–59), the second represents data collected by GPs in the context of a screening and brief advice project (SBA) (N=425). **RESULTS:** Analyses of reliability showed satisfying internal consistency of the AUDIT-C (Cronbach's alpha = .75 for the population survey and .74 for the primary

care sample). The respective value for ASSIST was .70. The identification of risky drinking on the basis of the AUDIT-C was identical for both samples: approx. 30%, with a cut-off point of 5 and more. ASSIST identified 9.9% of patients as positive. The differences between the two instruments are due to differences in their conceptual background. The AUDIT-C is based solely on information about alcohol consumption, while ASSIST includes items on symptoms of alcohol disorder and problems associated with drinking. **CONCLUSIONS:** The Czech versions of the AUDIT-C and ASSIST screening instruments seem to be useful for the identification of the risk level in a primary health care setting.

Keywords | Harmful Alcohol Consumption – Screening – Primary Health Care – General Population – AUDIT-C – ASSIST

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● 1 INTRODUCTION

Excessive use of alcohol is associated with a negative impact on physical and mental health. The correlation between alcohol abuse, depression, and anxiety has been confirmed in many studies (e.g. Manninen et al., 2006). Degradation of social functioning and alcohol-induced mood disorders are often associated with increased suicide rates in addicted persons.

In the field of alcohol research, great efforts have been made to find effective interventions to reduce the health and social harm that alcohol causes. The results of these studies suggest that screening and brief interventions in primary health care are effective and cost-effective, whereas simple education or information dissemination has little impact, while specialised treatment is costly and, moreover, often limited to cases of individuals with addiction disorder or chronic problem drinkers (Babor et al., 2006; Anderson & Baumberg, 2006).

The effectiveness of brief interventions is not only linked to primary care facilities, but also applies to different types of health care facilities, such as emergency departments. Studies showed that the provision of a brief intervention may lead to a 30% decrease in alcohol consumption (Bertholet et al., 2005; Kaner et al., 2018; Kaner et al., 2009). The cost-effectiveness of brief interventions was documented by Wutzke et al. (2001).

The reasons for supporting the implementation of brief interventions in a primary care setting in the Czech Republic include the high consumption of alcohol per capita and serious health and social consequences of drinking. The provision of brief interventions is also stipulated in the Act on the Protection of Health from the Harmful Effects of Addictive Substances (Act No. 65/2017 Coll.).

An important part of a brief intervention must consist of a well-functioning screening tool to identify people consuming alcohol hazardously or harmfully. There are several widely-used screening instruments. In addition to CAGE (Ewing, 1984) and MAST (Selzer, 1971), the Alcohol Use Disorder Identification Test (AUDIT) has received extensive scientific evaluation. The development of the AUDIT as a short tool for rapid and timely identification of alcohol problems has been supported by the World Health Organisation (Babor, Higgins et al. 2001). The use of the AUDIT questionnaire spread rapidly beyond the Anglophone area, and thanks to the Czech edition of the AUDIT, it is also available for use in the Czech Republic (Babor & Higgins-Biddle 2003; Miovský, 2013). The interconnection of the screening instrument with practical guidelines for brief interventions and counselling makes the AUDIT a popular and widely-used instrument. The good psychometric properties of the test have been confirmed in several studies, e.g. Shevlin (2007), Carey (2003), and Bradley (2007).

In addition to routine application in primary care, the AUDIT can be used in clinical settings such as hospital emergency departments (Neumann et al., 2004) or in work with psychiatric patients (Carey et al., 2003) or drug addicts (Skipsey et al., 1997). A comprehensive approach to the screening of sub-

stance use-related problems is represented by ASSIST (WHO Group, 2002), which, in addition to alcohol, also targets other addictive substances (illegal drugs and pharmaceuticals).

The aim of this paper is to evaluate the possibilities of screening using the Czech adaptation of the ASSIST questionnaire for alcohol use and a short version of the AUDIT questionnaire in the conditions of primary health care.

● 2 METHODS

2.1 Samples

The analyses in this work are based on the application of the AUDIT-C and ASSIST screening questionnaires in screening and brief interventions in general practitioners' surgeries, which are compared with data from a general population study. In general practitioners' surgeries, 425 patients were screened. The patients were screened as a part of preventive examination, and no excluding criteria were applied except the mental inability to respond to the items contained in the screening test. The population sample consisted of 926 respondents. In terms of age, both samples were identical (the average age of the patients was 43.8 years, and that of the population sample was 44.8 years). Both samples were comparable by gender (53% of the patients and 50% in the population sample were males). Characteristics of the samples are summarised in *Table 1*.

	Patients in a primary care setting	General population
Number of respondents	425	926
Gender (% of males)	53.0	50.3
Age in years [M (SD)]	43.8 (8.5)	44.2 (8.2)

Table 1 | Sample characteristics

2.2 AUDIT-C and ASSIST Instruments

The Audit-C questionnaire (Bush et al., 1998; Bradley et al., 2007) was developed as a shortened version of the Alcohol Use Disorders Identification Test (Babor et al., 2001). There is a Czech translation of the AUDIT and a study focused on its psychometric properties (Sovinová & Csémy, 2010). The AUDIT-C consists of the first three items of the AUDIT that measure alcohol consumption (drinking frequency, usual quantity per occasion of drinking, and frequency of heavy episodic drinking). The overall score is from 0 to 12 points, with international studies being recommended to interpret the overall score as follows: 0 to 4 points – low-risk drinking, 5 to 8 points – risky drinking or harmful drinking, 9 or more points – high-risk drinking or problem drinking.

The ASSIST Screening Questionnaire was developed by a WHO Working Group (WHO Group, 2002). The ASSIST questionnaire was translated into Czech for the purposes of the

“Analysis of the Effects of Early Identification and Brief Intervention Aimed at Reducing Alcohol-related Health Damage” project. The alcohol screening module contains six items, only one of which monitors alcohol consumption. The remaining five items cover the symptoms of alcohol-induced disorders and alcohol use-related problems. The total score ranges from 0 to 40 points. Values up to 10 points are interpreted as low-risk, 11 to 26 points are rated as hazardous or harmful drinking, and 27 or more points as high-risk drinking with problems.

2.3 Data analysis

The IBM SPSS Statistics 22 software was used for the data analysis. In addition to the standard descriptive statistics, correlation analysis and analyses of internal consistency were performed.

● 3 RESULTS

3.1 Reliability of the AUDIT-C and ASSIST questionnaires

The reliability of the AUDIT-C questionnaire, measured as a Cronbach alpha coefficient, was satisfactory and practically identical in both the general practitioners' sample and the population sample (0.74 vs. 0.75). For the ASSIST questionnaire, the value of internal consistency was still acceptable (0.70). The results generally confirm the good coherence of the items in both instruments.

3.2 Summarised Scores and Gender Differences

Table 2 summarises the mean scores obtained with the AUDIT-C and ASSIST questionnaires for the patient population of the primary care setting and the general population sample. The overall score in the AUDIT-C was almost the same in both the general population sample and in the sample from the general practitioners' surgeries, with distinct differences between the sexes, with men having the higher mean scores. Additionally, men reached a higher overall score for the ASSIST questionnaire. The distribution of the overall score in the AUDIT-C is illustrated in Figure 1. It is evident that the distribution corresponds with the shape of the Gaussian curve, with the left-hand deflection given by zero-score respondents.

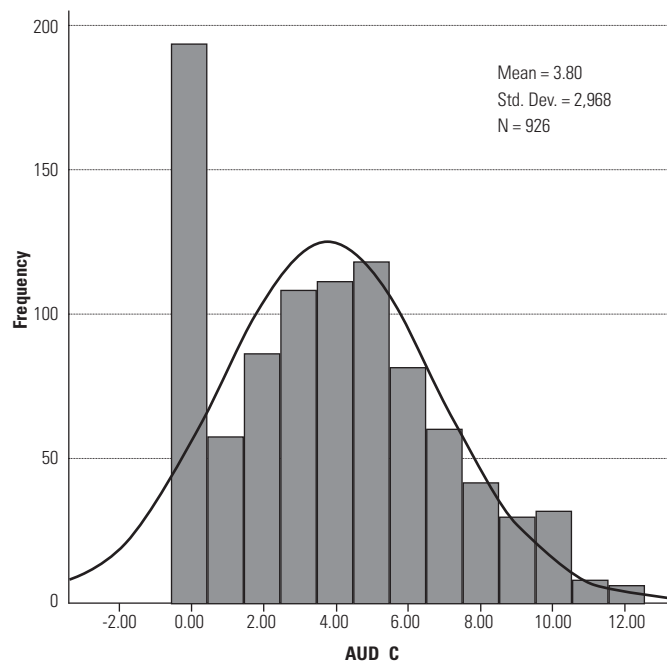


Figure 1 | Distribution of summary scores for the AUDIT-C in the general population sample

3.3 Correlation between AUDIT-C and ASSIST

We could only measure the association between the screening using ASSIST and the AUDIT-C in the primary patient population because ASSIST was not applied in the population sample. The Pearson's correlation coefficient was 0.68, indicating a relatively high association.

3.4 Determining the prevalence of hazardous and harmful drinking in the population

Both questionnaires, the AUDIT-C and ASSIST, are designed to perform a quick assessment of the level of hazardous, harmful, and problem drinking, especially for the purposes of individual counselling. When applied in population surveys, they can also be used to estimate the extent of unhealthy drinking patterns in the population. In this study, the population sample is used as the baseline for assessing whether the response of patients to screening conditions is not biased by the fact of a clinical condition. The results are summarised in

	ASSIST (Primary health care)	AUDIT-C (Primary health care)	AUDIT-C (General population)
Males	5.8 (4.91) ^a	4.3 (2.50) ^b	4.7 (3.14) ^b
Females	4.7 (4.57)	3.1 (2.07)	2.9 (2.47)
Total	5.4 (4.78)	3.7 (2.36)	3.8 (2.96)

^a male-female difference $P < 0.05$; ^b male-female difference $P < 0.01$

Table 2 | Mean scores (SD) in ASSIST and AUDIT-C screening questionnaires by gender

Instrument	ASSIST	AUDIT-C	AUDIT-C	AUDIT-Crev	AUDIT-Crev
Sample	Prim. care	Prim. care	Gen. Population	Prim. care	Gen. Population
	% (of which % of males)	% (of which % of males)	% (of which % of males)	% (of which % of males)	% (of which % of males)
Low-risk drinking	89.3 (53.7)	54.2 (40.0)	47.9 (35.4)	70.0 (39.3)	59.9 (39.1)
Hazardous/harm-ful drinking	9.9 (64.1)	42.5 (51.0)	44.3 (58.3)	26.7 (59.4)	32.3 (62.5)
Problem (heavy) drinking	0.8 (66.7)	3.3 (100)	7.8 (86.1)	3.3 (100)	7.8 (86.1)

AUDIT-C^{rev} – AUDIT-C screening questionnaire with cut-off point for hazardous drinking raised by 1 point to 5

Table 3 | Distribution of respondents into consumption categories according to the cut-off scores of the ASSIST and ADDIT-C screening tests

Table 3. For the AUDIT-C questionnaire, the prevalences are the same in both files. 42 to 44% of the respondents fall into the hazardous or harmful drinking category. If the cut-off score is increased by one point (i.e. 5 points), the distribution to the risk zone is reduced to 27% in the primary care sample and 32% in the general population. The last remaining column of the table represents the distribution for the ASSIST questionnaire. Only 10% of the patients in general practitioners' surgeries fall into the hazardous/harmful drinking category. We speculate that the difference in the prevalence of hazardous/harmful drinking between the AUDIT-C and ASSIST screening tools comes from the differences in the composition of the items. While ASSIST is heavily burdened by reporting symptoms and problems, the AUDIT-C only reflects reported consumption.

Male representation grows proportionally with the riskiness of drinking. Men are overwhelmingly present in the category of high-risk and problem drinking.

● 4 DISCUSSION

The study confirmed the good internal consistency of the Czech version of the AUDIT-C questionnaire applied for screening in two different situations: in the general population and in patients in a primary health care setting, and it suggests the applicability of the questionnaire as a whole with a meaningful interpretation of the overall score. The fact that the recommended lower cut-off value for assignment into the group of hazardous and harmful drinking leads to a high number of persons to whom brief interventions should be provided reflects the reality of the consumption habits of Czech society, which is, in terms of consumption of alcohol per capita, one of the leading countries in Europe and the world (Csémy & Winkler, 2010). It seems reasonable to raise the critical value by one point. At present, we do not have a study on the Czech population available to verify the validity of the AUDIT-C screening against an independent criterion. The findings from the use of the AUDIT in the Czech environment are limited to the ten-item AUDIT, which also includes items on the symptoms of addiction and the problematic consequences of drinking. The continuation of the current project will provide the necessary insights for the confirmation and practical application of cut-off point for the identification of hazardous drinking and providing brief interventions. The current results suggest that raising the cut-off point by one would be desirable.

Research experience with the ASSIST questionnaire is new in the Czech Republic. Comparison with the AUDIT-C showed that differently designed screening questionnaires lead to differences in distribution in severity categories. It might be supposed that primary care patients would be more willing to give their doctors information about their consumption rather than report the symptoms of addiction and problems. It is also possible that patients who drink hazarously do not reflect on reduced control over their drinking and do not consider social and/or health problems as consequences of drinking. Of course, social standards, which are very liberal in the Czech Republic, play their part. Criticism of drinking from a person's close social environment usually comes when the problems are so serious that they are seriously annoying for the persons who are close to the drinker. These hypotheses have arisen in connection with the analyses of existing data; their validity must be critically verified through wider contextual research.

The comparison of two screening instruments, ASIST and the AUDIT-C, enabled us to evaluate their practical usefulness in a primary care setting. Besides the high intercorrelation of the summary scores, it was also shown that 90% of the cases identified with ASSIST as at-risk consumers were also identified as risky drinkers in the AUDIT-C.

The international literature suggests that the rate of positive screening was similar to that of the sample screened with ASSIST in this country, i.e. around 10% (Scott & Anderson, 1990; Richmond et al., 1995; Anderson & Scott, 1992).

There are considerable cultural differences in estimating the prevalence of hazardous and harmful drinking. For example, in a Finnish study, 49% of men and 24% of women were classified as hazardous or harmful consumers when a cut-off score of 8 was applied in the AUDIT (Pahlen et al., 2008). Neumann et al. (2004) monitored a sample of nearly two thousand patients admitted to hospital treatment for an injury through a computer version of the AUDIT. Using the same critical value, hazardous or harmful drinking was found in 18% of the men and 7% of the women. Numerous studies have confirmed the good validity of screening tools. Berner et al. (2006) confirmed the good validity of the AUDIT compared to independent objective biological criteria (CDT and GGT). These authors concluded that the use of a combination of a screening questionnaire with laboratory tests improves the diagnosis in comparison to using any single method alone. The limitation of this study is that we have not been able to assess the validity of the Czech version of ASSIST

against an objective criterion. The advantage, on the other hand, is that we were able to apply two different methods and compare their results and that we had the opportunity to test the AUDIT-C on two different samples.

● 5 CONCLUSION

The evaluation of the properties of the Czech version of the ASSIST and AUDIT-C screening questionnaires when used on relatively large samples and under two different sets of condi-

tions confirmed the good reliability of the instruments, measured by the Cronbach coefficient of internal consistency.

The estimates of the occurrence of hazardous and harmful drinking with the AUDIT-C did not differ in the two sets of conditions that were monitored. Differences were found when the prevalence of risky drinking was measured by means of the AUDIT-C and ASSIST questionnaires. The differences may be partly due to social desirability factors that may influence willingness to report on alcohol consumption and on the symptoms of drinking-related problems.

Authors' contribution: LC, BS and HS were responsible for the data collection and methodology. LC and ZD performed statistical analyses, all authors contributed to the draft of the paper and to literature review. All authors approved the final version of the manuscript.

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Typology of Adolescents in Terms of their Leisure-time Substance Use

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BACKGROUND: Substance abuse is considered one of the most serious society-wide problems. In our paper, we focus on leisure and the individual leisure activities which are either protective or risky in terms of substance abuse.

AIMS AND OBJECTIVES: To identify the typology of users of selected addictive substances in Slovak adolescents. Another objective is to determine the differences between the identified types of substance users in their leisure time, risk activities, demographic characteristics, and family environment. **METHOD:** The data set was obtained through our own questionnaire to determine the frequency of substance abuse, leisure activities, demographic characteristics, and family environment of the adolescents in the target group. **STATISTICAL ANALYSIS:** The data was analyzed using descriptive statistics and cluster analysis.

RESULTS: We identified three types of adolescents. Nearly

50% of them were non-users, approximately one third of them used all the addictive substances under study, mostly cigarettes, followed by alcohol and occasionally marijuana, and the last group was characterized by the occasional use of alcohol. Subsequently, we identified the differences between the groups in the ways they spend their leisure time. **CONCLUSIONS:** Occasional users of addictive substances go to discos/entertainment events, but also have temporary jobs, they use addictive substances while with their friends, and are involved in illegal activities significantly more frequently than the AS non-users. The AS non-users, in contrast, are more frequently engaged in activities such as reading books or playing board games with their parents, and they do not use addictive substances while with their friends and nor do they get involved in illegal/illicit activities.

Keywords | Adolescence – Addictive substances – Leisure time – Risk behavior – Cluster analysis

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● 1 BACKGROUND

Suitable leisure time activities help prevent risk behaviour (Miovský et al., 2010; Kolářiková & Němec, 2017). A number of research studies have been dedicated to the leisure activities of Czech and Slovak adolescents (e.g. Almašiová & Kohútová, 2015; Bieliková & Pétiová, 2007; Fulková, 2008; Gejdošová, 1997; Hradiská & Ritomský, 2008; Pétiová, 2012; Revay, 2008; Sak & Saková, 2004). The studies were mainly focused on identifying the leisure activities and their frequency. The above research suggests that adolescents are mostly engaged in listening to music, watching television, communicating on the Internet, doing sports, meeting their friends, and, less frequently, going to bars, cafes and discos. The research of substance abuse among young people is mostly focused on identifying the frequency of use (e.g. Bieliková & Pétiová, 2007; Kohútová & Almašiová, 2016; Nociar, 2014; Pétiová, 2011; Procházka, 2012). These studies indicate that alcohol, cigarettes, and marijuana are the most frequently abused substances. The above research studies were a source of inspiration to us when designing our research tool, which is described in greater detail in the “Variables” section.

In the theoretical analysis of the prevention of substance abuse among young people, meaningful leisure time activities are often cited as one of the forms of prevention. For example, Kristjansson et al. (2010) found that increased parental supervision and the involvement of adolescents in organized sports which were part of community-based prevention activities led to a reduction in alcohol use in an experimental group compared to a control group. Similarly, Badura et al. (2017) found that adolescents who spend their leisure time doing organized leisure activities exhibit a lower likelihood of regular smoking, repeated alcohol consumption, and truancy.

Adolescence can be seen as a sensitive period for the formation of stable interests and activities carried out in one's leisure time, as well as a period of risk behaviour because leisure activities are mainly associated with risk behaviour¹ (Biolcati, Mancini, & Trombini, 2018). Other authors (Tomšík et al., 2017) view risk behaviour as a sign of non-productive use of leisure time. As an episode in the period of adolescence, risk behaviour may serve not only as a means to explore and experiment with personal boundaries or as an expression of independence (Gavriel-Fried & Ronen, 2016). In the case of substance abuse, which is the focus of our investigation, it becomes a socially acceptable part of the lives of some adolescents (Kabiček, Csémy, & Hamanová, 2014).

Tomčíková et al. (2013) found that risk activities in leisure time increase the likelihood of alcohol consumption, and, vice versa, that parental supervision reduces this likelihood in the Slovak adolescent population (N 3694, AM 14.5 years,

49% boys). Risk activities included socializing with friends, membership of “sororities”, and daily (and/or a few times a week) attendance at sporting events. Parental control was also identified in the research conducted by Albertos et al. (2016) and Yu et al. (2016) as a protective factor against substance abuse. In terms of the correlation between leisure time and alcohol use, Koutra et al. (2011) also included coffee bars and billiard halls (research sample – 117 respondents from Crete) into the risk factors for leisure time. Spending time in bars, clubs, and cafes and at parties was also seen as a significant risk factor for substance abuse by Medrol (2015). Additionally, it was concluded that every other extracurricular activity performed by adolescents is in a certain way associated with the use of addictive substances. A possible explanation is that all these activities are carried out under peer pressure. Protective activities only included reading books and religious activities. Similarly, the research conducted by Grace et al. (2007) confirmed that the time spent with peers is a key risk factor for substance abuse, while leisure time spent with the family is a key protective factor. The importance of leisure time spent with the family was also confirmed in the research conducted by Kohútová and Almašiová (2015) on a research sample of 728 students aged 11-19 (59.4% female), in which it was found that this type of leisure time activity has a negative relation to the consumption of energy drinks, cigarettes, marijuana, and alcohol. This included activities such as trips with parents, board games with parents, talking to parents, and spending time with siblings.

Caldwell and Darling (1999) found that addictive substances are used to a greater extent by those who spend their leisure time in unstructured social meetings with peers who use addictive substances, and this process is moderated by going to discos (or parties). However, these authors also point out that leisure time spent with peers does not automatically lead to partying, and parties do not automatically mean substance abuse. It depends on the peer group, peer pressure in the group, and resilience of the individual.

Shinew and Parry (2005) point out that most research in the last decade was focused on the benefits of leisure time. However, there are other aspects of leisure time that have received less research attention, for example, drinking and drug use, which are the favourite leisure time activities of many students. Therefore, these authors focused on exploring two leisure activities among university students (N 740, 41.9% women) – drinking alcohol and illegal substance abuse. They found that university students spend much of their free time (two to three days a week) with friends who drink alcohol or use drugs. Social interaction and having fun are some of the reasons given for such activities. Hence the importance of friendships and social groups, which have an effect on student leisure time.

Seppo and Crowley (1991) compared the leisure time of substance users and non-users. They found that users of addictive substances are often bored in their free time, but on the other hand, more often than not they spend their leisure time on physical activities, trips, concerts, and social

1 | Risk behaviour is understood as a behaviour that puts adolescents and their environment at risk. For example, Jessor (1997) understands it as substance abuse, delinquency, and risk sexual behaviour.

activities. The authors explain this by the assumption that the personality predispositions of substance abusers are characterized by a search for excitement and thrills and a low tolerance for the same, meaning they apparently prefer an active lifestyle. However, if the leisure activities fail to satisfy their need for excitement, substance abuse can be an easy alternative to boring leisure time. The authors conclude that boredom could be the cause or effect (or both) of substance abuse. Brissett and Snow (in Biolcati, Mancini, and Trombini, 2018) suggest that boredom is a factor causing insufficient stimulation, a lack of excitement, and a lack of psychological engagement, which is associated with dissatisfaction, and the individuals trying to cope with boredom by searching for additional stimulation, which may take the form of one-off or repeated substance abuse. Similar results were achieved e.g. by Sharp et al. (2011), who point to boredom as the most consistent and strongest predictor of the use of alcohol, cigarettes, and marijuana.

On the basis of the above, we assumed that the empirical types which we created on the basis of their frequency of consumption of select habit-forming substances would vary systematically and in the expected direction in terms of the ways and frequency of spending leisure time and involvement in risk activities.

The aim of the present study is to identify the types (clusters) of consumers of selected addictive substances (alcohol, cigarettes, and marijuana) in 12-18-year-old Slovak adolescents. The study also aims to determine the differences in a) leisure activities, b) risk leisure time activities, and c) demographic characteristics and family environments among the identified types of drug and substance users.

● 2 DATA COLLECTION

The respondents were presented with the authors' questionnaire, which consisted of several parts. The first part was focused on identifying the demographic characteristics of the respondents and their family environment.

The second part focused on identifying the frequency of various leisure activities, with the variables provided on a six-point Likert scale (0 = never; 1 = once in six months, 2 = every month, 3 = once per week, 4 = more times per week, 5 = every day). The respondents reported the frequency of the following leisure activities: talking to parents, playing computer games, using the Internet, listening to music, watching TV, reading books, playing board games with parents, visiting places with parents, sports, going out with friends, spending time with siblings, being bored, taking a temporary job, attending interest clubs, preparing for school, taking care of pets, talking to friends, attending church, going to the shopping centre, doing nothing (resting, lying down), going to discos/entertainment events, chatting online.

The third part focused on the frequency of substance abuse, which was measured on an eight-point scale (0 = never, 1 = once in six months, 2 = once a month, 3 = several times

a month, 4 = once in two weeks, 5 = once a week, 6 = several times a week, 7 = every day). The respondents reported the frequency of use of the following addictive substances: alcohol, cigarettes, and marijuana.

Other questions focused on risk behaviour in leisure time, such as substance abuse in the peer group, irregular/illegal activities in the peer group, or slot machines.

The questionnaire was administered by the coordinators for the prevention of addictions and social pathologies, who did not have to be present in class during the administration process. Participation in the research was voluntary; the respondents expressed their consent by completing the questionnaire (paper or electronic), and they could cease to answer the questionnaire at any time. The respondents were informed about the research aim and method used for the presentation of the research results, and they were also instructed about confidentiality (the respondents only indicated their year of study). Throughout the research, an emphasis was placed on compliance with ethical standards.

2.1 Data set

The data for the analysis was obtained from a written and electronic questionnaire. The population set in our research included secondary school students from secondary vocational schools, grammar schools, and conservatories in the Slovak Republic. Our research was conducted during the months of May-June 2017, and the population set in the school year 2017/2018 was 206,570 students, according to the Centre for Scientific and Technical Information of the Slovak Republic. We used stratified random selection, and in each Self-Governing Region we chose as many secondary schools (secondary vocational schools, secondary grammar schools, and conservatories) as necessary, corresponding to the proportion in the population set. The respondents who participated in our research corresponded to 2.2% of the entire population set. The resulting sample set consisted of 4525 respondents aged 12 to 18 (12-year-olds: 15.2%, 13-year-olds: 14.7%, 14-year-olds: 15.5%, 15-year-olds: 14.3%, 16-year-olds: 15.0%, 17-year-olds: 14.3%, 18-year-olds: 11.0%). The mean age was 14.86 years, the standard deviation was 1.95 years, and the research questionnaire was completed by 2045 girls (45.3%) and 2474 boys (54.7%), with six respondents not identifying their gender. Altogether, 1991 (44.1%) of the respondents lived in urban areas and 2526 (55.8%) of the respondents in rural areas, and eight respondents did not state their residence. Altogether, 3394 (75.2%) of the respondents grew up in a complete family, 1121 (24.8%) of the respondents grew up in an incomplete family, and 10 respondents did not provide an answer to this question. We also investigated the education of the respondents' parents, with the following results: 215 fathers (4.8%) with basic education, 882 fathers (19.7%) with secondary education without the school-leaving exam, 2312 fathers (51.6%) with upper secondary education with the school-leaving exam, and 1069 fathers (23.9%) with college education. 47 respondents did not pro-

vide an answer. There were 225 mothers (5.0%) with basic education, 698 mothers (15.5%) with secondary education without the school-leaving exam, 2338 mothers (52.0%) with upper secondary education with the school-leaving exam, and 1236 mothers (27.5%) with college education. 28 respondents did not provide an answer.

2.2 Statistical methods

The data was analysed in SPSS (version 22), and cluster analysis was used because of its nature and structure. Cluster analysis is an exploratory data analysis method which seeks to identify homogeneous groups of cases. It uses methods and algorithms to attribute the data with similar characteristics into a single cluster. It tries to organize the collected data into meaningful structures to create a taxonomy. Cluster analysis classifies units into clusters in such a way that the similarity of two units belonging to the same group is the maximum, while their similarity with the units outside the cluster is the minimum (Kučera, undated.). We used a TwoStep cluster analysis because of its advantages, which include the ability to create clusters based on categorical (discrete) and continuous variables, automatic selection of clusters (as well as the option to define the desired number of clusters), and the ability to analyse large data sets effectively.

3 RESULTS

On the basis of the frequency of substance abuse (alcohol, cigarettes, marijuana) we created a typology of users. In the cluster analysis, we adjusted the search for the optimal number of clusters to the maximum value of 10 (i.e. 1–10) using the Schwarz Bayesian information criterion (BIC). Using the above procedure, the system identified three clusters as an appropriate number, which is a reasonable number in terms of interpretation. The contour coefficient value for the above three clusters was 0.60.

The first cluster consisted of the respondents who have never used any of the substances being studied, and it carries the name “**non-users of substances**” (hereinafter AS non-users). This cluster consisted of 2145 respondents (47.4%), nearly half of the sample set.

The second cluster was composed of the respondents who used alcohol, cigarettes, and marijuana. The respondents who consume alcohol more than once a month (20.0%) predominate, followed by the daily smokers (35.4%), and marijuana was not used by 63.4% of them (the remaining respondents used marijuana once in six months – 16.7%, more than once a month – 6.4%, every day – 4.1%, once a month – 3.5%, more times a week – 2.2%, once a week – 2.1%, and once in two weeks – 1.6%). This cluster consisted of 1358 respondents (30.0% of the sample set). This cluster was named “**occasional users of addictive substances**” (hereinafter occasional AS users) because this cluster is typified by the consumption of all of the substances that

were monitored, and the consumption is relatively high (compared to the other clusters).

The third cluster was made up of alcohol drinkers only, with the most common frequency being once in six months (55.1%) (several times a month – 21.2%, once a month – 13.4%, once in two weeks – 4.9%, and once a week – 5.4%). This cluster was called “**occasional alcohol drinkers**” because its members only consumed alcohol and they did so less frequently (compared to other clusters). The third cluster consisted of 1022 respondents (22.6% of the sample set).

Figure 1 shows the absolute count and the corresponding percentage of the subjects relative to the total number of respondents (row *Size*). The row *Label* designates the individual clusters and the row *Description* shows a description of each category.

Input (Predictor) Importance
 1.0 0.8 0.6 0.4 0.2 0.0

Cluster	1	2	3
Label	AS non-users	Occasional AS users	Occasional drinkers
Description	never drank alcohol, smoked or used marijuana	use all three AS – alcohol, cigarettes, marijuana	only drink alcohol
Size	47.4% (2145)	30.0% (1358)	22.6% (1022)
Inputs	alcohol never (100%) cigarettes never (100%) marijuana never (100%)	alcohol several times per month (20.0%) cigarettes every day (35.4%) marijuana never (63.4%)	alcohol once in half year (55.1%) cigarettes never (100%) marijuana never (100%)

Figure 1 | Results of cluster analysis – typology of adolescents in terms of selected addictive substances

3.1 Differences in leisure activities with respect to the identified typology of AS users

Within the clusters that had been identified, we determined the relative abundance of the variables relating to the different types of leisure activities. For this purpose, we used the SPSS feature in a two-step cluster analysis called “Evaluation Fields”, which was used to calculate the data for the individual clusters related to the use of leisure time. This resulted in the identification of the variables that most visibly discriminate between the clusters² and in displaying the relative counts.³ On the basis of the outcome of this procedure, we reach the following conclusions.

– **Discos/entertainment events** are the most discriminating activity among the identified clusters. The occasional AS users go to discos/entertainment events on a week-

2 | In the bullet list, we proceed from the strongest discriminant variable to the weakest.

3 | The procedure resulted in a graphic model, which is, however, very long given the scope of this study, so the results are described in the bullet list.

	AS non-users		Frequent AS users		Occasional alcohol drinkers	
	AM	SD	AM	SD	AM	SD
I go to discos/entertainment events	0.56	1.13	1.94	1.42	1.15	1.27
I have temporary jobs	0.57	1.21	1.58	1.70	1.00	1.40
I prepare for school	4.48	1.18	3.58	1.73	4.18	1.31
I play board games with my parents	1.92	1.48	1.24	1.36	1.57	1.31
I attend interest clubs	2.17	1.93	1.25	1.77	1.84	1.90
I go out with my friends	3.59	1.44	4.10	1.13	3.54	1.28
I chat online	3.32	1.99	3.93	1.68	3.84	1.72
I use the Internet	4.57	1.01	4.82	0.67	4.86	0.53
I listen to music	4.47	1.10	4.84	0.58	4.69	0.78
I read books	2.42	1.77	1.82	1.74	2.33	1.72

Table 1 | Mean differences in various leisure activities for each type of substance user

- ly basis in 30.8%⁴ of cases, while the occasional alcohol drinkers do not go to discos/entertainment events in 42.0% of cases and the non-consumers in 72.2% of cases.
- **Temporary jobs** were the second most important discriminating variable among the clusters. In the occasional AS users, the most frequent category was “not at all” (39.1%), and similarly, this was also the case even with the occasional alcohol drinkers, but with a higher percentage of 54.4%; the AS non-users do not have temporary jobs in 75.3% of cases.
 - **Preparation for school** is the third most important discriminating variable in each group. In 43.5% of cases, the AS users prepared for school every day, followed by the occasional alcohol drinkers with 58.3% and AS non-users with 75.0%.
 - **Board games with parents** were another important discriminating variable. The AS users did not pursue this activity in 41.0% of cases, the occasional alcohol drinkers pursued it semi-annually (30.1%), and the AS non-users several times a week (24.8%).
 - **Attending interest clubs** also differentiated between the groups: the AS users did not visit a club in 61.9% of cases, the occasional alcohol drinkers in 45.8% of cases, and the AS non-users in only 36.1% of cases.
 - **Going out with friends** was an important discriminating variable, with the AS users going out with their friends every day (47.6%), the occasional alcohol drinkers more times a week (36.1%), and the AS non-users every day in 33.5% of cases.
 - The above were followed by **online chatting**, with the AS users being the most frequent on a daily basis with 64.4%, followed by the occasional alcohol drinkers at 61.3%, and the AS non-users at 48.0%.
 - These were followed by the activities with a similar level of importance, namely Internet use, listening to music, and reading books. The AS users **use the Internet every day** in 90.6% of cases, followed by the occasional alcohol drinkers in 92.0% and the non-users in 78.3% of cases. The AS users **listen to music on a daily basis** in 90.3%

of cases, followed by the occasional alcohol drinkers in 81.8% and the non-users in 73.8% of cases. 34.1% of the AS users **do not read books**, while 19.9% of the occasional alcohol drinkers read books once in six months and 18.1% of the non-users read books once a week.⁵

To obtain a more comprehensive overview of the differences between the groups, we also present the mean differences in the various leisure activities (*Table 1*).

3.2 Differences in risk activities in leisure time with respect to the identified typology of AS users

The risk activities that discriminate between the identified clusters include the following:

- **Consumption of alcohol and cigarettes and going out with friends** are the activities that discriminate most between the identified clusters. The occasional AS users go out with friends and “have a drink” more than once a month in 37.4% of cases, while the occasional alcohol drinkers do not consume alcohol in this way in 67.8% of cases and the non-users in 98.1% of cases. With regard to cigarette smoking as an activity that the teens do with their friends, the occasional AS users smoke daily in 36.1% of cases, while the occasional alcohol drinkers are barely engaged in this activity at all (99.1%), and the situation is similar with AS non-users (97.8%);
- Another activity is **marijuana consumption and going out with friends**: the occasional AS users do not pursue this activity in 76.8% of cases, followed by the occasional alcohol drinkers and AS non-users with 99.7% of cases;

5 | The importance of other leisure activities within each cluster was low and they are not shown in the results. These included activities such as playing computer games, spending time with siblings, attending church meetings, going to the shopping centre, talking with parents, watching TV, doing nothing, taking care of pets, being bored, and talking with friends (the frequency of these activities was similar in the groups). These activities did not discriminate between the clusters, which means the individual groups perform them to a similar degree.

4 | We show the percentage distribution of the most represented category, i.e. the one that prevailed in the individual clusters.

	AS non-users		Frequent AS users		Occasional alcohol drinkers	
	AM	SD	AM	SD	AM	SD
Frequency of cigarette use with friends	0.03	0.31	1.91	1.74	0.01	0.17
Frequency of alcohol use with friends	0.03	0.28	1.21	1.09	0.34	0.59
Frequency of marijuana use with friends	0.01	0.20	0.41	0.94	0.01	0.13
Playing slot machines	1.28	0.84	1.78	1.40	1.39	0.97

Table 2 | Mean differences in various risk activities for each type of substance user

- Even **playing slot machines** was an activity that discriminated between the groups. The occasional AS users never played slot machines in 60.9% of cases, the occasional alcohol drinkers in 74.6% of cases, and the AS non-users in 82.0% of cases;
- **Spending time in the group** the respondent belongs to **in public places, such as parks, streets, and shopping centres**, shows differences among the identified groups. The AS users spend their time on this activity in 81.7% of cases, followed by the occasional alcohol drinkers with 71.9% and the AS non-users with 76.4% of cases.

For a more comprehensive overview of the groups, *Table 2* shows the average differences in the various leisure activities among the identified groups.

3.3 Description of the individual types of adolescents and their demographic characteristics

Among the demographic characteristics, the only significant discriminatory variable was age: the AS non-user group had a mean age of 13.92 years (SD 1.70), the AS user group had a mean age of 15.95 years (SD 1.67), and the alcohol user group had a mean age of 15.42 years (SD 1.83).

Other demographic characteristics were not considered to be significant predictors among the individual clusters. In terms of gender, the distribution of boys and girls was similar in each group (AS non-users – girls: 52.2%, occasional AS users – girls: 56.7%, occasional alcohol drinkers – girls: 57.2%).

In terms of residence, the distribution was similar (AS non-users – residing in a village 53.7%, occasional AS users – residing in a village 56.3%, occasional alcohol drinkers – residing in a village – 60%). The Catholic religion dominated in all the clusters (AS non-users: 72.1%, occasional AS users – 69.1%, occasional alcohol drinkers: 75.5%). Secondary education with a school-leaving exam prevailed among the respondents' fathers (AS non-users: 48.9%, occasional AS users – 51.4%, occasional alcohol drinkers: 53.9%) and mothers (AS non-users: 50.0%, occasional AS users – 51.1%, occasional alcohol drinkers: 55.4%). Family type was not a discriminatory variable either, with most of the respondents living in a complete family (AS non-users: 77.1%, occasional AS users – 66.7%, occasional alcohol drinkers: 79.8%).

● 4 DISCUSSION

On the evidence of the results of several studies which we presented in the introduction to our study, one can expect some differences in the leisure activities of the adolescents with respect to their rate of consumption of addictive substances (alcohol, cigarettes, and marijuana). In the present study, we designed a typology of adolescents according to the frequency of use of said substances and we observed the differences in how the different types of adolescents spend their leisure time.

In the cluster analysis, we identified three types of adolescents in terms of their rate of consumption of addictive substances. The group characterized by non-consumption of any of the substances that were mentioned was the largest, and it was dubbed “AS non-users”. This cluster consisted of 2145 respondents, representing almost half of the sample set. The adolescents belonging to this group had never used any of the addictive substances being monitored. The other cluster that was identified accounted for nearly one third of the respondents (N 1358, 30%), by whom alcohol was consumed several times a month in 20% of cases, cigarettes were smoked each day by 35.4%, and 16.7% of them consumed marijuana once in six months. This cluster was named “occasional AS users”. The last cluster consisted of the respondents who only drank alcohol, most frequently once in six months (55.1% of the respondents in this cluster). This cluster was called “occasional alcohol drinkers”. The respondents in this group never smoked cigarettes or used marijuana.

Subsequently, we determined the differences in leisure activities, risk activities, and demographic characteristics in the individual clusters, which resulted in the following typology:

- **AS non-users** – this group accounts for nearly half of the adolescents, and is characterized by the non-use of alcohol, cigarettes, or marijuana. In their spare time, the respondents in this group use the Internet (78.3%), prepare for school (75.0%), listen to music (73.8%), chat (48.0%), and go out with friends (33.5%) **on a daily basis**. They read books (18.1%) once a week and play board games with their parents (24.8%) several times a week. The vast majority of them do not pursue activities such as temporary jobs (75.3%) and going to discos/entertainment events (72.2%). Over a third of them do not attend inter-

est clubs (36.4%), but 23.7% of them do so on a monthly basis and 21.5% of them several times a week.

In their spare time, they do not pursue any risk activities, such as consumption of alcohol, cigarettes, and marijuana with friends, playing slot machines (82.0%) or other illegal group activities (91.2%). Altogether, 76.4% of them spend their free time in public places (parks, streets, shopping centres, etc.). This is the youngest of the identified groups, with an average age of 13.92 years.

- **Occasional AS users** – this group accounts for nearly a third of the adolescents, and is characterized by occasional use of alcohol (20% of them use it more than once a month), cigarettes (more than a third of them smoke every day), and marijuana (16.7% of them use marijuana once in six months). In their spare time, they are engaged in activities on the Internet (90.6%), listen to music (90.3%), chat online (64.4%), go out with friends (47.6%), and prepare for school (43.5%) **on a daily basis**. They go to discos/entertainment events (30.8%) once a week. 39.1% of them do not have temporary jobs, but 21.1% of them do so once in six months and almost 13% of them more than once a week. They read books to a relatively limited extent (34.1% not at all, 18.2% once in six months). In their spare time, many of them do not attend an interest club (61.9%) or play board games with their parents (41.0%).

The predominant risk activities include the consumption of drugs “with friends” (37.4% of the respondents in this group drink alcohol more than once a month and 36.1% smoke cigarettes every day when out with friends). Marijuana is not consumed with friends by 76.8% of the respondents, but 14.5% of them consume it several times a month. A greater majority is involved in illegal activities with the group and 81.7% spend time in public places (parks, streets, shopping centres, etc.). Altogether, 60.9% of the respondents have never played slot machines, while others indicated that they did so once in their lifetime (26.7%) or once in half a year (7.9%). This is the oldest of the identified groups, with an average age of 15.95 years.

- **Occasional alcohol drinkers** – this group accounts for nearly 23% of the adolescents, and it is characterized by the occasional use of alcohol (once in six months – 55.1% of the respondents in this group), but cigarettes and marijuana are not used in this group at all. In their spare time, the respondents in this group are engaged in activities on the Internet (92.0%), listen to music (81.8%), chat online (61.3%), and prepare for school (58.3%) **on a daily basis**. They go out with friends (36.1%) several times a week. 30.1% of them play board games with their parents once in half a year and 19.9% of them read books with the same frequency. A majority do not have temporary jobs (54.4%). 42.0% of them do not go to discos/entertainment events, but 25.4% of them do so once in six months and 24.0% of them more than once a week. Most of them do not attend interest clubs (45.8%), but 21.2% of them do so several times a week.

In their spare time, they do not pursue any risk activities such as the consumption of cigarettes and marijuana with friends or drinking with friends in 67.8% of cases (but 26.2% of the respondents in this group drink alcohol with friends more than once a month). 80.7% are not engaged in illegal activities with friends, and 74.6% of them have never played slot machines. Altogether, 71.9% of them spend their free time in public places (parks, streets, shopping centres, etc.). The average age in this group of users is 15.42 years.

We conclude that the frequency and intensity of various leisure activities differs across the identified types. The members of the group which exhibits some elements of risk behaviour (frequent consumption of alcohol and cigarettes, experimenting with marijuana) spend their leisure time differently compared to the other groups. The respondents in this group spend more time on the Internet, listen to music, chat online, go out with friends, go to discos, and have temporary jobs. They spend time preparing for school and reading books to a lesser extent. They attend interest clubs and play board games with their parents to a much lesser extent. They engage in risk activities in their free time when meeting their friends (group of friends), such as drinking alcohol and smoking cigarettes (some experimenting with marijuana), and they engage in illegal activities and meet their friends in public places at a much higher rate (compared to the other two groups). Similar observations were made by Tomčíková et al. (2013), who found that when adolescents engage in risk activities in their free time, it increases their likelihood of consuming addictive substances. We have arrived at similar risk factors in leisure time to those proposed by Koutra et al. (2011) or Medrut (2015), such as going to discos/parties or going out with friends. It should be noted that going out with friends need not be considered a risk activity. It becomes a risk activity in terms of substance abuse when addictive substances are consumed in the group and/or the group is engaged in illegal activities. As pointed out by Caldwell and Darling (1999), unstructured social meetings with peers who use addictive substances, moderated by going to discos, lead to higher rates of substance abuse.

The protective factors (occurring mainly in the AS non-user group) include preparing for school, reading books, or playing board games with parents (these were the activities where the non-users differed from the occasional AS users). We believe that board games with parents have a protective function in the sense that it creates a space for quality time between the parents and children, fostering close relationships and meaningful communication even in adolescence. Leisure time spent with the family was also identified as a protective factor in the research presented by Grace et al. (2017) and Kohútová and Almašiová (2015). In the research study by Medrut (2015), reading books proved to be a protective factor, as did religious activities; however, the latter was not confirmed in our research (the item “go to church” did not discriminate among the identified clusters and its frequency was similar in each group).

The limits of the study include the questionnaire data collection method, which in itself always carries the risk of

subjective distortion and the fact that it depends on the ability of self-reflection of the respondents.

● 5 CONCLUSION

The consumption of addictive substances in adolescents is of interest not only to the professional but also to the general public. The findings of this study may be useful in preventive and clinical interventions and when working with children

and young people showing risk behaviour. The above typology can help professionals to create prevention and intervention programmes specifically for the individual types of users and modify their free time in a targeted way. The shaping of ways in which adolescents spend their leisure time is an important aspect of ensuring the meaningful and creative use of leisure time and preventing risk behaviour, which often stems from boredom and idleness. Our findings can also be used by future researchers to identify the risk and protective factors involved in risk behaviour, which includes substance abuse.

Authors' contribution: The authors – Angela Almašiová and Katarina Kohútová – initiated the research, proposed the design of the study, and performed the data collection and literature search. Katarina Kohútová performed the statistical analysis and participated in the interpretation of the data. Both authors contributed to this article and approved the final version of the manuscript.

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Evaluation of a Czech Adaptation of the Boys and Girls Plus Prevention Programme

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BACKGROUND: The Boys and Girls Plus (B&G+) programme aims to prevent the use of addictive substances and its consequences among the adolescent population by adopting attitudes that lead to a healthy lifestyle. **AIMS:** The aim of the evaluation was to assess the strengths and weaknesses of the B&G+ programme and to identify the most appropriate target group of students in the Czech Republic.

DESIGN AND MEASUREMENTS: The research design was based on a European evaluation which took place in all the countries where the programme was piloted. Students filled in an attitude questionnaire before and after the intervention. Teachers filled in an evaluation questionnaire. The data obtained was mainly processed quantitatively. Qualitative processing, which involved evaluation questionnaires for prevention methodologists, is a complement to the

study. **INTERVENTION:** In the Czech Republic, the B&G+ programme was implemented by teachers acting as school prevention methodologists. **SAMPLE:** The post-intervention questionnaire was completed by students from 31 classes. The average age of the students was 15 years. A total of 26 prevention methodologists completed the questionnaire for programme implementers. **RESULTS AND CONCLUSIONS:** The evaluation mainly assessed the development of skills for life. Primarily, the B&G+ preventive programme proved to be effective first and foremost for boys in middle schools (8th and 9th grades). The most significant contribution of this programme to the level of general primary prevention of risky behaviour was found above all in the consolidation of students' life goals. More studies would be needed to determine the effectiveness of the programme in specific areas of prevention.

Keywords | Primary prevention – Evaluation – Effectiveness – Use of addictive substances – Adolescence – Healthy lifestyle – Mental health – Promotion

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● 1 INTRODUCTION

The evaluation of programmes aimed at preventing risk behaviour is an important part of evidence-based prevention practice. An effective preventive programme should be intensive and ongoing and combine objective factual information with an individualized personal approach (Gallá, 2005).

In the Czech Republic, studies on the effectiveness of several preventive interventions have been published in the last two decades (e.g. Gabrhelík et al., 2012; Jurystová et al., 2017). These can be considered as the basis for good practice in this area of research in the Czech Republic (Miovský, Štastná, Gabrhelík, & Jurystová, 2011). It has long been shown that programmes that are closely focused on specific prevention are more effective when combined with methods that work to improve life skills. Nešpor (in Höschl, Libiger, & Švestka, 2004) states that the majority of self-influencing skills (such as coping with strong emotions, self-motivation, and healthy relaxation) can be mastered by training. It is this combination of skill training with specific topics that can enhance the overall effect of preventive interventions. This interconnection has proved successful in the programmes that have already been evaluated, such as Unplugged (Miovský, Aujezká, & Burešová, 2015), although the evaluation of the Unplugged programme also involved a focus on specific issues of addiction and other areas.

The Boys and Girls Preventive Programme is a programme of specific general primary prevention. The main objective of the programme is to prevent substance abuse and the consequences arising from it in the adolescent population by adopting attitudes that lead to a healthy lifestyle (Rementeria & Cunin, 2015). It focuses on the prevention of addiction, risky sexual behaviour, and eating disorders. It is underpinned by three core elements – providing relevant information, promoting the development of healthy attitudes, and developing life skills. It can be an attractive form of education for students. It is an online animated series and a medium that is very close to adolescents and well understood by them. Each series of videos is followed by specific tasks and other activities. The programme includes a detailed methodology for the teachers who implement it.

The aim of the research was to measure the effectiveness of this preventive programme in the Czech setting. Specifically, the aim was to survey attitudes and identify the most appropriate target groups. Furthermore, the programme was evaluated in terms of satisfaction from the perspective of the students who participated in it, but also by the prevention methodologists who directly implemented the programme in schools.

● 2 MATERIAL AND METHODOLOGY

2.1 Study Design

The data was evaluated using a predominantly quantitative methodology (attitude questionnaire and programme eval-

uation questionnaire) but also qualitatively (evaluation of prevention methodology).

2.2 Sample

A total of 31 classes in various middle schools, grammar schools, and secondary schools participated in the pilot Czech study. The attitude questionnaire was completed by students from 31 classes (of which 22 were recruited from middle schools or the lower grades of grammar schools and seven from secondary schools, while in two cases data on the type of school was not available). In a total of 14 classes, a short version of the programme (three blocks) and 14 longer versions of the programme (four or six blocks) were implemented. For the remaining three classes, programme length data is not available. In total, 331 girls and 289 boys responded to the programmes and 343 girls and 271 boys after the programmes. The average age of the students was 15 years (the youngest respondent was 13, the oldest 20).

2.3 Data Collection and Data Analysis

The students completed the attitude questionnaire before and after the implementation of the preventive programme. They also rated the programme itself. There was a total of 630 student responses prior to the implementation and 614 responses to the implementation of the programme. Subsequently, the average responses of each class were worked on with respect to data collection. It was not possible to match the responses of individual students, only those of individual classes. In addition, the school prevention methodologists who led the classroom programmes also commented on the implementation of the programmes. The students chose their answers to each statement from a scale from 1 to 4 (1 – False, 2 – Partially true, 3 – Rather true, 4 – Completely true).

The data obtained showed a normal distribution; the Kolmogor-Smirn test was used for verification. The attitude questionnaire was evaluated using the t-test for two dependent samples by means of the SPSS statistical program. A 5% margin of error was chosen for data evaluation (*Table 1*). The evaluated data sets can be considered representative (given the age of the students, their gender, and the types of schools).

The difference in the average responses of the selected group of students between the first and second rounds of questioning was evaluated (*Table 2, Table 3*). The following groups were involved: all students, girls, boys, students completing the shorter programme, students completing the longer programme, students in middle or lower secondary schools, and secondary school students.

	Students	Girls	Boys	Middle School	Secondary School	Blocks 4 & 6	Block 3
Statement 1	2.88 < 2.92 p=0.288	2.95 > 2.86 p=0.171	2.81 < 2.97 p=0.054	2.93 > 2.88 p=0.247	2.83 < 3.04 p=0.090	2.92 > 2.88 p=0.351	2.88 < 2.99 p=0.050*
Statement 2	2.80 < 2.82 p=0.321	2.81 > 2.80 p=0.482	2.89 > 2.82 p=0.235	2.81 < 2.83 p=0.366	2.80 < 2.88 p=0.161	2.87 > 2.85 p=0.420	2.75 < 2.84 p=0.133
Statement 3	2.49 < 2.57 p=0.074	2.50 < 2.52 p=0.409	2.49 < 2.64 p=0.020*	2.50 < 2.61 p=0.037*	2.49 < 2.55 p=0.337	2.45 < 2.61 p=0.020*	2.54 < 2.56 p=0.405
Statement 4	2.68 < 2.71 p=0.314	2.73 > 2.66 p=0.254	2.65 < 2.77 p=0.070	2.70 < 2.76 p=0.159	2.68 > 2.63 p=0.388	2.69 < 2.78 p=0.109	2.72 > 2.68 p=0.490
Statement 4	2.75 > 2.73 p=0.311	2.71 > 2.66 p=0.309	2.87 > 2.83 p=0.288	2.79 > 2.72 p=0.069	2.76 > 2.72 p=0.328	2.77 > 2.73 p=0.262	2.81 > 2.71 p=0.027*
Statement 6	3.00 > 2.83 p=0.008**	2.88 > 2.72 p=0.052	3.08 > 2.97 p=0.042*	2.93 > 2.86 p=0.060	2.94 > 2.79 p=0.150	2.96 > 2.79 p=0.001**	2.92 = 2.92 p=0.470
Statement 7	2.73 < 2.80 p=0.029*	2.66 < 2.72 p=0.187	2.82 < 2.95 p=0.037*	2.73 < 2.84 p=0.008**	2.67 < 2.77 p=0.100	2.78 < 2.85 p=0.068	2.69 < 2.80 p=0.021*
Statement 8	3.15 < 3.18 p=0.296	3.19 < 3.23 p=0.288	3.09 > 3.08 p=0.463	3.19 > 3.17 p=0.376	3.04 < 3.16 p=0.064	3.16 > 3.12 p=0.290	3.13 < 3.20 p=0.187
Statement 9	2.70 < 2.75 p=0.138	2.66 < 2.67 p=0.401	2.76 < 2.84 p=0.140	2.71 = 2.71 p=0.490	2.71 < 2.84 p=0.185	2.68 < 2.72 p=0.246	2.75 < 2.78 p=0.349
Statement 10	2.75 < 2.77 p=0.293	2.72 < 2.75 p=0.321	2.83 > 2.81 p=0.389	2.78 < 2.80 p=0.432	2.66 < .77 p=0.132	2.79 < 2.83 p=0.340	2.70 < 2.73 p=0.180

* Differences are significant at the 0.05 level.
 ** Differences are significant at the 0.01 level.

Table 1 | Summary of statistically significant changes in the averages of responses of all groups under study – Attitude Questionnaire

1 st Questionnaire / 2 nd Questionnaire	Students	Girls	Boys			Mean	N	Std. Deviation
Statement 1	70%/74%	70%/71%	70%/77%	Statement 1	T1	2.8836	31	0.24061
Statement 2	62%/64%	60%/63%	64%/65%		T2	2.9178	31	0.31585
Statement 3	48%/56%	44%/52%	54%/61%	Statement 2	T1	2.7983	31	0.27952
Statement 4	60%/64%	59%/59%	62%/69%		T2	2.8218	31	0.31595
Statement 5	61%/61%	56%/56%	67%/68%	Statement 3	T1	2.4942	31	0.24998
Statement 6	72%/66%	68%/60%	76%/72%		T2	2.5737	31	0.35129
Statement 7	57%/65%	50%/59%	65%/74%	Statement 4	T1	2.6811	31	0.26651
Statement 8	74%/76%	78%/79%	70%/74%		T2	2.7064	31	0.26551
Statement 9	60%/66%	53%/62%	68%/73%	Statement 5	T1	2.751	31	0.26391
Statement 10	63%/66%	59%/62%	68%/72%		T2	2.7269	31	0.25052
				Statement 6 *	T1	2.9556	31	0.2241
					T2	2.8297	31	0.29345
				Statement 7 *	T1	2.7231	31	0.31536
					T2	2.7998	31	0.27549
				Statement 8	T1	3.1528	31	0.33335
					T2	3.1801	31	0.34811
				Statement 9	T1	2.7026	31	0.21216
					T2	2.7462	31	0.18558
				Statement 10	T1	2.7445	31	0.25314
					T2	2.774	31	0.2561

* A statistically significant change in the mean response was found.

Table 3 | Differences in averages of students' responses to the first and second questionnaires – Attitude Questionnaire

2.4 Intervention

According to its authors, the programme is suitable for students aged 13 to 19. It has been pilot-tested in the Czech Republic and other European countries. The programme is designed to appeal to students through its form. It assumes that given the age of the target group, students already possess enough information about risky behaviour and that their attitudes and the influence of their peers should be used. The main medium used in the programme is a series of videos consisting of 25 episodes. These episodes are divided into six units that correspond to the six thematic blocks of the programme. The storyline of the series is conceived in such a way that only some blocks can be utilized, but its impact is not changed. The series is animated, mostly monochrome, using colours only to highlight specific and important situations. The series is not tied to a particular language. The dialogues between the characters are mostly non-verbal. What is important is the behaviour of the characters in different situations, when they express their opinion or attitude to a particular topic. Music is also an important aspect, as it is unique to each character. Some of the elements of the music are in tune, others are cacophonous. This is to indicate the relationships between the individual characters. The action takes place in locations which are well known and familiar to the target group (street, park, disco, etc.).

Each block of the programme begins with a look at the relevant section of the series, followed by specific activities, described in detail in the methodology. The programme implementer decides to what extent he/she wants to focus on the topic and can adjust the programme accordingly. Some topics are mandatory; others may be omitted. The programme includes activities for three to 18 lessons (three to six thematic blocks).

The programme is led by a school prevention methodologist or a teacher who has been trained in this method (e.g. as part of a specialization course for school prevention methodologists), but this is not a prerequisite. The programme materials are designed to provide the teacher with appropriate information and guidance for them to be able to implement the programme without the need for additional training.

The videos of the internet series are freely available at www.boysandgirlsplus.eu. Other materials and detailed methodology (also in Czech) can also be downloaded from the site.

Programme description in terms of content, goals, and activities:

Block 1 – Question of Attitude. It's up to you!

Focus: Attitude

Life skills developed in this block: Self-awareness, decision making, emotion management, and interpersonal relationships

Goals:

- Getting to Know the Internet Series Characters (Watching Videos)
- Show how different attitudes can lead to different lifestyles (Group analysis and discussion)
- Formulate Your Own Conclusions on the Importance of Attitudes (Role Playing in Pairs)
- Focusing on your own attitudes and analysing them and their consequences in life (Self-analysis)

Block 2 – Drugs, Decision Making, and Peer Pressure

Focus: Drugs, decision making, and peer pressure

Life skills developed in this block: Self-awareness, decision making, emotion management, and interpersonal relationships

Goals:

- Getting to Know the Internet Series Characters (Watching Videos)
- Show how different attitudes can lead to different lifestyles (Group analysis and discussion)
- Formulate Your Own Conclusions on the Importance of Attitudes (Creating a story of how to resist peer pressure through drug use decision making)
- (Role Playing in Pairs)
- Focusing on your own attitudes and analysing them and their consequences in life (Self-analysis)
- Identify bad decisions and how peer pressure was involved. Clarify how emotions and motivations are related to peer pressure and decision making (Decision making and mind maps)

Block 3 – What about drugs?

Focus: Drugs

Life skills developed in this block: Self-awareness, critical thinking, creative thinking, and decision making

Goals:

- To show drug-related situations and effects (Watching Videos)
- Provide information on the effects of drugs, including body changes and mood changes (Teacher Presentation)
- Reflect on the motives young people have to use drugs and promote alternative leisure activities (Classroom Discussion)
- Reflect on your personal leisure habits regarding drug use and motivation (Proposal for a structured interview on leisure habits)

Block 4 – This is my choice!

Focus: Decision making

Life skills developed in this block: Self-awareness, decision making, and emotion management.

Goals:

- Show decision-making situations and what happens when barriers and feelings related to them occur (Watching Videos)
- Analyse why decision making is important for each of us to achieve the lifestyle we desire and show how to overcome obstacles in achieving life goals (Group discussion and presentation of conclusions)
- Learn about values and motivations that influence the decision-making process (Group Discussion)
- Learn about your own decision-making process (Filling a decision template)

Block 5 – Me and My Surroundings

Focus: Peer pressure

Life skills developed in this block: Self-awareness, empathy, assertive communication, interpersonal relationships, emotion management, and stress management

Goals:

- Show different situations in which peer pressure is present (Watch Video)
- Learn how peer pressure and our normal beliefs are reflected in some life decisions (Video Analysis and Group Discussion)
- Reflect on situations where peer pressure is present and encourage the acquisition of the necessary means to manage it (Creating a Story)
- Promote loyalty to what you want to do and how you want to do it. Emphasize the value of the group as an enriching element that can provide support and assistance in difficult times (Working in small groups and sharing ideas)

Block 6 – Lifestyle and Future

Focus: Lifestyle and Future

Life skills developed in this block: Self-awareness, empathy, assertive communication, interpersonal relationships, emotion management, decision making and problem solving.

Goals:

- Show the consequences of decisions and how they can become a way of life (Watching Videos)
- Analyse why decision making is important for achieving the desired lifestyle, and show how to overcome obstacles in achieving life goals (Group Discussion)
- Learn to cope with emotional “slumps”. Encourage autonomous decision making, fulfilment of our own goals and consistency in achieving them (Sketching a mind map of future plans)
- Strengthen self-confidence and support positive social networks as a source of support (Capturing Future Plans in the Mind Map. Providing Feedback to and Receiving from Others)

● 3 RESULTS**3.1 Results of the Attitude Questionnaire**

The students in our study already had good knowledge of addiction-specific issues when entering the programme, so the programme did not provide them with new information on this topic. This is not surprising, given the age at which the students experienced the programme. They had the opportunity to acquire the basic information about addictive substances and their effects in lower grades. However, the programme enabled the students to discuss different topics and work on developing their skills (e.g. in decision making).

List of items in the Attitude Questionnaire

- When I encounter obstacles, I find the means to go my own way.
- I won't let others influence me.
- Setbacks and despair will not affect my life goals.
- In general, I have no problems achieving my goals and aims.
- I am confident that I can cope with surprising events.
- I am always aware of my own feelings.
- In most cases I know completely what I want for myself.
- I know exactly where to find support and help when I'm in trouble.
- When there is a new challenge ahead, I know how to deal with it.
- Normally, it is easy for me to make the right decision.

The programme was most powerful in the following four areas:

- The programme taught students how to choose strategies to solve problems they encounter, i.e. how to stay on the path they have set for the shortest implementation of the programme (i.e. three blocks).
- The programme strengthened the students' life goals, most notably in the younger students and boys, in whom the impact was strongest. With the longer programme implementation (four and six blocks), the programme already had this effect on all the students (regardless of gender).
- The programme sensitized the students to their own feelings. The students probably started to notice their feelings more and thus they were even more aware that they were not always sure what was happening in them.
- The programme taught students to perceive their needs better and realize what they want to achieve. We see a connection between this point and the aforementioned information about the affirmation of the students' life goals.

The Boys and Girls Plus prevention programme proved to be most effective for the boys and girls in middle schools. The secondary school students did not show any statistically significant results. The clearest benefit of this programme is in the area of general primary prevention of risky behaviour, which is mainly evident in the affirmation of students' life goals. Significant changes were achieved for Statements 1, 3, 6, and 7. In Statements 1 (“If I am faced with an obstacle, I find a means to help me to go my own way.”), 3 (“Failures and

		Mean	N	Std. Deviation
Statement 1	T1	2.9499	31	0.38483
	T2	2.8635	31	0.45917
Statement 2	T1	2.8059	31	0.45315
	T2	2.801	31	0.4551
Statement 3	T1	2.4955	31	0.41137
	T2	2.515	31	0.45547
Statement 4	T1	2.7253	31	0.38991
	T2	2.6619	31	0.36552
Statement 5	T1	2.7071	31	0.4518
	T2	2.655	31	0.4488
Statement 6*	T1	2.8847	31	0.43443
	T2	2.723	31	0.54434
Statement 7	T1	2.6571	31	0.47326
	T2	2.7148	31	0.50316
Statement 8	T1	3.1869	31	0.44107
	T2	3.2302	31	0.46341
Statement 9	T1	2.6574	31	0.41273
	T2	2.6731	31	0.37117
Statement 10	T1	2.7158	31	0.45867
	T2	2.747	31	0.3031

* A statistically significant change in the mean response was found.

Table 4 | Differences in averages of girls' responses in the first and second interviews – Attitude Questionnaire

troubles do not affect my life goals.”), and 7 (“In most cases I am absolutely sure what I want for myself.”), the students' responses (particularly among the boys) were statistically significantly higher in the second round of questioning than in the first (Table 4, Table 5). Statement 6 in the second questionnaire (“I am almost always aware of my own feelings”) yielded answers showing a statistically significantly lower average. This outcome was the only one which grew worse (in all the focus groups). However, this worsening could be due to wider perspectives and closer self-examination, which are desirable elements in prevention efforts.

It should be noted that after the implementation of the programme there was an increase in the rate of positive answers to all the statements, with the exception of the aforementioned Statement 6. However, the increase is statistically significant only for Statement 7 (“In most cases I am absolutely sure what I want for myself.”).

The attitude questionnaire was focused more on the examination of non-specific areas of the prevention programme, or rather, skills for life. Therefore, in total the results show the efficiency of the programme in the area of the improvement of skills for life, rather than in the area of specific general primary prevention. The questionnaire was compiled by foreign authors purely for the purpose of this evaluation.

		Mean	N	Std. Deviation
Statement 1	T1	2.8106	30	0.32431
	T2	2.9662	30	0.41263
Statement 2	T1	2.8792	30	0.38028
	T2	2.8153	30	0.40298
Statement 3*	T1	2.4936	30	0.2989
	T2	2.6411	30	0.37042
Statement 4	T1	2.6484	30	0.39583
	T2	2.7747	30	0.31138
Statement 5	T1	2.8694	30	0.32541
	T2	2.8318	30	0.29067
Statement 6*	T1	3.0816	30	0.31645
	T2	2.9722	30	0.38514
Statement 7*	T1	2.8226	30	0.41588
	T2	2.945	30	0.25659
Statement 8	T1	3.0919	30	0.50072
	T2	3.0819	30	0.55999
Statement 9	T1	2.7644	30	0.35733
	T2	2.8388	30	0.35817
Statement 10	T1	2.8289	30	0.30305
	T2	2.805	30	0.424

* A statistically significant change in the mean response was found.

Table 5 | Differences in the averages of boys' responses in the first and second interviews – Attitude Questionnaire

Its validity and reliability have not yet been tested, which slightly reduces the significance of the results.

3.2 European Results

The provisional and unpublished results from June 2016 bring the first information about the efficiency of the programme from the perspective of the evaluation of all the European data. The Czech Republic submitted almost a third of all the completed questionnaires and therefore greatly influenced the general European results.

The European results show that the younger the students were, the more information they learned from the programme (mainly in the area of information about addictive substances and how others influence our decision making). Younger students generally agreed that they learned to make correct decisions thanks to the programme, but their general understanding of the tasks was worse than was the case with older students. No significant benefit for the older students was observed. The girls gave the programme significantly higher ratings than the boys did.

One of the main aims of the programme was more “negative” answers to the question concerning the significance of

alcohol. However, there was no difference in the answers to this question (in all categories).

3.3 Evaluation of the programme by students

To evaluate their satisfaction with the programme, the students were asked to rate 15 statements pertaining to the programme. The same rating scale as in the attitude questionnaire was used.

The list of entries in the questionnaire:

- I learned many new things in the Boys and Girls Plus programme.
- I understood well what the stories in the series were about.
- The stories in the series are representative of the lives of young people today.
- I understood well the tasks and exercises during teamwork.
- The time dedicated to discussions and exercises was sufficient.
- I felt good during the team discussions and exercises.
- The discussions and exercises were informative and inspiring.
- Participation in the discussions and exercises was not too stressful for me.
- I learned new things about drugs and their impact in the Boys and Girls Plus programme.
- The Boys and Girls Plus programme showed me how positive approaches can be beneficial for my life.
- In the Boys and Girls Plus programme I learned something about how other people can influence my decisions.
- In the Boys and Girls Plus programme I learned to make correct decisions.
- In the Boys and Girls Plus programme I learned new ways to make up my mind and decide.
- Through the Boys and Girls Plus programme I looked at my life and learned something about myself.
- Things I learned in the Boys and Girls Plus programme will be useful for my future life.

For the majority of the students, the life stories of the young people presented in the programme were highly realistic and relatable. Overall, the students evaluated the programme as very comprehensible.

We emphasize only the difference between the girls and boys in the students' evaluations of the programme. This difference was remarkable in the evaluations on the European level, but not so for the Czech Republic.

More than half of the students (57%) did not view the programme as beneficial in terms of acquiring new information; however, almost three-quarters responded that the discussions and exercises were informative and thought-provoking. 62% of the students did not learn anything new about drugs and their effects. This data demonstrates that secondary school students are already well informed about the subject matter presented and that it is possible to concen-

trate more on changing certain positions and perceptions than on providing information.

Over half of the students stated that the programme had not taught them to make the right decisions (14 classes, however, did not undergo the programme aimed at good decision making). 53% of the students stated that they had not learned new ways to contemplate and make decisions. 75% of the students had learned about the influences others can have on their decision making. Almost three-quarters of the students stated that the Boys and Girls Plus programme had demonstrated the advantages of positive attitudes in life. 61% of the students thought that the things they had learned in the Boys and Girls Plus programme would be useful for them in their lives. It is thus evident that the subjective benefit of the programme for students is their realization of the strong influence others (especially peers) have upon their decisions, especially in challenging situations when they often do not decide for themselves.

3.4 Evaluation of the programme by prevention methodologists

The prevention methodologists stated that the aims of the programme were first and foremost to hold discussions with students, improve their awareness about addictive substances, change attitudes towards addictive substances, and demonstrate how to resist peer pressure. The methodologists were successful in capturing the students' attention with videos and leading discussions. They were not successful in adhering to the programme's timetable of activities. Some students had problems relating to the characters in the series, or with understanding the storyline (too-short videos interrupted by credit titles after each episode). Overall, the methodologists were successful in fulfilling their aims in whole or in part. We consider the attitude and approach of the individual methodologists towards the programme and students to be highly important and a major factor in ensuring the effectiveness of the programme. Thus, it is not possible to say that the programme is in itself successful; suitable instructors are required in classrooms. The programme itself and the materials for it can in no way guarantee successful results. It is evident from the student responses that a school prevention instructor's ability to lead a group of students has a very large impact. A safe and relaxed environment is important for students to cooperate and feel good in the programme. The Czech school prevention instructors were successful in this area as the students evaluated the discussions as not being too stressful and the spaces allocated for the programme adequate. The atmosphere in the classrooms appears to have encouraged students to participate actively in the programme and, therefore, the primary prevention intervention can be evaluated as successful.

● 4 DISCUSSION

The programme fulfils the majority of the basic principles of prevention (Martanová, 2012). The programme is continual, combines various strategies, is systematic, uses bona fide information and forms of influence upon the target group, and deals with various areas of risky behaviour. The programme is oriented towards positivity, attempts to demonstrate the advantages of a healthy lifestyle, and uses the KAB model of peer elements, de-normalization of risky behaviour, and promoting protective factors in society.

The form and content of the Boys and Girls Plus programme is undoubtedly attractive for students. The video series is made in such a way as to be appealing. The animated series with specific graphics and the use of colour catches students' attention. The music is chosen to suit the atmosphere of the surroundings and the individual characters. For most students the stories of young people are presented in a realistic way and for them it was very realistic and contemporary. In general, the students evaluated the programme as being very comprehensible.

Upon starting the programme, the students already had good knowledge about various types of addiction. Therefore, the programme did not provide them with new information on this subject. This is not surprising considering the age of the students when they participated. The programme nevertheless enabled the students to discuss various issues and to work on the development of their skills (e.g. in the area of decision making).

When starting the programme, the majority of the students had a high level of self-efficacy and, therefore, reached what is called the ceiling effect. The programme would be more effective with more vulnerable groups whose levels of self-efficacy were lower. The programme was initially conceived for groups of children from worse socio-economic backgrounds and realized in low-threshold facilities. The programme has a greater impact upon individuals who are more susceptible and exposed to the given issues than more stable students.

The analysis of the results indicates that the programme is most effective with younger boys (in middle school and the first years of secondary school). For this group skills for life training proved to be particularly important. In this area, no statistical progress was registered for the girls. Langmeier and Krejčířová (2006) concluded that the perceivable differences in development between boys and girls were mostly relative. Thus, the results made it impossible to conclude that girls were more socially mature or more capable than boys.

The evaluation of the results indicates that even a short-term intervention (three blocks) teaches students how to choose methods for following their own path and their own way towards their chosen aims and goals when confronted with obstacles. However, at the same time, it is also more likely to raise doubts within students as to whether they would be able to cope with unexpected negative events. Furthermore,

the programme does not demonstrate such tendencies. It is probable that the programme sensitizes students and forces them to think more about situations which could arise. The students had the opportunity to consider their perception of situations and their own emotions, which probably resulted in them improving their reflective skills. Even with a short intervention, the programme helped the students realize what they wanted in life. The programme taught the younger students and boys, especially, to consider their needs and be better at resisting potential peer pressure. It appears that with the programme we were successful in encouraging adherence to life goals which the younger students set for themselves. The longer the programme, the better the outcomes. We see this aspect as being one of the strongest areas of the programme.

The programme also had subjective benefits for the students. They stated that they recognized the advantages of a healthy lifestyle and that for the majority this was the main thing they learned. In terms of general primary prevention of risky behaviour, the most obvious benefit of the programme was the reinforcement of the participating students' life goals.

The Boys and Girls Plus primary preventive programme has various strengths, one of the main ones being its very form. The animated internet series is very appealing to students while maintaining a comprehensive nature. This form of communication is natural to them, and during the programme, there were no problems with keeping the students focused on the subject matter. The programme was found successful in encouraging the students to discuss various prevention-specific topics in a natural way.

The programme covers (and goes beyond) the recommended number of hours that should be dedicated to general primary prevention under the School Prevention Programme (for 13-to-15-year-olds, according to the recommended structure of such programmes (Miovský, Aujezká, Burešová, et al., 2015, p. 53).

The results of the study reveal that the form of the programme appeals to the current generation of young people, in part thanks to the use of modern technology in primary prevention programmes. The results also point out some specific issues for prevention programmes, e.g. high-risk sexual behaviour, which have not been studied in detail yet. Vondráčková (in Blinka, 2015), for example, noted that, in practice, there was a lack of effective programmes to prevent dependence on the internet that fulfil framework prevention criteria. This serves as a great inspiration for the future development of prevention activities.

● 5 LIMITATIONS OF THE SURVEY

The evaluation has some weak points in several areas. One significant weakness seems to be the unsuitable choice of actual evaluation materials, namely the attitude questionnaire. Since the programme is presented as comprehensive

specific primary prevention of risky behaviour, the evaluation materials should be focused in this direction in order to look into specific areas. However, the focus of the attitude questionnaire is rather non-specific and, apart from attitudes, predominantly maps skills for life. There is only one question focused on a specific (addiction-related) area – “Alcohol will most probably be an indispensable part of my life.” We find this question very problematic and ambiguous and thus we did not consider this question in our survey as it is not clear why the authors of the questionnaire chose it. The question is so broad and general that none of the answers indicate what the student actually means. Additionally, the answer to this question is closely linked to the cultural background, and the Czech Republic is a country where alcohol has deep historical traditions and the one which features the highest consumption of beer per capita in the world.

Therefore, the evaluation was more focused on ascertaining the efficiency of the programme in the area of the cultivation of skills for life rather than specific areas of prevention.

Another disadvantage of the design of the survey was the impossibility of matching the answers of individual students because the students stated only their sex and class. It was possible to match only groups of boys and groups of girls or a group of individual classes (more specifically, the averages of their answers) but not specific individuals. Therefore, all the evaluations were made on the basis of

average answers. Potential significant divergences among students that were possibly influenced by the programme could not be identified. Nevertheless, some statistically significant outcomes were observed.

A further weak point is the fact that the survey did not feature a control group, and other external variables which could have affected the efficiency of the programme were not ascertained. This can reduce the validity of the overall results.

It is difficult to estimate the extent to which the effectiveness of the programme could be attributed to the programme itself and to what extent it was influenced by the moderators, i.e. the prevention methodologists who led the programmes in the classes. The overall effectiveness of the programme can be influenced considerably, either positively or negatively, by the personality of the programme moderator (Gabrhelík, in Miovský, Adámková, & Barták, 2015).

● 6 CONCLUSION

The pilot evaluation of the Boys and Girls Plus programme confirmed that it is possible to implement the prevention programme in the Czech Republic. The Boys and Girls Plus programme ranks among the international programmes that have been successfully adapted to the Czech setting.

Authors' contribution: Veronika Pavlas Martanová initiated and designed the study. She led Anna Fromberger as her thesis supervisor. Anna Fromberger conducted the statistical analyses and participated in the interpretation of the data and preparation of the manuscript. They both worked together on the literature search and summary of relevant evidence. Both authors contributed to the article and approved the final form of the manuscript.

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Loneliness and the Prospect of Abstinence in Addicts in the Context of the Ecosystem Meta-theory of Social Work

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BACKGROUND: Studies around the world point out that there is a significant relationship between loneliness and different types of substance and non-substance addiction. Different types of loneliness are caused by different factors and reflect a significant quantitative and/or qualitative deficit in the area of basic human needs, specifically affiliation, intimacy, and love. The multi-dimensional phenomenon of loneliness can precede substance or non-substance addiction, develop simultaneously, emerge as a consequence, and prevent abstinence. The ecosystem meta-theoretical framework considers the complexity of loneliness and addiction as phenomena and conceptualises the relationships between a person's internal experience and their social and physical environment. **AIMS:** The primary goal of the pilot study is to verify the relationships among different constructs of loneliness and affinity in parallel. The secondary goal was to explore the possible differences in the measured constructs between currently hospitalised respondents and abstaining respondents.

METHODS: The quantitative test battery consisted of the

UCLA loneliness scale, T-98 social inclusion questionnaire, de Jong Gierveld loneliness scale, and MOS anticipated social support survey. **SAMPLE:** 54 respondents participated in the research. At the time, 28 respondents were hospitalised in the Košice Drug Addiction Treatment Centre (CPLDZ) and 26 were abstaining A-club members from psychotherapy and self-help groups. The research subjects were males (n=38) and females (n=16) aged 22 to 79. **RESULTS:** The mutual correlation of the tests showed medium to strong correlation. The comparison of respondent subgroups showed statistically significant differences in the individual criteria pertaining to loneliness, affiliation, and anticipated social support. **CONCLUSIONS:** Theoretical triangulation and parallel tests support the assumption that social and emotional isolation represent important factors in the treatment and abstinence prognosis. Further data analysis will be of key importance in the selection of the most suitable tests, with the emphasis on the extent of the whole battery. More detailed testing based on diagnostic as well as demographic criteria will also be necessary.

Keywords | Loneliness – Substance and non-substance addiction – Abstinence – Ecosystem – Social work

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● 1 INTRODUCTION

“Loneliness” is a specific phenomenon of human existence; however, the term is often incorrectly used to express and describe a whole range of emotions and situations such as anxiety, depression, sadness, emptiness, loss of meaning in life, solitude, etc., although loneliness as such is very specific. These conditions share certain characteristics with loneliness; however, the causes as well as consequences may differ, influence or condition each other, and precede one another. Because of this affinity, it is necessary to distinguish loneliness from other emotional states. Clinical studies point out that loneliness and issues or deficiencies in social and close intimate relationships are significant negative factors increasing the risk of relapse that may encourage the development of addiction and complicate the therapy (Medora & Woodward, 1991; Rokach, 2002; Orzeck & Rokach, 2004; Akerlind & Hornquist, 1992; Rokach, 2018).

1.1 Loneliness

On the basis of his own research and reflection on others' work in the area of analytical and therapeutic usefulness (Fromm-Reichmann, 1959; Parkes, 1985; Leiderman, 1969; Sullivan, 1953, etc.), Weiss (1985a, b, c) defines two types of loneliness related to 1) emotional isolation and 2) social isolation. Loneliness resulting from emotional isolation results from the loss or lack of intimate attachment. The fear of being neglected, losing security, but also intimacy and being hurt resulting from loneliness resulting from emotional isolation reflects the *child's first attachment*. This characterises the person's intimate relationships. In this respect, Weiss's interaction-based view corresponds with the psychodynamic loneliness model. In psychodynamics, loneliness is understood as a negative subjective experience rooted in early childhood and caused by a dysfunctional, inadequate, or absent relationship with the person who was supposed to fulfil the child's needs to a sufficient extent and duration (Sullivan, 1953; Bowlby, 1985; Weiss, 1985b). The injury caused by loneliness resulting from emotional isolation is hard to heal, and it is necessary to establish a sufficiently strong and intense connection with another person. This type of relationship cannot be substituted for by other types of relationships (Weiss, 1985b; Bowlby, 1985). *Loneliness resulting from social isolation* results from the absence of a social network of peers, colleagues, neighbours, family, or friends in which a person can participate and engage. Any severe disruption of social roles and statuses may result in loneliness resulting from social isolation. A broad range of events can cause a mental load which loneliness exacerbates further. In fact, everything that results in the loss of contact with people sharing the same interests can lead to loneliness resulting from social isolation. The symptoms of loneliness resulting from social isolation can be expected in a number of groups, e.g. divorcees, unemployed persons, those who move to live in another place, people whose behaviour and values differ from those of their surroundings, stigmatised persons (health disadvantage, minority religion, ethnic or racial identity, age – specifically seniors, minority sexual orienta-

tion, etc.) (Weiss, 1985c). People suffering from substance or non-substance addiction, those who have undergone primary treatment, and abstainers represent a specific group. Within the majority population, these people are often labelled (the labelling theory) as “addicts”, “alcoholics”, “gamblers”, and so on. The stigma grows in extent as well as negative connotations if the abstaining addict refrains from all pathological relationships with their drug-related peer group and tries to create a new, functioning social group to receive appropriate social support. The transitional period between breaking the dysfunctional contacts and making new ones can potentially result in significant loneliness resulting from social isolation. The risk that the abstaining addict will be feeling so lonely that they will return to their original, still existing, although pathological social network significantly increases. Kelly, Stout, Magilm, and Tonigan (2011) state that participation in abstaining addict groups supports the creation of new social attachments with other abstainers, thus eliminating the influence of the original social network consisting of alcohol abusers. The results show that self-help abstainer groups clearly influence the prevention of relapse and their prospects for abstinence in a positive way.

1.2 Loneliness as a relapse risk factor

Dimeff and Marlatt (1995) define relapse as a process in which cognitive, behavioural, and affective components condition one another. The process leading to a lapse in abstinence begins several weeks before the drug is actually taken. The relapse, as such, results from a generally imbalanced lifestyle that leads to specific, high-risk situations that jeopardise the individual's self-control and eventually break their abstinence. The aforementioned authors specify three categories of risky situations:

- a** | more than a third of all relapses are caused by *negative emotional states*. These states are usually related to interpersonal relationships. Such mental states include frustration, aggression, depression, apathy, fear, anxiety, boredom, etc.;
- b** | *interpersonal conflicts* cause approximately 16% of relapses; these include negative and conflicting relationships with significant others, friends, or relatives, but also confrontations at work or other types of social interaction;
- c** | *social pressure* causes as many as 20% of all relapses. Social pressure can be *direct*, from the “old drug peer group”, or *indirect*, where alcohol is a part of a social event.

The risk situations are often emotionally charged, which can trigger a strong urge in the individual to take the drug to release the tension caused by the negative emotional state they are experiencing. Loneliness resulting from both social and emotional isolation as a negative emotional state belongs to the first two categories of risk situations (Weiss 1985a, b, c). Dimeff and Marlatt (1995) do not directly state loneliness as a risk factor in breaking abstinence; however, they describe certain mental states and symptoms related to loneliness. In terms of the *ecosystem meta-theory in social work*, the aforementioned risk situations and negative emotion-

al states can be labelled as *life stressors* and *stressful situations*. *Managing stressful situations* and *coping strategies* are determined by personal characteristics as well as the dynamically developing system of their life environment and transactions between their physical and social environment. Life stressors take the form of actual or perceived harm or loss, e.g. disease, death, loss of job, difficult life changes, interpersonal and intrapersonal conflicts, broad ranges of stressful situations, traumatising situations, difficult life situations of variable quality and quantity, including *loneliness resulting from social and emotional isolation* and abstaining from *psychoactive substances* and *managing craving*. *Managing craving* and abstinence often represent *critical stressful situations* in which the person cannot rely on their previous patterns of behaviour, thinking, and feeling. Different conditions create acute and/or chronic stressful situations, which can accumulate. The resulting stress is generated internally and manifests in the form of physiological and/or mental consequences (Gitterman & Germain, 2011; Weiss, 1985a, b, c; Nešpor, 2011). From the holistic point of view, if stressful situations or stress of an inescapable nature remains unmanaged, it disrupts emotions and causes problematic behaviour; these emotions and behaviour affect the individual's internal conviction, thus creating circular causality (Ellis & MacLaren, 2005, pp. 39–43). Physiological and emotional tension result from anticipation, internal interpretation of the way the surrounding reality is constructed, and intuitive or justified evaluation of the surrounding structures, based on which the difficult life conditions, traumatising events, environmental and/or in pressure exceed the perceived available personal and/or environmental resources for managing particular situations and conditions (Gitterman & Germain, 2011).

● 2 RESEARCH METHODS

A quantitative research design was selected for the pilot study. Data was collected using a test battery consisting of the following tests:

1 | **UCLA** – Loneliness Scale (Version 3) (US). The one-dimensional scale evaluates the subjective feeling of loneliness resulting from social isolation. The questionnaire consists of 20 items. The questions describe how a person sometimes feels (“How often do you feel...”). The answers are scaled as follows: 1 – never, 2 – rarely, 3 – sometimes, 4 – always. The higher the score, the higher the loneliness experienced (Russell, 1996).

2 | **T-98** – Social inclusion questionnaire (SK). The **achieved social inclusion (ASI)** part of the questionnaire observes the behavioural aspect of affiliation; the **desired social inclusion (DSI)** part observes the motivational level of affiliation. The total number of items in the questionnaire is 30, with dichotomous coding: yes – 1, no – 0. The parts can be evaluated independently or compared. If the behavioural aspect of affiliation (ASI) is significantly lower than the motivational one (DSI), the individual may be feeling lonely (negative difference between the two scores). If the difference between the ASI and DSI scores equals zero, the in-

dividual should be subjectively feeling satisfied with their social interactions. Further interpretations depend upon the difference and direction between the ASI and DSI scores (Kolárik, 2008).

3 | **OESL** – Overall, Emotional, Social Loneliness (NL). The scale for social, emotional, and overall rates of loneliness. The questionnaire consists of 11 items with answers scaled as follows: 1 – definitely yes, 2 – yes, 3 – more or less, 4 – no, 5 – definitely not. The questionnaire evaluates the *social and emotional subscales of loneliness*. Their sum expresses the *overall rate of loneliness*. The questions examine the situations experienced by the individual and the way they feel about them. The lower the score, the higher the rate of loneliness experienced (de Jong Gierveld & Tilburg, 1999).

4 | **MOS** – The MOS Social Support Survey focuses on the estimated rate of expected social support (CZ). The questions examine how often there is another person available for the individual if they need help or support from friends and relatives or from other people. The answers are scaled as follows: 1 – never, 2 – rarely, 3 – sometimes, 4 – usually, 5 – always. The higher the score, the higher the rate of expected support. The Czech version used includes three subscales: an understanding authority, emotional closeness, and practical intervention. The American version of the questionnaire includes as subscales tangible support, affection support, positive social interaction, and emotional and information support. The American version of the questionnaire showed a statistically significant negative correlation with loneliness. In terms of Pearson's coefficient, the whole original version correlated with loneliness as follows: $r = -0.67$ ($p < 0.01$) (Kožený & Tišanská, 2003; Sherbourne & Stewart, 1991). The data was analysed and statistically processed using the IBM SPSS 20 program.

● 3 RESEARCH SAMPLE

The research involved available, non-proportional quota sampling (Hendl, 2009). The total sample consisted of 54 respondents; permission was obtained to select them from the Košice Drug Addiction Treatment Centre and self-help and psychotherapy groups for abstaining alcoholics and persons addicted to other psychoactive substances. The questionnaires were administered in person, with the assistance of the health care staff. The respondents participated in the research voluntarily and anonymously. The research sample consisted of 38 men and 16 women; average age: $x=45.6$, $Med(x)=45$; age range: 22 to 79. 28 respondents were hospitalised at the time because of substance or non-substance addiction; 26 respondents were abstaining while being provided with aftercare and attending self-help or psychotherapy groups. Since the sociodemographic questions were not answered by all the respondents, the individual summaries may not correspond with the total number of respondents. As for the weaknesses of the pilot study, the substance and non-substance addictions were not differentiated, nor were the diagnoses categorised according to MKCH-10-SK-2016. Other observed demographic data can be found in *Table 1*.

● 4 STATISTICAL PROCESSING AND INTERPRETATION OF RESULTS

Since the test battery was quite extensive (110 test questions in total plus demographic data), some respondents failed to answer all the questions in the individual tests or demographic data surveys. Only the batteries in which at least some tests could be evaluated and sociodemographic characteristics were provided were processed. The results of the individual statistical processing therefore differed in terms of the number of files that were processed and compared.

The main goal of the pilot study was to identify the strength of the relationship between individual constructs pertaining to loneliness, and to assess their relationships to constructs with shared affinity. Because of the nature of the data distribution, size of the total research sample, and size of the groups compared – consisting of hospitalised and abstaining respondents, the alternative Spearman's correlation coefficient (correlation) and Mann-Whitney U-test (causal-comparative processing) were selected. The data was analysed using the IBM SPSS 20 program.

Table 2 shows the mutual comparison of the individual tests used. The UCLA Loneliness Scale (Version 3) shows medium to strong correlation with all tests, except for the motivational affiliation component in T-98 DSI. The MOS and OESL surveys correlate in individual dimensions as well as the total score and show medium to strong relationships, except for the dimensions of practical intervention (MOS) and so-

cial loneliness (OESL), which show weak correlation. On the basis of the theoretical constructs pertaining to loneliness and related concepts, it can be stated that the researchers' assumptions about the mutual relationships between the variables that were studied were supported.

The secondary goal of the pilot study was to explore the possible statistically significant differences in the measured constructs between the currently hospitalised and abstaining respondents. On the basis of research abroad, as well as the theoretical analysis of loneliness, it was assumed that the addicts, specifically the currently hospitalised respondents, are experiencing loneliness to a larger extent than the abstaining ones who are receiving after-care. Table 3 shows the statistical comparison between the groups of hospitalised and abstaining respondents in the variables that were examined. The assumptions were partially supported. In terms of statistics, significant differences were identified in most of the variables that were examined (see Table 3); however, the results need to be approached critically because of the size of the research sample and non-normal data distribution. Despite the rather vague results of the statistical comparison, the direction of the main research can be established.

The main research to which this case study pertains aims to identify the way different types of loneliness and related phenomena change in the addicts throughout the treatment process and aftercare in relation to their prospects for abstinence. Another goal of the main research is to perform a causal-comparative investigation of the relationships be-

		hospitalised	abstaining	total
gender	male	21	17	38
	female	7	9	16
	total	28	26	54
marital status	single	10	9	38
	married	3	9	16
	divorced	8	7	15
	in other relationship	2	0	2
	widow(er)	2	1	3
household type	alone	6	8	14
	other members	20	18	38
job status	student	A	0	2
		N	23	47
	employed	A	13	18
		N	15	23
duration of abstinence	0–12		14	14
	13–36		5	5
	37–72		1	1
	73≤		6	6
abstinence broken	yes		6	6
	no		19	19

Table 1 | Respondents' sociodemographic data

		UCLA	ASI	DSI	OESL – em.	OESL – soc.	OESL – tot.	MOS – pract. int.	MOS – em. clos.	MOS – und. auth.	MOS tot.
Spearman's correlation coefficient ρ (rho)	ASI	Cor. Coef.	-.397**								
		Sig. (2-tailed)	.003								
		N	54								
	DSI	Cor. Coef.	.257	-.195							
		Sig. (2-tailed)	.060	.157							
		N	54	54							
	OESL – em.	Cor. Coef.	-.543**	.307*	-.451**						
		Sig. (2-tailed)	.000	.024	.001						
		N	54	54	54						
	OESL – soc.	Cor. Coef.	-.534**	.437**	-.171	.348**					
		Sig. (2-tailed)	.000	.001	.216	.010					
		N	54	54	54	54					
	OESL – tot.	Cor. Coef.	-.626**	.484**	-.362**	.805**	.791**				
		Sig. (2-tailed)	.000	.000	.007	.000	.000				
		N	54	54	54	54	54				
	MOS – pract. int.	Cor. Coef.	-.441**	.302*	-.200	.395**	.291*	.404**			
		Sig. (2-tailed)	.001	.029	.155	.004	.036	.003			
		N	52	52	52	52	52	52			
MOS – em. clos.	Cor. Coef.	-.485**	.419**	-.046	.516**	.380**	.537**	.504**			
	Sig. (2-tailed)	.000	.002	.745	.000	.005	.000	.000			
	N	52	52	52	52	52	52	52			
MOS – und. auth.	Cor. Coef.	-.560**	.421**	-.057	.553**	.500**	.625**	.635**	.826**		
	Sig. (2-tailed)	.000	.002	.693	.000	.000	.000	.000	.000		
	N	51	51	51	51	51	51	51	51		
MOS tot.	Cor. Coef.	-.540**	.401**	-.068	.544**	.433**	.588**	.770**	.852**	.961**	
	Sig. (2-tailed)	.000	.004	.638	.000	.002	.000	.000	.000	.000	
	N	51	51	51	51	51	51	51	51	51	
ASI- DSI (difference)	Cor. Coef.	-.420**	.860**	-.636**	.462**	.455**	.573**	.312*	.372**	.353*	.341*
	Sig. (2-tailed)	.002	.000	.000	.000	.001	.000	.025	.007	.011	.014
	N	54	54	54	54	54	54	52	52	51	51

**. $p(\alpha) < 0.01$; *. $p(\alpha) < 0.05$

Table 2 | Correlation between individual tests

H/A	UCLA	ASI	DSI	OESL – em.	OESL – soc.	OESL – tot.	MOS – pract. int.	MOS – em. clos.	MOS – und. auth.	MOS tot.	ASI- DSI (difference)
Mann-Whitney U	237.000	186.500	224.500	171.000	316.500	201.000	230.500	278.500	219.000	222.500	175.000
Z	-2.202	-3.077	-2.422	-3.356	-.825	-2.827	-1.973	-1.093	-2.000	-1.933	-3.274
Asymp. Sig. (2-tailed)	.028*	.002**	.015**	.001***	.409	.005***	.048*	.274	.045*	.053	.001***

***.p(α)<0.001; **.p(α)<0.025; *.p(α)<0.05

Table 3 | Non-parametric tests – hospitalised/abstaining

tween the loneliness experienced and the risk of breaking abstinence. The differences between males and females will also be studied. Other demographic characteristics will be observed to determine whether they can be a moderating factor in the loneliness experienced, thus influencing the risk of breaking abstinence. As a secondary goal, the differences between the psychoactive substance addicts with selected diagnoses and non-substance (process) addicts will be looked into.

● 5 LIMITS AND RESTRICTIONS OF THE PILOT STUDY

The main limiting factor in causal comparative research is the number of respondents. It relates to the duration of abstinence in relation to the loneliness experienced, which may generate different rates of breaking abstinence. It is assumed that the rate of loneliness experienced will decrease as the duration of abstinence increases, thus also probably reducing the risk of breaking abstinence. The pilot study is also limited by the fact that substance and non-substance addiction were not differentiated. It is assumed that individual groups may differ in terms of the rate of loneliness experienced. Significant differences may be shown mainly by non-substance addiction related to use of the Internet in comparison with e.g. alcohol addiction. The assumption also applies to the fact that alcohol addicts often participate in actual social networks (although pathological) with other addicts. On the other hand, it can be assumed that process addicts (Internet-related) tend to form non-physical relationships which may isolate them more, which can manifest itself in the total score in some tests. The results of the pilot study are limited in further ways. The number of respondents within the individual groups based on sociodemographic characteristics prevented more detailed statistical processing, although that was not the goal of the pilot study. However, it is assumed that the sociodemographic characteristics will play the role of moderating variables in the relationship between the addiction, duration of abstinence, breaking abstinence, individual constructs pertaining to loneliness, and related phenomena. It is also important to perceive the results of the causal-comparative investigation as approximate, with the emphasis on the limiting aspects of

diagnostic and demographic characteristics; in the main research, these limitations will be minimised as far as possible.

● 6 DISCUSSION

The UCLA Loneliness Scale (Version 3) and OESL (Overall, Emotional, Social Loneliness Scale) test instruments were explicitly designed for measuring loneliness. The MOS anticipated social support survey focuses on the functional aspects of social relationships; T-98 identifies the behavioural and motivational aspects of affiliation. The aforementioned constructs and concept mutually reflect different constructs pertaining to concepts of loneliness and affinity related to close intimate and social relationships. Using their own questionnaire verified by a comparison with the older version of the UCLA Loneliness Scale (Russell, Peplau, & Cutrona, 1980), Medora and Woodward (1991) confirmed a negative relationship between loneliness and marital satisfaction, and loneliness and self-respect in alcohol addicts undergoing treatment. The authors also revealed that female alcohol addicts are lonelier than their male counterparts. They compared alcohol-addicted respondents to other groups of the population and found that alcohol addicts are lonelier than e.g. seniors (in general), widows, divorcees, single mothers with low incomes, etc. Rokach (2002) provided the results of a comparison between three groups of young adults: users of MDMA (methylenedioxyamphetamine; known as ecstasy), non-DMA drug users, and the general population of young adults who do not use drugs. The research focused on personality and developmental deficiencies, unsatisfying intimate relationships, moving, separation, and social exclusion. It showed significant differences between all the groups within all five factors. In a similar study, Orzeck and Rokach (2004) compared the multi-dimensional experience of loneliness in three groups: detoxifying opiate users, participants in a methadone substitution programme, and non-users. Again, significant differences were found between the groups, and the most pronounced ones were identified between the detoxifying users and the non-users – in the dimensions of loneliness experienced. The aforementioned studies showed differences between psychoactive substance addicts; however, the main assumption of the present research is as follows: addicts experience various kinds of loneliness more than abstainers, regardless of the type of addiction diagnosed. A more detailed analysis

of the loneliness that is experienced which focuses on the individual substance addiction diagnoses may provide interesting results; however, it is not the goal of this research. A specific group is represented by non-substance addictions, specifically behavioural Internet-related ones (Young, 1998; Patarák, 2016; Patarák, 2018). Loneliness emerges as a by-product of excessive Internet use when an individual dedicates inordinately more time to virtual relationships than to real ones; on the other hand, lonely individuals use online activities to make contact with other users and communities through the Internet (Morahan-Martin, 1999). Using the UCLA Loneliness Scale (Version 3), Morahan-Martin and Schumacher (2003) divided 277 university students into those identifying as lonely and as not lonely. The lonely ones used the Internet to cope with anxiety, get emotional support, look for online friends, or modify their negative moods significantly more than their counterparts, which in turn disrupted their day-to-day functioning. Addiction (substance and non-substance) and loneliness are stressful situations, phenomena that are very complex, mutually interconnected, and potentially condition each other in human life. Loneliness and addiction often appear simultaneously, and it is hard to tell the cause from the consequence. Loneliness increases as the addictive behaviour and negative internal experience develop. Substance and non-substance addictions have similar characteristics in terms of their development and symptoms across the individual di-

agnoses pertaining to the addiction syndrome. Despite their similarities, the loneliness accompanying either of them has specific features.

● 7 CONCLUSION

So far, the parallel testing of the individual instruments has justified the researchers' assumptions about loneliness in relation to other affinity constructions or concepts in the context of the prospects for abstinence. The findings should set the direction of the main research in terms of selection of the appropriate tools for measuring loneliness and help determine which diagnostic and demographic variables should be observed. Studying loneliness is important because different forms of loneliness reflect specific deficiencies in our basic human needs. The failure to satisfy one's basic human needs for cohesion, belonging, affiliation, intimacy, and love makes individuals alienated, lonely, and isolated from the rest of the world and from their own internal experience, and that may result in pathological behaviour. The ecosystem framework of the life environment structure, the social environment, formal as well as informal networks, and close intimate relationships significantly influence how people cope with addiction treatment and accept a specific diagnosis and a new lifestyle aimed at abstinence.

Authors' contribution: Ján Kahan, a PhD candidate, designed the pilot study project as the main part of his dissertation. He also performed the literature review, designed the research, collected and evaluated the data, and processed the manuscript. Eva Žiaková, as his supervisor, supervised the research process and reviewed the manuscript. Both authors agree with the present version of the manuscript.

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NEWS

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The Role of Teachers in the Correction of Descriptive Normative Beliefs

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BACKGROUND: Given that normative beliefs are associated with the use of addictive substances, their correction is necessary in prevention. **AIMS:** The main aim of our research was to examine the association between participating in the Unplugged programme and the correction of descriptive normative beliefs in the short and long term among schoolchildren in the Slovak Republic. It also looked into the moderating effect of gender in these relationships. **DESIGN AND MEASUREMENTS:** In the 2013/2014 school year, the Unplugged programme was implemented in the Slovak Republic. The study was a cluster randomized controlled trial with data collection immediately before the implementation of the programme (T1), three months after its implementation (T2), and 12 (T3) and 18 months (T4) after. Participation in the programme was monitored through three categories: an experimental group with committed teachers, an

experimental group with uncommitted teachers, and a control group. The experimental group was exposed to a drug prevention programme consisting of 12 lessons. **SAMPLE:** The research sample consisted of 497 schoolchildren (mean age 11.5, 40.4% boys). **RESULTS:** Participation in Unplugged in the group with committed teachers was associated with the probability of having a lower level of normative beliefs regarding the number of friends who get drunk at least once a week in the short and long term in comparison with the control group. However, no relationship was found between participating in Unplugged and a lower level of normative beliefs in the group with uncommitted teachers. The results also show gender-specific differences in descriptive normative beliefs. **CONCLUSIONS:** In addition to participation in a prevention programme, the correction of normative beliefs requires the role of a committed teacher.

Keywords | Drug prevention – Descriptive normative beliefs – Unplugged programme – Schoolchildren – Fidelity – Teachers' commitment

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● 1 BACKGROUND

The field of drug abuse prevention in the school environment has made significant progress in recent decades in identifying factors that support and inhibit the onset of drug use and the development of interventions (Dusenbury et al., 2003). Drug use is the consequence of social influence from peers or from the media (Botvin, 2000). Interventions that are based on social impacts and aim to develop personal and interpersonal skills using interactive techniques and include normative learning components have been found to be more effective than others (Gianotta et al., 2014). An effective approach to drug prevention consists of several components, including normative education that targets the correction of the misperception that most people use drugs (Botvin, 2000).

Descriptive normative beliefs concern an individual's convictions about other people's actions (Göckeritz et al., 2010). In the case of drug use, descriptive normative beliefs are related to the perceived quantity and frequency of peers' drug use (Cialdini et al., 1991). Schoolchildren are often convinced that the use of addictive substances is more frequent than is really the case. This overvaluation occurs regardless of whether they are close friends, best friends, or typical or average pupils. These descriptive norms and their misperception might be a strong predictor of drug use (Larimer et al., 2004). Many studies have pointed to the relationship between normative beliefs and various forms of risky behaviour (Olds et al., 2005; Olds & Thombs, 2001). These false normative beliefs are related to substance use and their correction can have an impact on personal substance use (Lewis & Neighbors, 2006). Pupils who were convinced that their peers used alcohol to a high degree reported higher alcohol consumption (McAlaney et al., 2015; Padon et al., 2016). Normative beliefs are also a significant predictor of one's future drinking behaviour (Sher, Bartholow, & Nanda, 2001). A perception that the prevalence of smoking among peers is high contributes to an increase in smoking among teenagers (Ellickson et al., 2003; Primack et al., 2007). Descriptive normative beliefs are also a significant predictor of frequent marijuana use (Buckner, 2013).

The correction of normative misperceptions can be achieved through providing students with information about the prevalence of drug use (Botvin, 2000). When pupils' own beliefs are confronted with the real frequency of drug use, it leads to a correction of their beliefs and can subsequently reduce the use of addictive substances (Moreira, Smith, & Foxcroft, 2009). Effective access to social norms should reflect the correction of the discrepancy between self-belief and other people's behaviour (Borsari & Carey, 2003). Studies have confirmed that preventive programmes can reduce the use of addictive substances if they include the correction of normative beliefs (Borsari & Carey, 2000; Walters & Neighbors, 2005). However, some studies have not confirmed the association between correcting misperception and a reduction of drug use (Wechsler et al., 2003; Clapp et al., 2003).

It is important to note that it is not only the component of normative education included in the preventive pro-

gramme which is important, but also the way in which the programme is implemented. The fidelity (the quality of implementation and adherence to its principles) of a prevention programme is a potential moderator of the relationship between interventions and their expected results and can greatly influence the results of a preventive programme (James Bell Associates, 2009; Carroll et al., 2007). The examination of the fidelity of a preventive programme is a broad concept that includes many components that need to be addressed. Among other things, it is necessary to pay attention to the teachers, who play a central role in implementing the prevention programme among schoolchildren (Midford, 2002). The consistent training of teachers to implement the programme is crucial to its success. It provides teachers with the knowledge and skills necessary for implementing the programme and contributes to their greater commitment to the programmes (Mihalic, Fagan, & Argamaso, 2008). Teachers who have undergone detailed training implemented programmes better in terms of implementation fidelity than those who had not undergone the training (Parcel et al., 1991; McCormick et al., 1995). Moreover, trained teachers continued to implement the programme a year later, unlike teachers who were not trained but had only received the programme implementation materials (McCormick et al., 1995). The encouragement and support of teachers in preventive programmes contribute to their professional development and maintenance of their commitment, both at the organizational level and beyond (Durlak & DuPre, 2008). The organizers of the programme should offer strong methodological support to programme implementers (teachers) because the fidelity of programme implementation is also influenced by the approach of the programme organizers and coordinators and the entire methodological team (Mihalic, Fagan, & Argamaso, 2008).

Teachers' attitudes towards the programme, their interest, and the ways in which they participate in the programme are indicators of fidelity (James Bell Associates, 2009). In order for a programme to be effective, teachers must make efforts to implement it. Teachers should see the importance of implementing the programme. The structure and content of the programme must motivate and inspire them (Han & Weiss, 2005). It is also necessary to maintain the technical side of the programme, such as distributing the necessary materials, providing feedback, and monitoring and educating facilitators (Wandersman et al., 2008). The feedback provided by teachers during the implementation is an important source of information. As a result of this feedback, it is possible to monitor the participation of schoolchildren in the preventive programmes, the level of the teachers' interest in the prevention, and the implementation of the educational components that are an essential part of the programme (Schultes et al., 2014).

● 2 AIMS

The main aim of our research was to examine the association between participating in the Unplugged programme (which was monitored by the teacher's commitment) and

the correction of descriptive normative beliefs (alcohol use, drunkenness, and smoking cigarettes) in the short and long term among schoolchildren in the Slovak Republic. It also examined the moderating effect of gender in these relationships.

● 3 DESIGN AND MEASUREMENTS

3.1 Research Design

The Unplugged programme is a school-based universal prevention programme that is currently used by many countries in Europe. The Unplugged programme is primarily designed for 12–14-year-old schoolchildren (Kreeft et al., 2009). The main aim of the programme is the prevention of drugs such as alcohol, cigarettes, and illicit drugs. In particular, it aims to reduce the number of schoolchildren who start using addictive substances and delay their first contact with drugs, as well as delay the transition from experimentation to regular use (Širůčková et al., 2012). The curriculum consists of 12 lessons arranged at approximately three-week intervals. The programme is implemented during the teaching process. Each lesson lasts 45 minutes and is thematically focused. The programme's content is organized into three categories – information and attitudes, interpersonal skills, and intrapersonal skills. The primary principle of the programme is the Comprehensive Social Influence approach (CSI) – the impact of the social environment. In prevention programmes, it takes into account the overall impact of family, school, and peers. The influence of the social environment can be both positive and negative (Jurystová & Miovský, 2010). The combination of different methods used by the programme leads to the development of personal and social skills and to the perception of social norms, which thus corrects false normative beliefs and attitudes (Miovský et al., 2012).

During the 2013/2014 school year (September/December), the Unplugged programme was implemented once a week in the Slovak Republic. The programme was taught by teachers who underwent a three-day training course. This course focused on the process of implementing the programme, interactive work with schoolchildren, and the methodology needed for work with social competences.

In order to monitor the fidelity of the implementation of the programme, the teachers were asked to provide feedback after each lesson by completing a short online questionnaire. If the teachers did not provide any feedback, both the implementation and the quality of the performance of the programme were questioned.

The verification of the effectiveness of the Unplugged programme in Slovakia had an experimental design. The data was obtained prior to the implementation of the programme (T1) and three months (short-term) after its implementation (T2), as well as 12 months (T3) and 18 months (long-term) (T4) after.

3.2 Research sample

The research sample was selected using stratified random selection. Sixty primary schools from all over Slovakia participated in the research. The schools were randomly included into experimental (a group with intervention) and control groups (a group without intervention). The experimental group comprised thirty schools (20 of which were in a group with committed teachers and 10 schools in a group with uncommitted teachers) and there were another thirty schools in the control group. A total number of 1295 schoolchildren participated in the research. However, those schoolchildren who did not participate in all four waves of data collection were excluded from the data analyses. Ultimately, the research sample consisted of 497 schoolchildren, whose average age was 11.5 years (40.4% of the sample were boys).

On the basis of the amount of feedback sent by the teacher during the implementation of the programme, the schoolchildren in the experimental group were divided into two groups: a group with committed teachers (teachers who sent more than six sets of feedback) and a group with uncommitted teachers (teachers who sent fewer than six sets of feedback). Finally, participation in the Unplugged programme in this study was monitored through three categories: an experimental group with committed teachers (n=160), an experimental group with uncommitted teachers (n=83), and a control group (n=254).

3.3 Measures

Descriptive normative beliefs regarding the number of friends who smoke cigarettes, use alcohol, and get drunk at least once a week were measured by selected individual items from the questionnaire of the international study ESPAD (Hibell et al., 2011). The wording of the selected items was as follows: *How many of your friends would you estimate smoke cigarettes? How many of your friends would you estimate drink alcoholic beverages? How many of your friends would you estimate get drunk at least once a week?* These items were rated on a five-point scale (1=nobody, 5=everybody).

3.4 Statistical Processing

Direct logistic regression was performed to assess the impact of a number of factors on the likelihood that schoolchildren would report lower/higher normative beliefs about the number of friends using addictive substances (smoking cigarettes, alcohol use, and drunkenness).

The models contained three independent variables: gender, descriptive normative beliefs at T1 (before the implementation of the programme), and participation in the Unplugged programme with three categories (the experimental group with committed teachers, the experimental group with uncommitted teachers, and the control group as a reference group).

Descriptive normative beliefs (regarding the number of friends smoking cigarettes, using alcohol, and getting drunk) at T2, T3, and T4 were used as dependent variables in the regression models. For the purpose of this study, descriptive normative beliefs were dichotomized using the visual binning method into two approximately equal groups (higher versus lower levels of normative beliefs) and controlling the process visually (Pallant, 2011).

The results were processed in SPSS 21.

● 4 RESULTS

Descriptive statistics of the dependent variables (descriptive normative beliefs regarding the number of friends who use alcohol, get drunk at least once a week, smoke cigarettes, and use marijuana or hashish) are presented in *Table 1*.

Several logistic regression models (at T2, T3, and T4) were created to determine the association between participation in the Unplugged programme and descriptive normative beliefs regarding alcohol use, drunkenness, and smoking cigarettes. Because of the unequal distribution of the respondents in the categories of the dependent variable no

	Experimental group								Control group			
	Committed teachers				Uncommitted teachers							
	Almost none		Almost all		Almost none		Almost all		Almost none		Almost All	
	N	%	N	%	N	%	N	%	N	%	N	%
Alcohol use	101	63.9	57	36.1	56	68.3	26	31.7	169	67.3	82	32.7
Drunkenness	142	91.6	13	8.4	72	87.8	10	12.2	222	88.8	28	11.2
Smoking cigarettes	98	61.2	62	38.8	52	64.2	29	35.8	154	61.1	98	38.9
Using marijuana or hashish	153	96.8	5	3.2	76	92.7	6	7.3	237	94.4	14	5.6

Table 1 | Descriptive statistics of descriptive normative beliefs regarding the number of friends who use alcohol, get drunk at least once a week, smoke cigarettes, and use marijuana or hashish at T1 (before the implementation of the programme)

	Alcohol use			Drunkenness			Smoking cigarettes			
	OR	95% C.I.		OR	95% C.I.		OR	95% C.I.		
T2										
DNBT1	4.757***	3.161	7.158	8.483***	4.478	16.071	6.451***	3.263	12.755	
Participation in Unplugged	(1)	0.854	0.562	1.291	0.515*	0.286	0.929	0.569	0.292	1.110
	(2)	1.183	0.604	2.317	0.995	0.428	2.316	0.760	0.268	2.158
Gender	1.772**	1.189	2.639	2.053**	1.216	3.468	1.134	0.616	2.088	
T3										
DNBT1	3.595***	2.094	6.174	3.717***	1.990	6.942	3.451***	2.098	5.675	
Participation in Unplugged	(1)	0.676	0.296	1.543	0.246***	0.113	0.538	1.303	0.784	2.165
	(2)	0.536	0.145	1.977	0.512	0.192	1.365	0.722	0.281	1.858
Gender	1.089	0.519	2.288	0.999	0.558	1.790	1.033	0.628	1.699	
Participation in Unplugged (1)*Gender	1.825	0.578	5.758	4.520**	1.612	12.671				
Participation in Unplugged (2)*Gender	6.379*	1.022	39.714	1.155	0.210	6.342				
T4										
DNBT1	3.693***	2.306	5.917	5.821***	3.101	10.927	2.773***	1.767	4.353	
Participation in Unplugged	(1)	0.786	0.471	1.131	0.746	0.472	1.178	0.959	0.594	1.548
	(2)	1.818	0.881	3.749	0.844	0.401	1.776	1.353	0.641	2.857
Gender	0.857	0.528	1.392	1.368	0.890	2.102	1.106	0.700	1.748	

Table 2 | Binary Logistic Regression model of descriptive normative beliefs regarding the number of friends who use alcohol, get drunk at least once a week, and smoke cigarettes

T2: Three months after the implementation of the programme, T3: 12 months after the implementation of the programme, T4: 18 months after the implementation of the programme, (1): Participation in Unplugged in the group with committed teachers, (2): Participation in Unplugged in the group with uncommitted teachers, Reference group: Control group, (DNB T1): Descriptive normative beliefs before the implementation of the programme ; OR: odds ratio; CI: confidence interval; $p < 0.000***$, $p < 0.001**$, $p < 0.05*$

regression models were created for descriptive normative beliefs regarding the number of friends who use marijuana or hashish. The logistic regression models were created for smoking cigarettes, alcohol use, and drunkenness.

Table 2 shows the results of the logistic regression analyses with descriptive normative beliefs as the dependent variable during the three measurement points (T2, T3, and T4).

The binary logistic regression revealed that there was no significant association between participating in Unplugged and normative beliefs at T2, T3, and T4 in terms of the correction of normative beliefs regarding the number of friends who use alcohol.

At T2, the main effect of gender was confirmed (OR 1.772; 95% CI 1.189–2.629). The boys had a higher level of descriptive normative beliefs when compared to the girls. The whole regression model in T2 explained 14% to 18.9% of the variance and classified 70% of the cases correctly.

However, a significant moderating effect of gender was found at T3 in the experimental group with uncommitted teachers. The girls in the experimental group with uncommitted teachers had a lower level of descriptive normative beliefs regarding the number of friends who use alcohol in comparison with the boys in the group with uncommitted teachers (OR 6.379; 95% CI 1.022–39.714). However, it should be noted that the level of significance is low. The whole regression model at T3 explained 6.3% to 11.3% of the variance and classified 86.6% of the cases correctly.

On the basis of the results at T4, the relationship between Unplugged and normative beliefs regarding the number of friends who use alcohol was not confirmed. Moreover, no main effect of gender was found.

Table 2 also shows an association between descriptive normative beliefs regarding the number of friends who get drunk at least once a week and participation in the Unplugged programme. Three months after the implementation of the programme (T2), there was a significant association between Unplugged and normative beliefs, although only in the groups with committed teachers (OR 0.515; 95% CI 0.286–0.929). The groups with committed teachers had a lower level of descriptive normative beliefs in comparison with the control group. Moreover, a significant main effect of gender was identified (OR 2.053; 95% CI 1.216–3.468). Boys had a higher level of descriptive normative beliefs when compared to girls. However, there was no moderating effect of gender. The whole regression model in T2 explained between 11.3% and 19.1% of the variance and classified 83.9% of the cases correctly.

Similar results were found 12 months after the implementation of the programme. A significant association between participating in Unplugged and normative beliefs was found in T3 but only in the group with committed teachers (OR 0.246; 95% CI 0.113–0.538). The group with committed teachers had a lower level of descriptive normative beliefs in

comparison with the control group. There was no significant main effect of gender. However, a moderating effect of gender was found (OR 4.520; 95% CI 1.614–12.671). The girls in the experimental group with committed teachers had a lower level of descriptive normative beliefs in comparison with the boys. The whole regression model explained between 7.6% and 11.5% of the variance and classified 77.5% of the cases correctly. Despite the significant results in T2 and T3, no significant relationship between participating in Unplugged and normative beliefs was found, and neither was a moderating effect of gender found in T4. Participation in Unplugged 18 months after the implementation of the programme was not associated with descriptive normative beliefs regarding the number of friends who get drunk at least once a week.

Surprising results were obtained in relation to normative beliefs regarding smoking. Participation in Unplugged was not associated with descriptive normative beliefs regarding the number of friends who smoke cigarettes in the second (T2), third (T3), or fourth (T4) measurement. Neither was there any significant moderating effect of gender in either measure (see *Table 2*).

● 5 DISCUSSION

This study highlights the varied outcomes in the correction of normative beliefs about the number of friends who indulge in risky behaviour. The aim of the study was to examine the relationship between participating in the Unplugged programme and the correction of descriptive normative beliefs in the short and long term with respect to the approach of teachers. Significant results were shown regarding the correction of normative beliefs about the number of friends who get drunk at least once a week in the short and long term (T2, T3). However, this was only demonstrated in the group with committed teachers. Participation in the Unplugged programme in the group with committed teachers was associated with the probability of a lower level of normative beliefs. This corresponds to the claims that it is necessary to monitor fidelity during the programme implementation process. The way prevention programmes are implemented is a key component of their effectiveness (Durlak & DuPre, 2008).

However, the findings show that the Unplugged programme was not associated with the correction of normative beliefs about the number of friends who smoke cigarettes in the short and long term. These results may reflect the acceptability of smoking cigarettes at this age. Smoking seems to be a part of the daily life of many young people because of the high lifetime prevalence of smoking (Kraus & Nociar, 2016).

The results also show gender-specific differences in descriptive normative beliefs. Three months after the implementation of the programme, the girls had a lower level of descriptive normative beliefs regarding the number of friends who use alcohol and who get drunk at least once a week. Previous studies verifying the effectiveness of the

Unplugged programme point to the different impact that the programme has on boys and girls (Gabrhelik et al., 2012; Novák et al., 2013; Vigna-Taglianti et al., 2009). Our study has also confirmed that the Unplugged programme can work differently for boys and girls. In girls, the programme may have a stronger effect in terms of correcting normative beliefs about the number of friends who use alcohol and who get drunk. This was demonstrated 12 months after the implementation of the programme. These differences may arise from many individual factors, from the interpersonal dimension as well as from the social environment in which the child moves (Novák et al., 2013). This finding supports the promotion of a gender-specific approach in the preparation and implementation of prevention programmes (Berinšterová & Orosová, 2017).

The monitoring of the implementation process is linked to the greater effectiveness of the preventive programme and affects not only behavioural indicators (substance abuse), but also possible mediators such as attitudes and beliefs (Dusenbury, 2003). Han and Weiss (2005) mentioned that it is necessary to investigate teacher-level factors associated with the level of implementation fidelity. These concern teachers' self-efficacy beliefs, professional burnout, teachers' beliefs about the acceptability of the programme, and the anticipated effectiveness of the programme. The monitoring and evaluation of the implementation of the programme is therefore essential to assessing its effectiveness. Without sufficient implementation data, it is not possible to document sufficiently how the programme was performed and how its results can be interpreted (Bloomquist et al., 2013). Monitoring the fidelity of an intervention that has been implemented can contribute to its improvement (Dusenbury, 2003). The implementation of low-fidelity programmes may be the reason why programmes do not provide the same results in practice and can lead to faulty

conclusions about the effectiveness of the intervention (Breitenstein et al., 2010).

The weaknesses of the study also have to be acknowledged. First, a single-item measure was used for descriptive normative beliefs regarding the number of friends who indulge in risky behaviour. Multiple-item indicators would have been more suitable. Furthermore, using the visual binning method as a tool to dichotomize the dependent variable is a potential limitation and certain inaccuracies resulting from this cannot be ruled out. While the correction of normative beliefs has been shown in relation to the teacher's level of commitment, it is also important to look at other indicators when examining the fidelity of the preventive programme and not only teachers' feedback. Our results show that teachers' commitment plays an important role in the correction of normative beliefs. However, we believe that teachers' feedback is not a sufficient indicator of implementation fidelity and in future research other aspects need to be addressed. Another important direction of the research is the inclusion of booster sessions when assessing the programme in the long run.

● 6 CONCLUSION

In summary, this study reports on the importance of the correction of normative beliefs regarding drunkenness through participation in the Unplugged programme. It was found that committed teachers may play an important role in the correction of normative beliefs and constitute a significant predictor of low descriptive normative beliefs regarding the number of friends who use addictive substances. Despite some limitations, the study contributes to the importance of monitoring the fidelity of the implementation of the programme according to the available literature.

Authors' contributions: Marcela Štefaňáková, Olga Orosová, and Anna Janovská designed the study and proposed the study design. Marcela Štefaňáková performed the statistical analysis and participated in the data interpretation and preparation of the manuscript. Marcela Štefaňáková designed the initial form of the manuscript. Marcela Štefaňáková conducted the literature review and summary of related work. Olga Orosová and Anna Janovská

supervised the statistical analysis and participated in the preparation of the manuscript. All authors contributed to the article and approved the final version of the manuscript.

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NEWS

● 2019 ANNUAL ICUDDR CONFERENCE

July 21–23 2019

Conference Center, Cusco, Peru

ICUDDR (International Consortium of Universities on Drug Demand Reduction) is a global consortium of universities which offer graduate and postgraduate study programs specifically focusing on the transfer and adaptation of science-based knowledge regarding the prevention and treatment of substance use disorders. The Consortium provides a collaborative forum to support and share curricula and experiences in the teaching and training of this knowledge as well as to promote and encourage the recruitment of persons interested in the research, prevention and treatment of substance use disorders and public health. The ICUDDR provides an opportunity for universities and institutions of higher learning to share their expertise as well as to support instructors/faculty, trainers, and students in their learning and adoption of the science of substance use disorders (<https://www.icuddr.com/membership/icuddr-membership/>).

The 2nd Annual ICUDDR Conference was held in Prague in March 2016. The conference was intended to be the key moment because of its scope, viewed as a significant challenge for the group. Universities from around the globe were invited to participate in this meeting aimed at sharing and exchanging experience of university education for addiction professionals (<https://www.icuddr.com/annual-conference/previous-annual-conferences/2nd-annual-icuddr-conference-in-prague/>).

2019 Annual Conference Agenda

Sunday, July 21:

- 6:00–6:15 Welcome words from Mayor of Cusco Dr. Víctor Boluarte
- 6:15–6:30 Welcome words from ICUDDR President Michal Miovsky
- 6:30–7:00 Addiction, Prevention and Treatment Policies, DEVIDA, Dr. Ruben Vargas
- 7:00–7:15 The Role of the University, Dr. Emeterio Mendoza Bolívar, Rector UAC
- 7:15–7:30 Signature of the MOU for the Development of the Integrated Prevention and Treatment System on Addiction: Cayetano Heredia, Peruvian University-Universidad Andina del Cusco- Municipalidad del Cusco
- 7:30–8:00 Social gathering

Monday, July 22:

- 7:30–9:00 Registration Open, Continental Breakfast
- 8:30–8:45 Opening: Brian Morales, U.S. Department of State, INL
- 8:45–9:45 Keynote: Gregor Burkhart
- 9:45–10:00 Transition
- 10:00–11:00 Breakout Sessions 1–4
- 11:00–11:30 Break
- 11:30–12:30 Breakout Sessions 5–8
- 12:30–2:00 Lunch and Poster Session
- 2:00–5:30 Master Courses 1–4

Tuesday, July 23:

- 7:30–9:00 Registration Open, Continental Breakfast
- 8:30–8:45 Welcome back and introduction: Dr. Kim Johnson, Executive Director, ICUDDR
- 8:45–9:45 Keynote: Lisa Marsch
- 10:00–11:00 Breakout Sessions 9–12
- 11:00–11:30 Break
- 11:30–12:30 Breakout Sessions 13–16
- 12:30–2:00 Lunch and Poster Session
- 2:00–4:30 Master Courses 5–8
- 4:30–5:15 Closing Session

More details:

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Problem Opioid Use in the Czech Republic from a Historical Perspective: Times are Changing but Opioid Pharmaceuticals Remain

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SUMMARY: The prevalence of problem opioid use (POU) in the Czech Republic was estimated at 26.7% of 46,800 problem drug users in 2016, with buprenorphine being the most frequently used opioid. Although POU is not dominant in the Czech Republic because of the prevalent methamphetamine use, it still represents a public health issue, also because of the high level of intravenous use. This article reviews the literature on the development of POU on the territory of the Czech Republic and describes several phases of this development: the use of opioid analgesics and domestic production before 1989, a heroin epidemic in

the 1990s, and the decline in the use of heroin, which was replaced by diverted substitution medications (buprenorphine), and the recent return of the misuse of opioid analgesics as a consequence of users looking for a substance with an optimal cost/benefit ratio. Opioid analgesics are a desirable alternative to illicit opioids in various historical and socio-political contexts as they represent a cheap and effective opioid drug. In conclusion, appropriate regulatory, preventive, and treatment measures, such as opioid maintenance treatment, are needed to alleviate the health and social harms associated with POU.

Keywords | Opioids – Czech Republic – Opioid Analgesics – Buprenorphine – History

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● 1 INTRODUCTION

Problem opioid use is a substantial public health issue. At present, the average prevalence of problem opioid users (POU) in the EU is estimated to be 0.4% of the EU population, meaning there are around 1.3 million POU in the EU (European Monitoring Centre for Drugs and Drug Addiction, 2017). Opioid users in Europe are five to ten times more likely to die than their peers of the same age and gender as the illicit use of opioids is linked to high somatic comorbidity, as well as psychiatric comorbidity and a high overdose mortality rate (Fischer et al., 2006; Nutt et al., 2010; Taylor et al., 2012; Van Amsterdam et al., 2010). It is estimated that there were at least 7585 drug-induced deaths in the EU in 2017 and opioids were present in the majority of the fatal overdoses (79%) (European Monitoring Centre for Drugs and Drug Addiction, 2017). Illicit opioid use is also related to high levels of criminal activity and other social issues such as social isolation, low quality of life, and considerable financial expenses (Fischer et al., 2006; Nutt et al., 2010; Taylor et al., 2012; Van Amsterdam et al., 2010).

The onset of heroin use in Europe commenced in the 1960s in big cities in Northern and Western Europe, especially among young people, and by the 1980s the use of heroin had spread throughout the non-communist European countries (Hartnoll, 1986; Ruggiero & South, 1995). There was also an increase in heroin injecting and subsequent HIV transmission during this time (Hartnoll, 1986; Ruggiero & South, 1995). This article reviews the literature on the development of problem opioid use on the territory of the Czech Republic and describes the periods of problem opioid use from the socialist era until the present.

● 2 METHODS

A non-systematic literature review focusing on problem opioid use, the substances used by POU, and the illicit opioid market on the territory of the Czech Republic was conducted. The abstract and citation databases Web of Science, PubMed (NCBI), and Scopus were used for the primary identification of sources. The combinations of key words “opioids”, “history of use”, “opiates”, “drug scene”, “Czech Republic”, and Czech equivalents were used for the primary identification of sources, and afterwards the key words “heroin”, “buprenorphine”, “opioid analgesics”, “fentanyl”, “methadone”, and “opioid substitution” were added to yield more specific results. As a result, 13 relevant articles were selected. Other sources included the online library of the Czech National Monitoring Centre for Drugs and Addiction (NMS), Czech publications and scholarly journals (such as *Adiktologie*, *Zaostreno*, and annual reports on the drug situation in the Czech Republic), and publications by the European Monitoring Centre for Drugs and Drug Addictions. Key monographs in the addiction field and related university thesis works were also utilised. A narrative summary was produced.

● 3 RESULTS

Situation before 1989: the communist era

The Communist Party of Czechoslovakia gained power in 1948 and held on to it till 1989. The communist regime presented an ideology of a harmonious classless society and any antisocial behaviour was considered capitalist “decay”. Drug users were therefore persecuted and isolated from the rest of society. Since the drug issue was taboo, there is only limited information on the drug scene in this period. The relative isolation of the country, strict control of its borders, and high level of police control restricted the importing of drugs into the country and shaped the drug market in the direction of domestic production, which was dominant in this period (Bém et al., 2003).

The drug market consisted of small, isolated groups in which everyone knew each other inside their group (Bém et al., 2003). There was a division of roles within the group (suppliers of precursors and chemicals, suppliers of the equipment that was needed, and “cooks”, e.g. of “braun”) and the product was shared within the group members – a commercial market did not exist at that time (Hampl, 1994; Kalina & Bém, 1994; Miovský, 2007; Zábanský, 2007)

The drugs that were used were mainly pharmaceutical (analgesics, sedatives, tranquillisers, and anxiolytics) and volatile substances, and to a lesser extent marijuana, methamphetamine, and hydrocodone (Hampl, 1994; Kalina & Bém, 1994). Addiction to pharmaceutical substances (especially by medical professionals, who had the easiest access to drugs) has been known since the first half of the 20th century. Codeine misuse has been reported since the 1940s (Nechanská et al., 2012; Vondráček, 1941). The 1950s brought an enormous increase in the misuse of analgesics; a typical example was Algena[®], which consisted of phenobarbital, acetylsalicylate, caffeine, phenacetin, and aminophenazone. Because of the rapid increase in its misuse, the production of Algena[®] was stopped and it was replaced by Alnagon[®], with phenacetin and aminophenazone being replaced in the composition with codeine. Alnagon[®] was sold as an OTC drug and became the most widely misused opioid analgesic from the 1960s till the 1980s and the main source for the home-made production of “braun” at the time (Brenza & Gabrhelik, 2014; Nechanská et al., 2012).

“Braun” was produced from codeine in clandestine “kitchen” laboratories. The final brown liquid, administered intravenously, consisted of a mixture of opioids such as hydrocodone, dicodid, and dihydrocodeinone (Nožina, 1997; Urban, 1973). Domestic production of “braun” has been known since the 1970s (Brenza & Gabrhelik, 2014) and it remained the most frequently used opioid among PDU until the heroin epidemic in the 1990s (Bém et al., 2003; Hampl, 1994).

The use of pharmaceutical products was widespread in the population, with 10% of the adult population using analgesics on a daily basis, and 3% of the population were estimated to be addicted in the 1970s (Brenza & Gabrhelik, 2014).

The number of non-alcohol drug users was estimated to be 25–30 thousand at the end of the 1980s (Nožina, 1997). Addiction treatment services were limited to wards in psychiatric hospitals and outpatient treatment centres for both alcoholics and drug addicts. There were no appropriate specialised services for non-alcohol drug users because of the nature of the political and healthcare system (Kalina & Bém, 1994).

Early 1990s: the onset of heroin use

Whilst the use of heroin had become widespread throughout non-communist countries in Europe by the 1980s, the onset of heroin use in the Czech Republic was delayed until the fall of communism in 1989, which brought about a change on the drug market with the return of a democratic system in the country. The borders opened and the strict control by the police and state authorities receded. Drug consumption was identified with freedom, especially among the young (Kalina & Bém, 1994). The country was not prepared for the rapid increase in the availability of drugs and drug use as the drug issue had been taboo for several decades and no drug policy had been formulated or realised. Hence drug use spread quickly around the country (Bém et al., 2003).

The opened borders facilitated the introduction of heroin and other imported illicit drugs onto the Czech drug market and the Czech Republic became a transit country for the transportation of drugs from Asia to Northern and Western Europe (Kalina & Bém, 1994). Heroin and other imported drugs appeared on the Czech drug scene “to test the market” or in exchange for other services. Drug use spread quickly in the population and the number of drug users, including recreational and experimental users, increased rapidly. Drugs started to be paid for with money (or services, including sex) but the cost of drugs was not yet so high as to cause drug-related crime to become apparent. The drug market started to resemble a commercial market based on supply and demand. The character of the market can be described as semi-open, but not yet fully open or public (Bém et al., 2003).

Codeine (as part of the intravenously applied “braun”) remained the most abused opioid at this time (Hampl, 1994). The first heroin addicts were reported by medical services in 1991. Despite the importing of heroin, an increase in heroin use was delayed in comparison with neighbouring Slovakia or Hungary. This can be explained by the widespread domestic production of opioids, as well as “pervitin” (metamphetamine). According to a study in 1992, there were around 10,000 non-alcohol drug users, but it was estimated that the real number was several times higher (Kalina & Bém, 1994).

1994–2000: the dominance of heroin

A drug policy started to be shaped after 1993 (with the formation of the independent Czech state), new legislation was introduced, and the first preventive and harm reduc-

tion programmes were implemented (such as the Drop-In low-threshold centres, needle exchange programmes, and HIV counselling and testing) (Bém et al., 2003). An experimental ethylmorphine maintenance programme was introduced at the Drop-In centres (Kalina & Bém, 1994) as methadone was not officially approved for opioid maintenance treatment (OMT) until 1997, when a pilot study on OMT started at “Apolinář”, the addiction treatment unit in Prague (Zábranský et al., 2002).

Imported drugs had become dominant on the Czech drug market by 1994, with domestic production retreating as a consequence of the supply of cheap imported heroin of high quality. Drugs became widely available and the number of new drug users increased. The drug market could be characterised as open and hierarchised, with typical market competition. However, the cost of drugs increased with greater organisation of the market, with a consequent increase in drug-related crime (Bém et al., 2003).

According to a survey among PDU in Prague from 1995, 23% of the respondents indicated heroin as their primary drug (66% indicated pervitin). The proportion of heroin users increased further in the late 1990s (Csémy et al., 2002). The number of heroin users was estimated at 15 thousand out of 37.5 thousand PDU in the Czech Republic in 1998 (Mravčík & Zábranský, 2002).

2000–2001: the new millennium

OMT with methadone continued as a standard regime from 2000 and it was available for 318 clients (3% of POU) at seven substitution centres in six cities. An alternative, the buprenorphine substitution medication Subutex®, was registered on the Czech market in March 2000 (Zábranský et al., 2002).

Drug distribution throughout the whole Czech Republic, as well as the dominance of imported heroin over domestic opioid production, continued at the beginning of the new millennium. Heroin spread outside the capital city, Prague, and North Bohemia to other regions. The relatively isolated pervitin drug market started to shrink because of law enforcement activity and policing, which led to the development of organised crime and the merging of the heroin and pervitin drug markets (Radimecký, 2003).

Most of the opioid users were people who inject drugs (PWID), although new users would choose other routes of administration. Intravenous use brought an increase in the number of new cases of hepatitis B and C (Radimecký, 2003). In comparison to other countries, HIV/AIDS did not spread that widely among intravenous drug users in the Czech Republic (709 HIV positive cases were diagnosed up to 2001, of which only 29 were PWID) (Csémy et al., 2002).

The dominance of heroin among POU continued in this period. The number of heroin users increased slightly, in contrast to the decreasing number of pervitin users. There

was a peak in opioid-induced deaths in 2001, with 53 opioid-induced deaths, out of which 30 were caused by heroin overdoses (Zábranský et al., 2002).

The number of PDU stabilised in this period at 37.5 thousand (30 thousand PWID), with 15 thousand heroin users, suggesting an end of the heroin epidemic despite the continuous availability of imported heroin on the drug market (Mravčík et al., 2005; Mravčík & Zábranský, 2002). This was a surprising evolvment, as the heroin epidemic did not spread to such an extent and did not involve as many drug users in comparison to the adjacent countries and the post-Soviet countries. The difference might have been caused by the relatively resistant domestic market, with strong domestic production and the use of pervitin (Zábranský, 2003).

2002–2010: leakage of buprenorphine onto the black market

The drug epidemic began to retreat in 2002, which was documented by a relatively stable number of PDU (35–37 thousand users, out of whom 13–15 thousand were heroin users) and a decline in opioid-induced deaths (new users would be more prone to overdoses). On the other hand, the number of recreational and experimental users increased. The proportion of heroin users in treatment decreased from 28.7% in 2001 to 16.9% in 2002. This can be explained by the high price of heroin, despite its very low purity (dropping down to as little as 0.4%). OMT coverage increased slowly – there were 463 patients on methadone treatment at nine substitution centres and 500–700 patients who were being prescribed Subutex® in 2002, which represented 7% coverage of OMT (Mravčík et al., 2003).

The most frequently used opioid among PDU remained heroin, imported through the southern Balkan route. Opiates made from poppies were used only seasonally and the use of domestically prepared “braun” disappeared almost completely. Alnagon® and other pharmaceutical opioids were sporadically used by some PDU. The first reports by the SANANIM outreach programme on the leakage of Subutex® from OMT onto the illicit drug market in Prague appeared in summer 2002 (Řezníčková & Nedvěd, 2004). Subutex® had appeared on the illicit drug market in other regions (North Bohemia) by the end of the year (Nechanská et al., 2012). Subutex® (mainly applied intravenously) was used on single occasions or in transitional periods of a shortage of heroin on the illicit market. The primary drug of opioid users in the early 2000s still continued to be heroin (Mravčík et al., 2003).

Act No. 223/2003 Sb., on controlled substances, came into effect in the second half of 2003. The legislation scheduled buprenorphine medications in a stricter regime of opioid prescription. This unprepared and isolated legislative change led to a sudden drop in the availability of Subutex® as there were few medical doctors ready and willing to prescribe the drug. In consequence, it led to prolonged waiting periods for entering OMT and users were looking for a source of the

drug on the illicit market (Nechanská et al., 2012). The shortage of Subutex® became reflected in the cost of a dose on the illicit market, which increased five times, up to 1500 CZK (\$67.5 according to the exchange rate on 10th January 2019; this exchange rate is used throughout the paper) for an 8-mg tablet. Some users switched back to heroin use, which led to an increased demand for heroin and thus an increase in the price of heroin. There was also an increase in drug-related crime in the form of stealing prescriptions and mugging clients in OMT (Mravčík et al., 2004). This was the moment when the illicit market in buprenorphine preparations was finally established (Nechanská et al., 2012). A combined substitution product Suboxone®, with buprenorphine and naloxone (reducing the risk of misuse by injecting), entered the Czech market in February 2008. Initially, there was no demand for this product on the illicit drug market or in OMT (Mravčík et al., 2009).

The leakage of Subutex® from OMT onto the illicit drug market continued, especially in those regions with a traditionally high proportion of heroin users among PDU. Subutex® gradually became a primary drug of people who had originally been heroin users, and this was accompanied by a shrinking heroin market and a drop in the number of fatal opioid overdose cases. The number of buprenorphine users gradually rose from 4300 buprenorphine users out of 10,500 opioid users in 2006 up to 2012, when the number of buprenorphine users exceeded the number of heroin users for the first time (Mravčík et al., 2013).

Because of the high cost of buprenorphine, buprenorphine users tend to pulverise the tablet into smaller doses, which increases the frequency of injecting compared to heroin users (Švůgerová, 2015). The high cost leads to the use of a low dose (much lower than the optimal therapeutic dose) among problem buprenorphine users (Gluzová, 2014). This leads to *doctor shopping* (Sansone & Sansone, 2012) in an effort to get a prescription for a greater amount of substitution medication at substitution centres so that a client can afterwards resell part of the prescribed medication on the illicit drug market for a higher price to pay for his own dose (Nechanská & Mravčík, 2013). Poly-drug and intravenous use is common among buprenorphine users. According to a survey in 2006, one quarter of users combined buprenorphine with pervitin and 95% were PWID (Mravčík & Orlíková, 2007).

2011–present times: the comeback of opioid analgesics

The consumption of prescribed opioid analgesics in the Czech Republic has increased significantly, with a more than fourfold increase between the years 2001 and 2013 (Berterame et al., 2016), and the trend continues (Bosetti et al., 2018). The prescription of opioid analgesics is regulated by Decree No. 54/2008 Sb., which supplements Act No. 378/2007 Sb. and defines special prescription forms with a blue stripe and sets rules for keeping records regarding the prescription. According to the data of the Internation-

al Narcotics Control Board, by far the most frequently consumed opioid analgesic in the Czech Republic was fentanyl, while other frequently used opioids were oxycodone, hydro-morphone, and morphine (Bosetti et al., 2018). The most frequent diagnosis for the prescription of opioid analgesics for chronic pain, according to a pilot study in chronic pain centres in the Czech Republic, is musculoskeletal disorders (Lávičková et al., 2012).

The low purity of heroin and its high cost on the illicit drug market forced users to look for cheaper alternatives. Clients of low-threshold drop-in centres in Pilsen indicated the use of a morphine-based opioid analgesic, Vendal® retard 200 mg, for the first time at the end of 2010 and the intravenous misuse of fentanyl from transdermal plasters started to appear among the clients from 2012. Both opioid analgesics became the primary drugs of some of the users in Pilsen (Frýbert & Ackrmannová, 2015).

The first reports on fentanyl came from police units in the Moravian-Silesian region at the end of 2010. Fentanyl was distributed in a mixture called “vlacho”, cut with caffeine and paracetamol. The first two cases of fatal overdoses on fentanyl also occurred in the same year (Nechanská et al., 2012). Vendal® retard was also used among users in South Bohemia. Another illicitly used opioid analgesic was Palladone®, used among drug users in the Pilsen and Hradec Kralove regions (Mravčík et al., 2015).

There were also cases of domestic heroin production by the acetylation of raw opium or morphine products (Mravčík et al., 2015). A “braun” manufactory was uncovered for the first time in the new millennium in 2010 (Mravčík et al., 2012). The seasonal use of raw opium obtained from poppies cultivated in the Czech Republic is present. However, the poppy strains *Papaver somniferum* L. grown in the Czech Republic are cultivated mainly for culinary purposes and contain only a limited amount of opiates (according to Act No. 167/1998 Sb., the proportion of morphine in a poppy head must not exceed 0.8%).

Since 2012, the most prevalent opioid among POU in the Czech Republic has been buprenorphine; the second most commonly used opioid is heroin. However, opioid analgesics have reappeared, especially morphine and fentanyl (Mravčík et al., 2012). The estimated number of heroin users decreased in 2016, whilst the number of users of opioid analgesics increased (Mravčík et al., 2017). Heroin has gradually become a supplementary drug for most POU, rather than a primary drug, and there are just a few POU taking heroin regularly on a daily basis (Malinovská & Mravčík, 2017). There are some regional differences in the use of heroin. The use of heroin increased in the South Bohemia region in 2016. On the other hand, the availability of heroin in the Central Bohemia region decreased after a temporary come-back onto the illicit drug market in 2014-2016 and POU in Central Bohemia switched again to buprenorphine and opioid analgesics in reaction to the decrease in the availability of heroin (Mravčík et al., 2017).

The opioid analgesics used by POU in the Czech Republic are especially fentanyl, morphine (Vendal® retard), hydro-morphone (Palladone®), oxycodone (OxyContin®) and tramadol (Tramal®). Opioid analgesics can be the predominant opioids in some regions, for example Pilsen, where Vendal® retard is the second most prevalent drug among PDU (the most prevalent is pervitin). Fentanyl plasters are most often found in medical waste or obtained from oncological patients. The use of buprenorphine from boiled-out plasters has also been detected (Mravčík et al., 2017).

Intravenous application among POU is an ongoing public health issue; injecting is the route of application for up to 90% of PDU. However, according to reports from low-threshold centres, the proportion of PWID seems to have been decreasing recently (Mravčík et al., 2017). Suboxone® has the lowest proportion of injecting use among the clients of low-threshold centres, which may be caused by the addition of naloxone, which can prevent some users from injecting the drug (Malinovská & Mravčík, 2017).

The number of PDU in the Czech Republic in 2016 was estimated at 46.8 thousand (95% CI: 45.1–48.4 thousand), out of whom 34.3 thousand (33.7–34.9 thousand) were pervitin users and 12.5 thousand (12.0–12.9 thousand) were opioid users. There were 7.3 thousand (7.0–7.6 thousand) buprenorphine users, 3.4 thousand (3.2–3.6 thousand) heroin users, and 1.7 thousand (1.6–1.8 thousand) users of other opioids estimated using a multiplier method extrapolating the data from low-threshold programmes as a benchmark. Intravenous drug users were estimated at 42.8 thousand (41.8–43.7 thousand). The prevalence of problem drug use in the Czech Republic decreased slightly to 0.67% of the adult population aged 15–64. The majority of PDU are in Prague and the Ústí nad Labem region (Northern Bohemia), regions with a typically higher prevalence of POU (Mravčík et al., 2017).

Opioid maintenance treatment today

Drug use patterns are influenced by the availability of drug treatment and accordingly discussion of opioid maintenance treatment in the Czech Republic is important. 2266 patients in OMT from 63 healthcare providers were reported to the national registry of addiction treatment in 2016 (2300 patients annually were reported in the last five years). That means 18.1% of POU are registered in OMT. 1578 patients (69.6%) were prescribed buprenorphine, while 688 (30.4%) were on methadone. Subutex® and other mono-buprenorphine products were prescribed to 881 patients (55.8% of those on buprenorphine), and 697 patients (44.2%) were prescribed the combined product Suboxone®. However, there are doctors who do not register their patients in the national registry; therefore, the number of patients in OMT is underreported. On the evidence of the results of a survey among medical doctors, the estimated number of patients in OMT not reported to the registry is 1500–3500, which altogether yields 30–46% OMT coverage (Mravčík et al., 2017). The Czech Republic continues to have a below-aver-

age proportion of POU in OMT in comparison to the average OMT coverage in the EU, which is around 50% (European Monitoring Centre for Drugs and Drug Addiction, 2017). As some studies have shown, the reasons for the low coverage by OMT are the strict conditions set by health insurance companies and administrative and regulatory restrictions for OMT providers (Knudsen & Roman, 2012; Mravčík et al., 2018; Nosyk et al., 2013; Vranken et al., 2014).

There are considerable regional differences in the availability of OMT in the Czech Republic. The lowest availability is in the Zlín region (1% POU), Karlovy Vary region (7%), South Bohemia region (11.4%), Moravian-Silesian region (12%), and Pilsen region (13%). These regions are also typified by the significant use of opioid analgesics among POU. Prague also has a below-average availability of OMT: 67.7% of the POU in the Czech Republic are estimated to be in Prague, and just 16.5% of them (1418) are registered in OMT (Mravčík et al., 2017).

Apart from the limited geographical availability of OMT, the affordability of substitution medication is also critical. Methadone is available in the form of a *magistra liter* preparation; the import of the generic substance is financed directly by the Ministry of Health. Patients thus obtain methadone for free; however, methadone is only available at 12 substitution centres with a capacity of up to 700 slots in the long run. Mono-buprenorphine preparations, available on prescription in pharmacies, are not covered by health insurance and so are fully paid for by patients (Subutex® is around 1450 CZK (\$65.3) for seven 8-mg tablets). Suboxone® 8 mg (the combined product) can be fully paid for by health insurance. However, the medication that is covered is available for a small number of clients only, because the majority of OMT providers do not apply for this option because of the specific nature of the insurance scheme (special contract needed, available just at specialised centres, prescribed by psychiatrists or addiction specialists only, the costs are reimbursed to health facilities retrospectively, strict control by insurance companies). As a result, the estimated number of clients with Suboxone® treatment paid for by health insurance was around 75 in four centres in 2015. Therefore, the majority of clients on buprenorphine (over 3000) pay the full price for the substitution medication (Mravčík et al., 2015). A proper and sufficient dosage is an important factor for effective treatment, as a higher dosage prolongs retention in treatment and prevents illicit drug use (Fareed et al., 2009; Gossop, 2006; Schulte et al., 2008).

Low affordability and availability are likely to be the main factor of limited OMT coverage in the Czech Republic. They act as a motor for *doctor shopping* and the reselling of the surplus prescribed medication at a higher price among users, which shapes the Czech illicit opioid market today and at the same time co-finances the medication of clients in official OMT programmes. Improving the financial affordability of OMT is crucial in order to increase OMT coverage and to help reduce the illicit market in OMT medication (Mravčík, et al., 2018).

The development of problem opioid use in the Czech Republic is summarized in *Table 1*.

Period	Description
Before 1989	Home-made drugs made from opioid medicinal products Closed user groups, no commercial market
Early 1990s	Introduction of imported heroin onto the drug market Rapid spread of drug use, beginnings of a commercial market
1994–2000	Dominance of heroin among POU Further spread of drug use, an open, hierarchised commercial market
2000–2001	Continuation of dominance of heroin among POU Stabilisation of the number of PDU, merging of plevitin and heroin markets
2002–2010	Leakage of buprenorphine from OMT onto the illicit market Decline in the number of heroin users
2011–now	Dominance of buprenorphine over heroin among POU Comeback of opioid medicinal products

Table 1 | Summary of the development of problem opioid use in the Czech Republic

● 4 SUMMARY AND CONCLUSIONS

The present review summarises the historical development of problem opioid use in the Czech Republic. Because of the language barrier and the low availability of relevant sources in bibliographical databases, a substantial part of the review is based on grey and unpublished sources in Czech. Some evidence, especially that referring to the 1980s or 1990s, may be anecdotal and the validity of some findings may thus be limited.

Although POU in the Czech Republic has never been as dominant as in other EU countries because of the prevalent plevitin use, it still represents a substantial public health problem, additionally because of the high level of intravenous use. It has gone through several developmental phases: from the use of opioid analgesics and domestic production based on them before 1989, the heroin epidemic in the 1990s, until the decline in heroin use saw it replaced by diverted substitution medications, and the recent return of opioid analgesics. The current situation on the Czech opioid scene can be characterised as a predominant misuse of opioid pharmaceutical products. The illicit opioid market is again disintegrating and decommercialising, as before 1989, as *doctor shopping* and the reselling of surplus prescribed medication among users are shaping the form of the market.

The development of opioid use on the territory of the Czech Republic illustrates how social changes, the nature of illicit drug supply, the quality/purity and price of a drug, legislative and regulatory changes, the availability of OMT, and the availability of opioid pharmaceutical substances, all in

combination, affect the shape of the phenomenon. Probably the major lesson to be learnt from this story is that users are looking for a substance with an optimal cost/benefit ratio (combination of effect and price) that would replace expensive and less effective/low-quality illicit opioids such as heroin. That is a reason why opioid analgesics are a desirable alternative to illicit opioids in various diverse historical and socio-political contexts.

Low affordability and availability are likely to be the main factor in the limited OMT coverage in the Czech Republic, driving the illicit market in OMT. Improving the financial affordability of OMT is crucial in order to increase OMT coverage and to help reduce the illicit market in OMT medications.

Therefore, it is necessary to apply appropriate regulatory and policy measures to reduce the prevalence and severity

of problem opioid use and to improve the availability and accessibility of effective preventive and treatment alternatives such as OMT.

LIST OF ABBREVIATIONS

OMT: opioid maintenance treatment

PDU: problem drug use(rs), defined by the EMCDDA as 'injecting drug use or long duration or regular use of opioids, cocaine, and/or amphetamines'

POU: problem opioid use, defined as injecting opioid use or long duration or regular use of opioids

PWID: people who inject drugs

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NEWS

● DEPARTMENT OF ADDICTOLOGY ATTENDING NAIROBI CONFERENCE

On 10–14 December 2018, representatives of the Department of Addictology of the First Faculty of Medicine and General University Hospital in Prague, prof. Michal Miovský, PhD., Anna Vondrová and Amalie Pavlovská, PhD., attended the first international conference on drug demand reduction in Africa. The conference was held at the Kenyatta International Congress Center in Kenya, Nairobi, under the auspices of the African drug organization NAC-ADA (National Authority for the Campaign Against Alcohol and Drug Abuse) and ISSUP (International Society of Substance Use Professionals).

The program of the conference was rich and varied, ranging from many speakers and their presentations, through specialized trainings related to working with clients or drug demand reduction, to the involvement of local youth associations who are actively involved in changing the situation in the area of substance abuse in Africa. Two days have been devoted to meeting ICUDDR (International Consortium of Universities for the Reduction of Demand for Drugs), of which Charles University is a member and also stands as the European Coordination Center for universities providing addiction studies.

We had the opportunity to introduce our Prague model of education in addiction studies called Addictology, which is still unique in the world thanks to its comprehensiveness (from the bachelor to the doctoral studies) and the possibilities of employability as our graduates are generic professionals, but the presentation of African universities (especially the University of South Africa, Stellenbosch University and Kenyatta University) can compete boldly. It is confirmed that the development in the field of addictology and education continues to flow smoothly, that in different parts of the world quality programs have been developed independently and are taught for decades and that all build on similar evidence-based principles. There is a wide scope for exchange of information and cooperation and establishing cooperation is a natural process of similar actions.

Several interesting and inspiring lectures have been presented, such as experience and reflection on the availability of aftercare from the viewpoint of an abstaining alcohol user, experience with work with substance users from the prison area, the use of mindfulness in working with clients, community involvement in the client care, the field of primary prevention, treatment and harm reduction topics.

Active presentations

During the conference week, the staff of the Department of Addictology provided several lectures.

- The Universal Prevention Curricula (UPC) Implementation into the Prague Model of Addiction Studies: Process Evaluation Study (M. Miovský)
- Do the Addiction Specialists Have Sufficient Job Opportunities? A Case Study of the Czech Addictologists' Employability (A. Pavlovská)
- The Importance of Learning Outcomes: How Can University Study Programs Understand Each Other (A. Vondrová)
- Ensuring Fidelity to Evidence-Based Treatment of Substance Use Disorders (M. Miovský)
- Master Class on the topic: Initiating a new program on drug demand reduction, identifying champions, engaging students and other factors critical to new program development (M. Miovský, A. Vondrová, A. Pavlovská). In this block, we introduced specific aspects of the addiction study program, the Universal Prevention and Treatment Curricula, but also the Czech Association of Addictologists and the Czech Association of Addictology Students.

If interested you can listen to the record of the university meeting and Master Class meetings for free on YouTube (ICUDDR Track of ISSUP Annual Meeting in Nairobi, Kenya 12/11/18), also available from the website www.icuddr.com.

More information about ISSUP can be found at www.issup.net, the association is open to all professionals in addictology free of charge and offers a wealth of materials and information. Information about ICUDDR is available on the website www.icuddr.com, and more information about the Department of Addictology at www.adiktologie.cz.

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NEWS

● LISBON ADDICTIONS 2019

Lisbon Addictions 2019, the third European Conference on Addictive Behaviours and Dependencies (23–25 October 2019), is a multidisciplinary conference that provides a forum for networking across the addictions. The conference will also provide opportunities for early-stage researchers to enhance their careers. The Programme and Organising Committees have therefore planned to hold dedicated showcase sessions, developed a new concept for poster sessions and will further promote networking activities and mentoring to meet the needs of these participants.

The overarching theme for 2019 is *The future of addictions: new frontiers for policy, practice and science*. The conference will therefore showcase cutting-edge research to help characterise, understand and respond to addiction and addictive behaviours.

For more details:

<http://www.lisbonaddictions.eu/lisbon-addictions-2019>

● EUROPEAN DRUGS SUMMER SCHOOL

The 2019 edition of the *Summer school on illicit drugs Europe* will take place from 24 June to 5 July 2019. It is a two-week summer school in Lisbon on the drugs problem in Europe and beyond involving Scientific Experts from the EMCDDA and guest lecturers from European Universities.

Special focus: Interventions in prison and alternatives to incarceration

Location: ISCTE – Lisbon University Institute provides its faculty, staff and students with all the resources needed to develop an attractive working environment. The Students' Association is very active in developing cultural, leisure and sport activities for the student community.

For more details: <http://www.drugsummerschool.cies.iscte-iul.pt>

● 32ND INTERNATIONAL CONGRESS OF PSYCHOLOGY

The congress will take place in Prague from 19 to 24 July, 2020.

Five-day Scientific Programme comprises over 25 state-of-the-art lectures, over 100 keynote addresses, over 190 invited symposia, over 5 controversial debates, and much more....

International Congress of Psychology (ICP) is organised every four years. After a long history (the first ICP Congress

was held in Paris in 1889), the ICP has become one of the largest international psychological events.

The main organiser of the 32nd ICP is the Czech and Moravian Psychological Society (ČMPŠ), strongly supported by the Union of Psychological Associations of the Czech Republic (UPA ČR) and under the auspices of the International Union of Psychological Science (IUPsyS).

For more details: www.icp2020.com

● THE INTERNATIONAL CONFERENCE ON DRUG PREVENTION, TREATMENT AND CARE – INSPIRATION AND DIRECTION

ISSUP is delighted to be partnering with UNODC to hold the International Conference on Drug Prevention, Treatment and Care – Inspiration and Direction in Vienna, July 1–5, 2019.

The conference will bring together national and international experts in drug prevention, treatment and care and will feature a broad range of topics and formats, including all-day training workshops, keynote speakers in plenary sessions, poster sessions, regional meetings and networking opportunities and a three-day refresher course and chance to take an exam to receive credentials. Conference programme: <https://www.issup.net/about-issup/issup-workshops/vienna-2019/conference-programme>.

Registration is free: <https://www.issup.net/about-issup/workshops/vienna-2019/registration>

What is ISSUP?

The International Society of Substance Use Prevention and Treatment Professionals (ISSUP) is a global, not for profit, non-government organisation to support the development of a professional prevention and treatment network. It serves as a focal point for information about substance use prevention and treatment. ISSUP's contribution is informed by science and research, promoting evidence based, high quality and ethical approaches and practice to substance use prevention and treatment. It does this through this unique website, providing access to up to date information and support for the substance use prevention and treatment community. The website, along with an annual international meeting also offers training and networking opportunities as well as resources that support the professionalisation of the workforce.

For more information on ISSUP and how to become a member, please visit: www.issup.net

