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Original Research Article

Self-reported cannabis products and other illicit drugs consumption in older school-age children in Northern Lithuania: A comparison between 2006 and 2012

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ABSTRACT

Background and objective: Cannabis use is widespread among young people in Europe. The aim of this study was to analyze and to compare the associations between the self-reported consumption of cannabis products and other illicit drugs among older schoolchildren in 2006 and in 2012.

Materials and methods: Two cross-sectional surveys were conducted in 2006 and 2012 in Northern Lithuania. In total 3447 young people aged 17–19 years were investigated (1585 male and 1862 female). For this survey, the ESPAD questionnaire was used.

Results: In Northern Lithuania, the schoolchildren aged 17–19 years self-reported that 16.7% in 2006 and 23.9% in 2012 of them tried cannabis products. The consumption of cannabis products in the age group of 17 years increased from 14.9% in 2006 to 21.5% in 2012. The consumption of cannabis together with alcohol increased from 7.6% to 14.3%. Cannabis consumers more often tried amphetamines, heroin, LSD, cocaine, crack, ecstasy, hallucinogenic mushrooms, and injective drugs. In 2012, cannabis consumers girls less than boys used only crack and injective drugs; all other illicit drugs they used the same often as boys.

Conclusions: The cannabis products consumption in schoolchildren has increased by 7%. Nearly twofold increase was observed in the consumption of cannabis together with alcohol. Young people who used cannabis products more often tried other illicit drugs. There were no differences by gender in the consumption of illicit drugs among cannabis consumers.

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1. Introduction

In all European countries participating in European School Survey Project on Alcohol and Other Drugs (ESPAD) studies, according to the prevalence data, cannabis products are the most frequently used illicit drugs among young people. By 2011 ESPAD data, 25% boys and 14% girls tried cannabis products at least once per their lifetime in Lithuania [1]. According to the European Monitoring Center for Drugs and Drug Addiction (EMCDDA) reports, the consumption of cannabis products is increasing in the countries of the European Union [2]. While in some countries this growth has stabilized, there are countries where over the years the products of cannabis were used quite often. In France, Spain, and the United Kingdom, the abuse of cannabis products is very common, whereas in Finland, Sweden, and Portugal cannabis frequencies are low. In all EU countries (according to the most recent data), the prevalence of cannabis products consumption among adults remains less than 10%. However, 20% of young people aged 15–25 years in France, Germany, Ireland, Spain, and the United Kingdom have used cannabis during the last 12 months. The prevalence of cannabis products in young people in these countries ranges from 20% to 35% [2].

Recently, in Lithuanian press, other media channels, and articles targeted to the young people, we can find statements that marijuana or hashish are not dangerous and do not cause physical and mental addiction to these drugs. In addition, some comments state that marijuana and hashish consumption do not lead to the stronger illicit drugs abuse. Non-professional articles about the successful use of cannabis products in other countries' industry and agriculture as well mislead the readers. They usually "forget" to inform their readers on special, complicated, and serious control mechanisms in such cases.

There are international scientific studies with sufficient evidence on the harm of marijuana and other cannabis products. Authors from different countries found that cannabis products abuse leads to the same adverse effects as of other illicit drugs [3–6]. The regular use of cannabis products is associated with an increase of the incidence in mental disorders for young people [7].

The level of seriousness of physical or mental health disorder, and how rapidly it occurs depends on the illicit drug type, its toxicity, amount, the duration of consumption, the way of the use, and the frequency of the particular drug consumption. Many researchers agree on the statement that, if someone tries marijuana only few or even a dozen times, it does not evolve addiction to cannabis, and desire to try stronger illicit drugs. However, a regular use of cannabis products is dangerous, and can lead to the development of addiction to cannabis products and the addiction to other illicit drugs [2,7–9].

In Lithuania, there are limited research and evidence on the cannabis products abuse and on prevention of the derivatives from cannabis consumption. There are not enough studies on association between the cannabis and stronger illicit drugs consumption. The aim of this study was to analyze and to compare the associations between the

self-reported consumption of cannabis products and other illicit drugs among older school-age children of Northern Lithuania in 2006 and in 2012. The objectives of the study were firstly, to determine the number of cannabis products consumers in 2006 and 2012 (by gender and by age groups); secondly, to establish the associations between the consumption of cannabis products and other illicit drugs (among boys and girls), and to compare these results in 2006 and in 2012.

2. Materials and methods

2.1. Sampling and procedures

The study was performed using two cross-sectional surveys, conducted in 2006 and 2012 in Northern Lithuania. In 2006 and 2012, a consent document for conducting survey was obtained from the municipalities located in Šiauliai County. The Departments of Education (in Šiauliai, Akmenė, Joniškis, Kelmė, Pakruojis, Radviliškis cities and districts) agreed in conduction of this survey on drugs abuse in older school-aged children aged 17–19 years. The school class was modeled as a cluster. The schools and the classes for this survey were selected randomly. In 2006, the response rate was 92%; in 2012, the response rate was 94.5%.

In 2006, in the survey 2270 schoolchildren participated (1053 boys and 1217 girls), and in 2012, 1177 schoolchildren took part (532 boys and 645 girls). In total 3447 young people were investigated (1585 male and 1862 female). The distribution by the age groups was: 1602 aged 17 years, 1051 aged 18 years, and 794 aged 19 years.

2.2. Measurements

For this survey in both 2006 and 2012, the questionnaire for schoolchildren from European School Survey Project on Alcohol and Other Drugs (ESPAD) was used. ESPAD questionnaire is widely used for international studies on prevalence of the drugs and psychoactive materials abuse among children and young people. The questionnaire was designed to consist of 49 closed questions with few or several values of answers. For this survey we used 12 items, because we asked about the consumption of each drug (or about the consumption of the cannabis products together with alcohol) separately, naming every drug. Schoolchildren should answer the questions "Have you tried this drug at least once in lifetime?"

2.3. Statistical analysis

SPSS for Windows 20.0 statistical package was used for analysis of the study data. The z and chi-square (χ^2) tests were applied for the evaluation of statistical hypotheses on difference in the distribution of variables between respondents' groups and the study years. The level of statistical significance established at $P \leq 0.05$ was considered as statistically significant. Our data in 2006 and in 2012 statistically significantly differed by some demographical indicators. Direct standardization procedures were applied for adjusting and standardizing the data by the age and

gender, when comparing different samples of respondents in 2006 and 2012.

3. Results

The study participants were divided into two groups: (a) schoolchildren who reported that they have never tried products of cannabis, and (b) schoolchildren who tried cannabis products at least once in lifetime. Cannabis consumption (or testing at least once in lifetime) in young people was used as some kind of indicator for conducting further analysis, in order to find out if cannabis users more often than non-users have tried other illicit drugs.

Table 1 shows that 22.7% of investigated boys and 11.5% of girls used cannabis products at least once in lifetime in 2006. The prevalence of cannabis products (marihuana, hashish) consumption in boys was nearly two times higher than in girls ($P < 0.001$). The study results showed that 371 (16.7%) schoolchildren used derivatives of cannabis at least once in lifetime in 2006.

In 2012, the situation in the region became worse. In 2012, both boys and girls abused cannabis products more often than in 2006 ($P < 0.001$). In 2012, the consumption of cannabis products of boys was again about two times more than that of girls ($P < 0.001$). In 2012, totally 23.9% of schoolchildren self-reported that they abused derivatives of cannabis. Over 6 years, a 1.43-fold increase in the number of cannabis products users was observed (in average by 7%).

The study results revealed that in 2006 the highest prevalence of cannabis products users was among the young people aged 18 years (Table 1). However, no significant differences among age groups were found. Differences between age groups was more evidence in 2012, when young people aged 19 years showed significantly higher usage of these drugs when compare with younger children ($P = 0.007$); about one third of 19-year-olds have tried or consumed cannabis products. The consumption of cannabis in the age group of 18 years showed no significant change over 6 years. Special attention needs schoolchildren aged 17 years; the

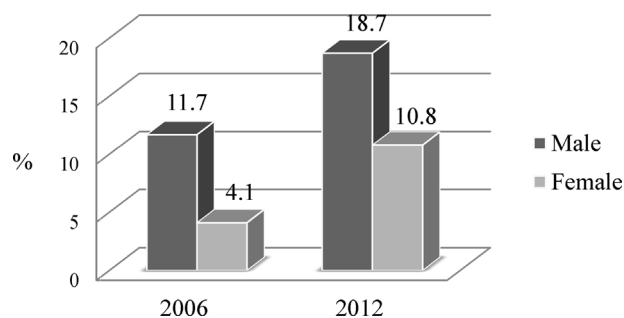


Fig. – Distribution of cannabis products consumption together with alcohol abuse among schoolchildren aged 17–19 years in 2006 and 2012.

consumption of cannabis products over the study period in this group increased by 1.4 times (from 14.9% to 21.5%) ($P = 0.002$). Totally, products of cannabis consumption among all investigated schoolchildren increased from 16.7% to 23.9% over the 2006–2012 ($P < 0.001$) (Table 1).

During our study, we investigated associations between the use of cannabis products and alcohol consumption (Fig.). The study results revealed that between 2006 and 2012, nearly two times increase was observed in cannabis products abuse together with alcohol consumption (from 7.6% to 14.3%) ($P < 0.001$). Although the girls' consumption of these two substances together was rarer than that of boys, the number of users among girls increased more than two times (from 4.1% to 10.8%) ($P < 0.001$) (Fig.).

In our study we analyzed what are associations between cannabis products consumption and other psychoactive substances (amphetamines, ecstasy, LSD (Lysergic acid diethylamide), crack, cocaine, heroin, hallucinogenic mushrooms, and injective drugs) abuse.

We compared two groups: cannabis products users and non-users (Table 2). The study revealed that schoolchildren, who had ever tried derivatives from cannabis significantly

Table 1 – Distribution of cannabis products consumption among schoolchildren in 2006 and 2012 (by gender and by age groups).

Gender, age groups (years)	2006 (n = 2227)	2012 (n = 1163)	P ¹ -value
	Tried cannabis products at least once in lifetime (%)	Tried cannabis products at least once in lifetime (%)	
Male	22.7	32.3	<0.001
Female	11.5	17.1	<0.001
P ² -value when compare by gender	$\chi^2 = 49.88$; $df = 1$; $P^2 < 0.001$		$\chi^2 = 36.54$; $df = 1$; $P^2 < 0.001$
17	14.9	21.5	0.002
18	19.3	21.5	0.413
19	16.4	30.3	<0.001
P ³ -value when compare by age groups	$\chi^2 = 5.54$; $df = 2$; $P^3 = 0.063$		$\chi^2 = 9.96$; $df = 2$; $P^3 = 0.007$
Total	16.7	23.9	<0.001
P ¹ – value when compare by the year of the study (z test); P ² – value when compare by gender (χ^2 test); P ³ – value when compare by age groups (χ^2 test).			

Table 2 – The comparisons between the use of cannabis products and other illicit drugs among schoolchildren aged 17–19 years in 2006 and 2012.

Consumption of other illicit drugs	2006 (n = 2227)		2012 (n = 1163)		P ¹ -value when compare by the year of the study
	Tried cannabis products at least once in lifetime (n = 371) (%)	Have never tried products of cannabis (n = 1856) (%)	Tried cannabis products at least once in lifetime (n = 278) (%)	Have never tried products of cannabis (n = 885) (%)	
Amphetamines	14.1 $\chi^2 = 217.01$; $P < 0.001$	0.4	8.1 $\chi^2 = 63.09$; $P < 0.001$	0.2	0.507
LSD	5.0 $\chi^2 = 73.97$; $P < 0.001$	0.2	1.0 $\chi^2 = 35.92$; $P < 0.001$	–	0.188
Crack	2.8 $\chi^2 = 51.11$; $P < 0.001$	–	2.9 $\chi^2 = 21.25$; $P < 0.001$	0.1	0.279
Cocaine	4.1 $\chi^2 = 58.90$; $P < 0.001$	0.2	5.5 $\chi^2 = 44.24$; $P < 0.001$	0.1	0.347
Heroin	3.0 $\chi^2 = 49.67$; $P < 0.001$	0.1	1.5 $\chi^2 = 12.93$; $P < 0.001$	–	0.551
Ecstasy	13.2 $\chi^2 = 189.47$; $P < 0.001$	0.5	5.1 $\chi^2 = 32.95$; $P < 0.001$	0.3	0.969
Hallucinogenic mushrooms	1.7 $\chi^2 = 20.01$; $P < 0.001$	0.1	7.3 $\chi^2 = 60.82$; $P < 0.001$	0.1	0.110
Injective drugs	1.7 $\chi^2 = 20.05$; $P < 0.001$	0.1	2.2 $\chi^2 = 14.95$; $P < 0.001$	0.1	0.605
P-value when compare by tried/not tried cannabis products (χ^2 test). P ¹ -value when compare by the year of the study (z test).					

more often consumed also other psychoactive substances than respondents, who had never tried cannabis products. For instance, the study showed that in 2006, cannabis users when compare with non-users approximately 35 times more often used amphetamines (respectively 14.2% and 0.4%), about 25 times more often used LSD (Lysergic acid diethylamide), about 20 times – crack and cocaine, about 30 times – heroin, about 26 – ecstasy, and about 17 times more often used hallucinogenic mushrooms and injective drugs. In all cases there were observed statistically significant differences between cannabis consumers and non-consumers concerning other illicit drugs usage.

The results in 2012 were similar to those in 2006. In 2012, schoolchildren, who consumed cannabis products, more often (about 40 times) used amphetamines, 29 times – crack, about 55 times – cocaine, about 17 times – ecstasy, and about 73 times – hallucinogenic mushrooms. In 2012, none schoolchild from cannabis non-users tried LSD or heroin, and from 885 respondents cannabis non-users only few tried other illicit drugs. It shows that cannabis products are starters, the entry drugs, and their consumption leads to the stronger illicit drugs abuse.

The survey revealed that in 2006 among cannabis users the most popular drugs were amphetamines and ecstasy (in 2012 – amphetamines and hallucinogenic mushrooms) (Table 3). In 2006, the girls (14.3%) used amphetamines even slightly more often than that of boys (14.0%), but this difference is statistically insignificant. On the next places were LSD, cocaine, and heroin. The girls used LSD, cocaine, and heroin similarly like boys ($P > 0.05$). The rarest used illicit drugs were crack and injective drugs, and no significance differences by gender were observed.

When compare the study results in 2006 and in 2012, a significant decrease in the consumption of amphetamines and ecstasy, and a significant increase in the consumption of hallucinogenic mushrooms was revealed. In 2012, the prevalence of crack and injective drugs consumers was significantly higher for boys than for girls. The prevalence of other illicit drugs consumption was similar in boys and in girls.

The study showed that over six years the prevalence of illicit drugs users remained much the same among schoolchildren in Northern Lithuania, and it is a high prevalence. Special attention needs a high level of drugs consumption among girls.

4. Discussion

We compared our results with ESPAD study. The last ESPAD survey was conducted in 2011 in 36 European countries [1]. We used ESPAD questionnaire for our study. When compare data, it is necessary to take into account that we used different age groups than that of ESPAD-2011. We investigated young people aged 17–19 years, while in ESPAD-2011 survey respondents aged 15–16 years participated. Because of these differences we cannot strictly state that the illicit drugs consumption among schoolchildren in Northern Lithuania is higher, than the average of consumption in Europe, even if we observed such a trend. In addition, the ESPAD survey was last conducted in 2011, and our first survey was conducted in 2006, and the second one – in 2012.

Some of our results are possible to compare with the results presented in the annual reports of European Monitoring

Table 3 – The consumption of other illicit drugs among cannabis products' consumers aged 17–19 years in 2006 and 2012 (by gender).

Consumption of other illicit drugs	Schoolchildren who used cannabis products at least once in lifetime						P ¹ -value when compare by the year of the study
	2006 (n = 371)			2012 (n = 278)			
	Boys n = 233 (%)	Girls n = 138 (%)	Total n = 371 (%)	Boys n = 169 (%)	Girls n = 109 (%)	Total n = 278 (%)	
Amphetamines	14.0 $\chi^2 = 0.004$; P = 0.947	14.3	14.1	10.8 $\chi^2 = 3.28$; P = 0.070	4.6	8.4	0.019
LSD	5.2 $\chi^2 = 0.104$; P = 0.747	4.5	5.0	4.2 $\chi^2 = 0.04$; P = 0.825	3.7	4.0	0.578
Crack	3.5 $\chi^2 = 1.270$; P = 0.258	1.5	2.8	4.8 $\chi^2 = 5.280$; P = 0.022	–	2.9	0.912
Cocaine	3.9 $\chi^2 = 0.057$; P = 0.812	4.4	4.1	7.3 $\chi^2 = 0.628$; P = 0.105	2.8	5.5	0.418
Heroin	3.1 $\chi^2 = 0.001$; P = 0.969	3.0	3.0	2.4 $\chi^2 = 2.601$; P = 0.107	–	1.5	0.196
Ecstasy	13.2 $\chi^2 = 1.705$; P = 0.983	13.2	13.2	7.8 $\chi^2 = 0.176$; P = 0.675	0.9	5.1	0.001
Hallucinogenic mushrooms	2.2 $\chi^2 = 1.07$; P = 0.300	0.7	1.7	7.8 $\chi^2 = 0.176$; P = 0.675	6.5	7.3	0.001
Injective drugs	1.7 $\chi^2 = 0.03$; P = 0.861	1.5	1.7	3.6 $\chi^2 = 3.054$; P = 0.047	–	2.2	0.625
P-value when compare by gender (χ^2 test).							
P ¹ -value when compare by the year of the study (z test).							

Center for Drugs and Drug Addiction (EMCDDA). Yet these reports are more focused on the assessment of the regular consumption of illicit drugs in the Europe, and not underline the drugs consumption in beginners [2]. When compare data from 2007 and 2011, an increase of the illicit drugs consumption in Europe is observed [1]. In 2011, in the average in Europe, 21% of boys and 15% of girls self-reported that they tried cannabis products at least once in lifetime. From 1995, every ESPAD survey revealed that the illicit drugs consumption of boys is much higher than that of girls. The similar differences by gender were observed in the surveys performed in Lithuania from 1995. These differences by gender in the drugs consumption was presented in the various studies of Lithuanian scientists [10–13].

The majority of the schoolchildren, who tried illicit drugs, reported that they first began to use cannabis products both in Lithuania and in other European countries. ESPAD-2011 survey revealed that in Europe, 17% of schoolchildren (19% boys and 14% girls) tried cannabis products at least once during lifetime. On the second place in Europe are ecstasy (3%) and amphetamines (3%). Cocaine, crack, LSD, and heroin are used more rarely (1%–2%) [1]. Our study showed similar prevalence of the illicit drugs consumption; in the first place were cannabis, the second – amphetamines and ecstasy, the third – LSD, cocaine, heroin, and in the fourth – crack and injective drugs.

The international researchers presented similar results on the drugs consumption in schoolchildren of European countries. In the countries of the highest prevalence of cannabis consumption (France and Monaco) more than one in five students reported that they used cannabis during the last 30 days [14]. Meanwhile, in Albania, Bosnia and Herzegovina, Serbia, the Faroe Islands, Moldova, and Norway during the last

30 days, only 1%–2% schoolchildren consumed cannabis products [1].

According to our survey, 32.3% boys and 17.1% girls tried cannabis products in 2012. It means that in Northern Lithuania, cannabis products consumption 1.7 times in boys and 1.2 times in girls exceeded the European average in 2011 (by ESPAD-2011 study). Therefore, Lithuania could be listed among the countries with the highest prevalence of cannabis products consumption in young people.

Many authors refers that the countries of high prevalence of stronger illicit drugs consumption are the Czech Republic, France, Monaco, Slovenia, and our neighboring countries Estonia and Latvia [2,14,15]. In these countries, there is the association between the use of cannabis and other illicit drugs. The more cannabis products are used, the quicker is a start to take stronger illicit drugs [9,16,17]. In our study, similar association was obvious: those schoolchildren, who had used cannabis, more frequently used amphetamines, LSD, crack, cocaine, heroin, ecstasy, hallucinogenic mushrooms, and injective drugs than those schoolchildren, who did not use the cannabis products. This confirms the statement that the use of cannabis is a start point leading to the use of other stronger illicit drugs.

ESPAD researchers and other authors [1,2,5] appointed great importance of gender differences. ESPAD surveys from 1995 showed that all illicit drugs, and particularly cannabis, were more often used in boys than in girls. For instance, by ESPAD-2011 data for 27 countries, illicit drugs consumption in boys was much higher than in girls. Nevertheless, in ESPAD-2011 study has appeared countries, where some of the psychoactive substances (still not many of them) were used more frequently in girls than in boys. Among these materials

are sedatives, alcohol with medicaments, and even amphetamines. Our study in 2012 showed that cannabis users girls statistically significantly rare than boys used only crack and injective drugs. The frequencies of consumptions of all other illicit strong drugs were similar in girls and in boys. It is important message to our public health specialists, policy makers and to health policy formation in our country. Female body is more susceptible to the psychoactive effects of substances, and evolves much earlier dependence of these materials. In addition, the young girls in future will become mothers, so knowing that many of drugs accumulate in the body, there is possibility to predict in Lithuania an increase in the number of newborns with disabilities and serious health problems.

In 2004, Drug, Tobacco and Alcohol Control Department under the Government of the Republic of Lithuania was established in Lithuania. For many years in annual reports of this Department, it was underlined that girls had used less frequently than boys all illicit drugs [8]. However, from 2008 the situation in the country changed. In 2009, 2010, 2011, and 2012, according to annual reports, the decreasing trend in gender differences concerning drugs consumption in young people in Lithuania was observed. This showed that prevention work in the country is insufficient and possibly not effective. Nowadays the Public Health Bureaus are responsible for organizing at school level the preventive activities of psychoactive substances consumption in young people. The prevention of illicit drugs consumption in schoolchildren needs much more attention in Lithuania.

In 2011, the ESPAD researchers were pleased to notice that in some countries (Ireland, the Faroe Islands, Iceland, Norway, Malta, Bosnia and Herzegovina, the United Kingdom, and the Russian Federation) the consumption of illicit drugs has stabilized or even declined when compare with ESPAD-2007 study [1]. Lithuania, however, not belongs to these countries. Although our survey showed that, when compare data in 2006 and in 2012, the consumption of the majority of illicit drugs is stabilized. However, the consumption of cannabis products (marihuana), and marihuana abuse together with alcohol, over six years statistically significantly increased.

The relatively high prevalence of cannabis use among young people in Europe raises concerns about the potential negative consequences for individual and for society [3,4,18,19]. The ESPAD researchers consider that one of the three cannabis users, who have used cannabis at least once in the past 12 months, could be attributed to the group of increased risk [1]. These young people in the future could have a major negative consequence of this abuse (for instance, to start consume the stronger illicit drugs). All countries need to enhance the control of illicit drugs distribution, transfer and turnover, and to promote the preventive work with young people. In our country, it is especially important to provide competent information to the young girls (future mothers) on the harm of illicit drugs consumption. For this should be used all levels of education and health sectors. It is necessary not only to combine the efforts of all related institutions in Lithuania, but also to share the best practices from the mentioned countries, where according ESPAD – 2011, the consumption of drugs is decreasing.

The strengths of our study were to consider the fact that the consumption of stronger illicit drugs significantly increased

among girls, who tried cannabis products at least once per lifetime. Every study has the limitations. We failed to explain (there was no specific item in the questionnaire) why the girls drugs consumers are rapidly catching up the boys, and in some cases even overpass them (for instance, in the amphetamines consumption). There are opinions that those young girls sometimes use strong illicit drugs (for instance, amphetamines, ecstasy, and cocaine) not only to get dizzy, but also from hunger or to lose weight. These questions could be analyzed in the future studies; it could be used other methodologies, more detailed questionnaire, and the target groups of respondents.

5. Conclusions

In Northern Lithuania, the self-reported prevalence of cannabis products consumption in schoolchildren in 2006 was 16.7% (22.7% for boys and 11.5% for girls) and 23.9% – in 2012 (32.3% for boys and 17.1% for girls). In the youngest investigated age group of 17 years, the consumption of cannabis products steeply rose from 14.9% in 2006 to 21.5% in 2012, and was rather high. Nearly twofold increase was observed in the consumption of cannabis products together with alcohol among investigated schoolchildren (from 7.6% to 14.3%). Young people who used cannabis products significantly more often tried other illicit drugs (amphetamines, heroin, LSD, cocaine, crack, ecstasy, hallucinogenic mushrooms, and injective drugs), however there was no significant change when compare data from 2012 and 2006.

Conflict of interest

The authors state no conflict of interest.

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