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## COMPARING NPS USERS IN NIGHTLIFE SETTINGS AND ONLINE COMMUNITIES

### COMPARAÇÃO ENTRE UTILIZADORES DE NSP EM AMBIENTES NOTURNOS E COMUNIDADES EM LINHA

Susana Henriques<sup>1</sup>, et al.

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#### ABSTRACT

This article reports on the comparison between two groups of New Psychoactive Substances (NPS) users: users in nightlife settings and users in online communities. A quantitative survey was conducted in six EU countries (Germany, Hungary, Ireland, Netherlands, Poland, and Portugal) within a convenience sample of adult (18 years+) current (12-month) NPS users. Participants self-completed either a pen-and-paper or online questionnaire. 2,757 respondents across the six European countries were reached during data collection in the two considered user groups. The comparison was based on sociodemographic characteristics, use patterns and market. The groups of NPS used are: herbal blends and/or synthetic cannabinoids; branded stimulants and/or stimulants/Empathogenics/nootropics obtained pure; psychedelics; dissociatives; and other NPS. Internet and virtual markets assume great relevance both for nightlife and online communities. Different drug policies and diverse geographical location between the

participant countries are the main characteristics that impact on the results - namely in the presence/absence of some substances, or in the legal concept of NPS. Comparing users in nightlife settings and online users highlighted substantive trends in NPS use across countries and user groups. New opportunities in the drug market were driven by technological developments on the internet.

**Keywords:** NPS; Nightlife users; Online users; Categories of NPS; Virtual markets; European trends.

#### RESUMO

Este artigo foca-se na comparação entre dois grupos de utilizadores de Novas Substâncias Psicoativas (NSP): utilizadores em ambientes noturnos e utilizadores em comunidades online. Foi realizado um inquérito por questionário em seis países da UE (Alemanha, Hungria, Irlanda, Países Baixos, Polónia e Portugal) com uma amostra de conveniência de adultos (18 anos ou mais) consumidores atuais (12 meses) de NSP. Os participantes preencheram um questionário em papel e caneta ou online. Foram contactados 2.757 inquiridos nos seis países europeus durante a recolha de dados, nos dois grupos de consumidores considerados. A comparação baseou-se nas características sociodemográficas, nos padrões de consumo e no mercado. Os grupos de NSP utilizados são: misturas de ervas e/ou canabinóides sintéticos; estimulantes de marca e/ou estimulantes/empatogénicos/nootrópicos obtidos puros; psicadélicos; dissociativos; e outras NSP. A Internet e os mercados virtuais assumem grande relevância tanto para a vida noturna como para as comunidades online. As diferentes políticas em matéria de droga e a localização geográfica diversa entre os países participantes são as principais características que têm impacto nos resultados - nomeadamente na presença/ausência de algumas substâncias, ou no conceito legal de NSP. A comparação entre os utilizadores em contextos de diversão noturna e os utilizadores online revelou tendências no consumo de NSP nos vários países e grupos de consumidores. As novas oportunidades no mercado da droga foram impulsionadas pelos desenvolvimentos tecnológicos na Internet.

**Palavras-chave:** NPS; Utilizadores da vida noturna; Utilizadores em linha; Categorias de NPS; Mercados virtuais; Tendências europeias.

## INTRODUCTION

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The rapid emergence of New Psychoactive Substances (NPS), the diversity of available products and the continued diffusion have been gaining attention in scientific research and international reports (Arfken et al., 2014; Reuter and Pardo, 2016; Caudevilla, 2016; Van Hout and Hearne, 2017; EMCDDA, 2019). NPS are defined as “synthetic or naturally occurring substances that are not controlled under international law or produced with the intention of mimicking the effects of controlled drugs” (EMCDDA, 2014). This phenomenon includes cathinone derivatives, synthetic cannabinoids, pyrovalerones, NBOMe series, and methoxetamine, and continues to be considered a major public health concern (Caudevilla, 2016; Addison et al., 2017). These characteristics reframed the scientific debate about drug users, their set and setting.

New Psychoactive Substances: transnational project on different user groups, user characteristics, extent and patterns of use, market dynamics, and best practices in prevention (NPS-transnational) was a European research project funded by the European Commission and driven by research institutions and universities in six countries. The research objectives of the NPS-transnational project were to determine the extent and patterns of NPS use within three different groups – users in nightlife settings, users in online communities and socially marginalized users, assess characteristics in the different groups of NPS users, collect information about supply, identify market dynamics for NPS, assess perceptions of legal status of NPS, make an inventory of prevention strategies used in the different countries, identify best practices in prevention of NSP use, and to disseminate and share project results Europe-wide (Benschop et al., 2017; Van Hout et al., 2017; Werse, et al., 2018; Korf et al., 2019). The current article reports the comparison between two groups of NPS users: users in nightlife settings and users in online communities within the participant six

countries - Germany, Hungary, Ireland, Netherlands, Poland, and Portugal.

Nightlife recreational venues such as clubs, bars, discotheques, music festivals, and raves are important activities for people in their leisure time. These nightlife venues provide partygoers with opportunities to socialize and dance, to form their identities by experimenting with the group. Such recreational settings are common locations for substance use, and several European Union countries experience rising patterns of party drug use in these settings (Calafat et al., 2012; EMCDDA, 2006). According to EMCDDA levels of substance use tend to be significantly higher among young people who regularly visit these nightlife venues, compared to the general population (Sannen et al., 2016).

The increased mobility of young people and the globalization of the leisure industry make it necessary to address these issues, including responding to the growth of NPS (Sannen et al., 2016). These responses are being heavily hampered by technological developments and by ease of access to the internet.

The online promotion of drug shopping and user information networks is proliferating. Research studies have had growing attention on the role the internet is playing in the supply and demand for illicit drugs in general and new psychoactive substances in particular (EMCDDA, 2016; Pires et al., 2015; Van Hout and Bingham, 2013). The cyber drug market “has become increasingly dynamic and innovative in its capacity to retail drugs, create new compounds, and circumvent legislative controls” (Van Hout and Bingham, 2013). It consists of online drug websites and chat forums operating to provide information on “outcomes, experiences, popularity, availability, sourcing mechanisms, optimum use, and harm reduction practices” (Van Hout and Bingham, 2013).

The drug markets have been shifting towards widespread global and digital markets, and among their users (drug users and dealers) are increasingly using the ‘Deep Web’ or ‘Invisible

Web', which represents online content not reachable by standard engines such as 'Google'. This is an innovative field and crypto markets are a second generation of parallel networks that have the following main characteristics (Van Hout and Bingham, 2013; Aldridge and Décarry-Héту, 2014):

- (1) Payments are made using virtual currency (e.g. bitcoins).
- (2) Subjects are required to accept an anonymous protocol (e.g. Tor or the Invisible Internet Project – I2P), thereby ensuring the absence of identifying elements and eliminating probabilities that the hidden servers will be traced and identified.
- (3) Incentives to keep transactions confidential, in such a way as to avoid the capture and sharing of information about illicit dynamics.
- (4) Use of an online assessment system whereby the various parties can give their feedback about a given transaction, product, or delivery, thereby differentiating and highlighting certain quality criteria.

However, the Clearnet or surface shops are still much more relevant because they rely much on the "legal" aspect. That is why the terms "legal highs" and "research chemicals" are common. "Darknet marketplaces were also reported to have been used by online community users, but to a much lesser extent" (Benschop et al., 2017).

The aim of the present article was to investigate the characteristics of NPS users in nightlife settings and online communities, and answer the following questions:

- Who are these users of NPS; what are their demographic characteristics?
- What are their drug use histories, and what is the extent of their concurrent use of conventional drugs?

## MATERIALS AND METHODS

This article is based on data of a wide study undertaken within a transnational and interdisciplinary European funded research project – NPS-transnational. A survey was applied in each one of the six participant countries under three eligibility criteria: (1) recent NPS use (at least once in the past 12 months); (2) resident of the participating countries; and (3) 18 years or older.

A targeted sampling methodology was chosen to reach NPS users in:

- (1) Nightlife settings, such as clubs, raves, and festivals. Respondents were recruited face-to-face on-site and through snowball sampling. Respondents were given the choice to self-complete either a written or online questionnaire. This group will, from here on, be referred to as 'nightlife users'.
- (2) Online communities, such as drug-related social media and internet forums. Respondents were recruited by actively promoting the survey on internet forums and other online resources. Users in online communities were only given access to the online questionnaire. This group will, from here on, be referred to as 'online users'.

A total of 647 nightlife users and 2,110 online users completed the survey. See Table 1.

**Table 1** - Sample of recent NPS users in nightlife settings and online communities by country.

Country	Nightlife NPS users	Online users	NPS
Germany	98	542	
Hungary	15	156	
Ireland	3	11	
The Netherlands	189	1,000	
Poland	172	338	
Portugal	170	63	
Total	647	2,110	

Fonte: University of Amsterdam (2023)

The data was screened/cross-checked for errors and analysed using SPSS V.24 using an anonymized database. For further details on practical and ethical issues and on methods see Benschop et al. (2017); Van Hout et al. (2017); Werse et al. (2018); Korf et al. (2019); Felvinczi et al. (2019).

Statistical analyses include Chi-square for percentages, Student’s T-test for averages, and Pearson’s r for correlations.

## RESULTS

### Social profile

The male-female ratio was about 2:1 for both nightlife and online users, but online users are two years younger on average (25.7 versus 23.6 years, see Table 2). Online users are also more likely to live in a small town (< 50,000 inhabitants), reside with parents or family, and be students. In both groups, the level of education was generally high, with most having completed at least secondary school and many carrying an academic degree (Table 2).

**Table 2** - Background characteristics of recent NPS users in nightlife settings and online communities

	Nightlife N = 647	Online N = 2,110	P
<b>Gender</b>			
male	67.9%	68.0%	.985
female	31.1%	32.0%	
<b>Age</b>			
18-24 years	50.1%	70.3%	.000
<b>25-34 years</b>	<b>41.7%</b>	<b>23.7%</b>	
35-44 years	7.6%	5.1%	
45 years and older	0.6%	1.0%	
average (sd)	25.7 (5.9)	23.6 (5.8)	.000
<b>Residence</b>			
small town (pop. < 50.000)	17.3%	41.2%	.000

medium town (pop. 50.000-100.000)	14.0%	17.0%	
large town (pop. > 100.000)	68.6%	41.8%	
<b>Living arrangements</b>			
own home	20.8%	14.5%	.000
rent apartment or room	47.1%	39.6%	
parents / family	27.6%	44.1%	
other	4.5%	1.9%	
<b>Level of education</b>			
none	0.3%	0.6%	.000
primary school	16.9%	12.8%	
secondary school	45.2%	56.2%	
college / university	37.3%	28.5%	
doctor’s degree, PhD,	0.3%	1.9%	
etc.			

### Employment

student	28.6%	43.7%	.000
full-time worker	39.0%	30.6%	
part-time or casual worker	12.0%	11.7%	
self-employed	9.3%	5.4%	
unemployed / benefits	10.7%	8.1%	
other	0.3%	0.5%	

Fonte: Henriques, et al. (2024)

### Patterns of NPS use

In terms of categories of NPS used we identified the prevalence of use in four main groups of NPS (See Table 3):

- **Cannabinoids:** synthetic cannabinoids obtained pure (e.g. JWH-x, AM-x) or herbal blends containing cannabinoids (e.g. ‘Spice’)
- **Stimulants:** stimulants/empathogens/nootropics obtained pure (e.g. mephedrone, MDPV, a-PVP) or branded stimulants (e.g. ‘bath salts’)
- **Psychedelics** (e.g. NBOMe-x, 2C-x)

- Dissociatives (e.g. methoxetamine)

Of the four categories of NPS studied, prevalence rates were highest for stimulants, followed by psychedelics and cannabinoids. The use of dissociatives was lowest among both nightlife and online users.

**Table 3** - Use of categories of NPS among recent NPS users in nightlife settings and online communities.

	Nightlife N = 647	Online N= 2,110	P
<b>Cannabinoid NPS</b>			
lifetime	55.8%	46.2%	.000
last 12 months	31.7%	29.9%	.376
last 30 days	12.1%	11.5%	.708
frequent	3.9%	5.6%	.090
<b>Stimulant NPS</b>			
lifetime	73.1%	79.9%	.000
last 12 months	57.3%	72.8%	.000
last 30 days	25.0%	43.3%	.000
frequent	1.7%	4.4%	.002
<b>Psychedelic NPS</b>			
lifetime	56.7%	51.3%	.016
last 12 months	48.5%	41.7%	.002
last 30 days	20.1%	17.3%	.112
frequent	1.3%	0.4%	.018

**Table 4** - Use of cannabinoid NPS (herbal blends and/or synthetic cannabinoids obtained pure) among recent NPS users in nightlife settings and online communities – per country

	Germany	Hungary	Ireland	Netherlands	Poland	Portugal	p
<b>Life time</b>							
Nightlife	66.3%	86.7%	*(100%)	23.8%	77.9%	59.4%	.000
Online	61.8%	90.4%	63.6%	15.2%	85.8%	77.8%	.000
TOTAL	62.5%	90.1%	71.4%	16.6%	83.1%	64.4%	.000
<b>Last 12 months</b>							
Nightlife	35.7%	86.7%	*(0%)	13.2%	60.5%	16.5%	.000
Online	42.8%	62.8%	18.2%	9.3%	50.3%	55.6%	.000

**Dissociative NPS**

lifetime	21.6%	21.3%	.886
last 12 months	14.4%	13.6%	.596
last 30 days	3.2%	5.6%	.017
frequent	0.2%	0.5%	.476

**Other NPS**

lifetime	13.0%	34.3%	.000
last 12 months	8.2%	26.3%	.000
last 30 days	4.5%	15.6%	.000
frequent	0.3%	2.7%	.000

Fonte: Henriques, et al. (2024)

**Notes:** Frequent = more than ten times in the past month; Cannabinoid NPS = Herbal blends and/or synthetic cannabinoids obtained pure; Stimulant NPS Branded stimulants and/or stimulants/empathogenics/nootropics obtained pure

Regarding cannabinoid NPS, lifetime use was more frequent among nightlife users (55.8%) than online users (46.2%), though the last 12 months, last 30 days, and frequent use (more than ten times in the past month) were similar in both groups. Hungary is the country where this category of NPS is highly reported, and the Netherlands is where it showed the lowest values. See Table 4.

TOTAL	41.7%	64.9%	14.3%	9.9%	53.7%	27.0%	.000
<b>Last 30 days</b>							
Nightlife	12.2%	46.7%	*(0%)	5.8%	20.9%	7.1%	.000
Online	15.5%	27.6%	9.1%	3.9%	16.3%	33.3%	.000
TOTAL	15.0%	29.2%	7.1%	4.2%	17.8%	14.2%	.000

Fonte: Henriques, et al. (2024)

It is important to highlight that most respondents failed to name the specific synthetic cannabinoid or herbal blend they had used in the last 12 months (50-75% of nightlife users; 54-69% of online users; percentages not included in the table). As far as respondents provided names, the most mentioned herbal blend was ‘Jamaican’ for online users (29 mentions) and ‘Spice’ for nightlife users (18); and the most mentioned synthetic cannabinoid was from the JWH-series (mainly JWH-018) for both groups.

The results for stimulant NPS show higher overall prevalence rates among online users when compared with nightlife users, with frequent use being more than twice as high among online users (4.4%) than nightlife users (1.7%).

The Netherlands was the country where this category of NPS is most reported by nightlife and online users. Hungarian nightlife users show the lowest prevalence of stimulant NPS use. See Table 5.

**Table 5** - Use of stimulant NPS (branded stimulants and/or stimulants/empathogenics/nootropics obtained pure) among recent NPS users in nightlife settings and online communities – per country

	Germany	Hungary	Ireland	Netherlands	Poland	Portugal	p
<b>Life time</b>							
Nightlife	58.2%	26.7%	*(100%)	95.2%	80.8%	52.9%	.000
Online	47.0%	80.1%	63.6%	97.0%	85.2%	65.1%	.000
TOTAL	48.8%	75.4%	71.4%	96.7%	83.7%	56.2%	.000
<b>Last 12 months</b>							
Nightlife	39.8%	13.3%	*(100%)	92.6%	73.8%	14.7%	.000
Online	37.1%	60.9%	27.3%	96.1%	74.6%	39.7%	.000
TOTAL	37.5%	56.7%	42.9%	95.5%	74.3%	21.5%	.000
<b>Last 30 days</b>							
Nightlife	14.3%	0%	*(0%)	48.1%	28.5%	4.7%	.000
Online	19.2%	21.8%	9.1%	63.2%	39.1%	17.5%	.000
TOTAL	18.4%	19.9%	7.1%	60.8%	35.5%	8.2%	.000

Fonte: Henriques, et al. (2024)

\*excluded from comparative analysis because of small group size (< 10 respondents)

Again, within this category of NPS many users failed to name the specific brand or chemical substance they had used in the last 12 months (27-

54% of nightlife in nightlife and 40-63% of online users; percentages not included in the table).

Nevertheless, the most branded stimulant mentioned was ‘Mephedrone’ among online users

(16) and ‘Coconino’ among nightlife users (14); the most mentioned stimulant/empathogenic/nootropic substance obtained pure was 4-FA for both online users (622) and nightlife users (123).

Regarding the psychedelic NPS category, lifetime, last 12 months and frequent use were higher for nightlife users than for online users. Though relatively low in both groups, frequent

psychedelic NPS use is three times more common among nightlife users (1.3%) than online users (0.4%). Portuguese nightlife users reported the highest rates of psychedelic NPS use, while Hungarian nightlife users did not report any use. See Table 6.

**Table 6** - Use of psychedelic NPS among recent NPS users in nightlife settings and online communities – per country

	Germany	Hungary	Ireland	Netherlands	Poland	Portugal	p
<b>Life time</b>							
Nightlife	82.7%	0%	*(33.3%)	48.1%	20.3%	93.5%	.000
Online	74.7%	37.2%	72.7%	38.4%	54.1%	71.4%	.000
TOTAL	75.9%	33.9%	64.3%	39.9%	42.7%	87.6%	.000
<b>Last 12 months</b>							
Nightlife	69.4%	0%	*(0%)	40.2%	9.9%	90.0%	.000
Online	64.9%	24.4%	36.4%	32.5%	37.0%	55.6%	.000
TOTAL	65.6%	22.2%	28.6%	33.7%	27.8%	80.7%	.000
<b>Last 30 days</b>							
Nightlife	28.6%	0%	*(0%)	11.6%	3.5%	43.5%	.000
Online	32.5%	5.8%	36.4%	12.0%	13.0%	20.6%	.000
TOTAL	31.9%	5.3%	28.6%	11.9%	9.8%	37.3%	.000

Fonte: Henriques, et al. (2024)

\*excluded from comparative analysis because of small group size (< 10 respondents)

Psychedelic NPS users were more often able to name specific substances compared to the former two categories of NPS (15% of nightlife users and 18% of online users were not; percentages not included in the table). The most mentioned psychedelic NPS used in both groups was 2C-B (351 online; 191 nightlife).

Last 30 days' use of dissociative NPS was higher among nightlife users (5.6%) than online users (3.2%), but proportions of frequent users were similar (nightlife 0.2%; online 0.5%). Use of this category of NPS was reported most among Irish online users. Like psychedelic NPS, Hungarian nightlife users did not report any use of dissociative NPS. See Table 7.

**Table 7** - Use of dissociative NPS among recent NPS users in nightlife settings and online communities – per country

	Germany	Hungary	Ireland	Netherlands	Poland	Portugal	p
<b>Life time</b>							
Nightlife	51.0%	0%	*(0%)	16.9%	9.9%	24.1%	.000
Online	29.3%	33.3%	36.4%	9.0%	39.9%	15.9%	.000
TOTAL	32.7%	30.4%	28.6%	10.3%	29.8%	21.9%	.000
<b>Last 12 months</b>							
Nightlife	34.7%	0%	*(0%)	13.2%	2.9%	17.1%	.000
Online	20.3%	13.5%	18.2%	6.8%	23.1%	11.1%	.000



TOTAL	22.5%	12.3%	14.3%	7.8%	16.3%	15.5%	.000
<b>Last 30 days</b>							
Nightlife	5.1%	0%	*(0%)	3.2%	1.2%	4.7%	.266
Online	9.4%	4.5%	9.1%	2.7%	9.2%	1.6%	.000
TOTAL	8.8%	4.1%	7.1%	2.8%	6.5%	3.9%	.000

Fonte: Henriques, et al. (2024)

\*excluded from comparative analysis because of small group size (< 10 respondents)

The most mentioned dissociative NPS used for both groups was MXE (107 online and 85 nightlife) (21% of nightlife users and 33% of online users were unable to name a specific substance; percentages not included in the table).

### Concurrent use of NPS

Online users had more often used more than one category of NPS in the previous 12 months than nightlife users (43.3% versus 51.1%,  $p = .000$ ). In both samples, the most prevalent combinations consisted of or included stimulants and psychedelics; among nightlife users, 19.6% had used both categories of NPS in the last 12 months; and among online users, 27.9% had used both categories. However, the previous 12 months' use of stimulants and psychedelics was negatively

correlated in both samples (nightlife:  $-.332$ ; online:  $-.111$ ). In other words, among recent users of stimulants, there were more who did not also use psychedelics in the last 12 months than there were those who did. The strongest positive correlation in both samples was between the previous 12 months of use of psychedelics and dissociative (nightlife:  $.228$ ; online:  $.320$ ).

In the prevalence of this combination of NPS categories, nightlife and online users showed no difference. Notably, the use dissociative NPS was positively correlated with the use of cannabinoid and stimulant NPS among nightlife users, but negatively correlated among online users, indicating that online users are more likely to combine various types of NPS while nightlife users are more preferential towards a certain category of NPS. See Table 8.

**Table 8** - Prevalence and correlations of recent use of combinations of NPS categories among recent NPS users in nightlife settings and online communities.

	Prevalence			Correlation (p)	
	Nightlife N = 647	Online N = 2,110	p	Nightlife N = 647	Online N = 2,110
Cannabinoid + stimulant	16.8%	15.5%	.394	-.057 (.145)	-.309 (.000)
Cannabinoid + psychedelic	8.8%	10.0%	.371	-.282 (.000)	-.108 (.000)
Cannabinoid + dissociative	2.6%	5.4%	.004	-.118 (.003)	.087 (.000)
Stimulant + psychedelic	19.6%	27.9%	.000	-.332 (.000)	-.111 (.000)
Stimulant + dissociative	6.2%	11.1%	.000	-.119 (.002)	.083 (.000)
Psychedelic + dissociative	11.0%	11.0%	.961	.228 (.000)	.320 (.000)

Fonte: Henriques, et al. (2024)

### Conventional drug use

A large majority of both groups declared to have used cannabis in their lifetime (97.3%

nightlife and 96.1% online). The respondents also reported the use of amphetamines (82.0% nightlife and 73.3% online), ecstasy/MDMA (89.7% nightlife and 81.7% online), cocaine (71.6% nightlife and 51.6% online), magic mushrooms (57.9% nightlife and 44.6% online), LSD (57.9% nightlife and 35.6% online) and ketamine (44.7% nightlife and 29.2% online). Substances such as crack cocaine and heroin were less reported: 13.9% and 10.8% in nightlife users and 6.4% and 13.7% in online users, respectively (Benschop et al., 2017).

**Concurrent use of NPS and conventional drugs**

Indications as to whether NPS is used as an alternative to, or in addition to controlled drugs can be derived from concurrent or discontinued use of conventional drugs whose effects are mimicked by the category of NPS used.

Table 9 presents the use of cannabis among recent users of cannabinoid NPS (herbal blends and/or synthetic cannabinoids obtained pure) within the samples. Most of those who

reported use of cannabinoid NPS in the last 12 months, also used cannabis within the same time frame, indicating that the use of cannabinoid NPS was supplementary rather than substitutional.

**Table 9** - Use of conventional drugs among recent users of NPS – mimicking the effects of the conventional drugs in question – in nightlife settings and online communities.

	Nightlife	Online	p
<b>Use of conventional cannabis among recent cannabinoid NPS users</b>			
N of cannabinoid NPS users	205	630	
recent (last 12 months use)	93.1%	92.8%	.176
former (lifetime, but no last 12 months use)	4.9%	6.6%	
never (no lifetime use)	2.0%	0.6%	
<b>Use of conventional stimulants (amphetamines, ecstasy and/or cocaine) among recent stimulant NPS users</b>			
N of stimulant NPS users	371	1,537	
recent (last 12 months use)	84.1%	83.7%	.788
former (lifetime, but no last 12 months use)	13.7%	13.5%	
never (no lifetime use)	2.2%	2.8%	
<b>Use of conventional psychedelics (magic mushrooms and/or lsd) among recent psychedelic NPS users</b>			
N of psychedelic NPS users	314	879	
recent (last 12 months use)	58.3%	46.5%	.000
former (lifetime, but no last 12 months use)	30.9%	26.1%	
never (no lifetime use)	10.8%	27.4%	
<b>Use of ketamin among recent dissociative NPS users</b>			
N of dissociative NPS users	93	286	
recent (last 12 months use)	70.7%	42.7%	.000
former (lifetime, but no last 12 months use)	20.7%	12.2%	

never (no lifetime use)

8.7%

45.1%

Fonte: Henriques, et al. (2024)

Likewise, data suggests that stimulant NPS (branded stimulants and/or stimulants/empathogenic /nootropics obtained pure) are used in addition to conventional illicit stimulants (amphetamines, ecstasy, and/or cocaine). A majority of previous 12-month users of this category of NPS in both samples also used conventional stimulants.

While most recent users of psychedelic NPS in the nightlife sample and a large part of the psychedelic NPS users in the online community sample concurrently also used magic mushrooms and/or LSD and thus supplemented conventional psychedelic substances with NPS, a sizeable part seemed to use psychedelic NPS as a substitute rather than a supplement (nightlife: 30.9%; online community: 26.1%). They formerly used conventional psychedelics but used psychedelic NPS in the last year instead.

Within the nightlife sample, use of dissociative NPS appears mostly supplementary to the use of the conventional illicit dissociative substance ketamine. Within the online sample, however, dissociative NPS appear to be used more as an alternative to ketamine, but not in the sense that users have substituted one substance for the other. Almost half of the recent dissociative NPS users in the online community sample have had no prior experience with ketamine.

## DISCUSSION

This paper presents an exercise at profiling recreational NPS users in nightlife and online communities based on a survey undertaken by researchers from six EU-countries: Germany, Hungary, Ireland, the Netherlands, Poland, and Portugal. Differences between countries point to the existence of specific characteristics and to limitations of the study. Different drug policies and diverse geographical location between the

participant countries are the main characteristics that impact on the results, namely in the presence/absence of some substances, or in the legal concept of NPS (such as Salvia being illegal in Portugal since 2013 - it is not a recent substance though and it is an NPS in other participant countries: Germany, the Netherlands). Limitations of the data focus on the varied composition of country samples.

Comparing users in nightlife settings and online users highlighted substantive trends in NPS use across countries and user groups. Of note and similar to other research (Measham et al., 2011; Van Hout and Hearne, 2016) was that the concept of NPS is not always clear for the users as most of them experienced difficulties in identifying the category and/or the active compounds they had used.

New opportunities in the drug market were driven by technological developments on the internet and social media. The NPS market had moved from physical shops (such as 'smartshops') to the virtual ones, both on surface web (more accessible) and deep-web (more restricted, can be seen as the web's 'underworld' – i.e. the part of the internet that can't be accessed via conventional engines, but only from another particular type of website, using 'hidden servers' involving high levels of information technology skills) (Orsolini et al., 2015).

Ultimately, there is a need to carry out further research on emerging trends in this rapidly evolving area. In particular, by pursuing research focusing on new challenges related to treatment and harm reduction services for NPS users (Gerostamoulos and Di Rago, 2023) or on the evolution of the legal framework for these Novel Substances (Amsterdam et al., 2023).

Additional and more precise understanding in this field taking advantage of the technological developments on the internet and social media may facilitate the drafting and implementation of proper

evidence-based prevention campaigns (EMCDDA, 2024).

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