Individual, social and environmental factors associated with different patterns of stimulant use: a cross-sectional study from five European countries.

Short title: Factors associated with different patterns of stimulant use

Number of Tables: 5

Number of Figures: 0

Word count: 4102

Abstract

Introduction

Amphetamine-type stimulants (ATS) are the second most commonly consumed class of illicit drugs globally, but there is limited understanding of the precise factors associated with problematic vs. controlled ATS consumption. This exploratory study aimed to identify which individual, social and environmental factors are associated with different patterns of ATS use over time.

Methods

Cross-sectional survey conducted in Germany, England, Netherlands, Poland, and the Czech Republic via face-to-face computer assisted personal interviews to collect data on different user groups. 1458 adults (18+) reporting: exposure to but no ATS use (n=339); former rare/moderate ATS use (n=242); current rare/moderate ATS use (n=273); former frequent/dependent ATS use (n=201); current frequent/dependent ATS use (n=403). Extent of ATS/other substance use was assessed by number of consumption days (lifetime, past year, past month) and Severity of Dependence Scale. To identify factors associated with group membership, data were also collected on previous injecting drug use (IDU), and consumption setting/rules. Psychological distress was measured using the Brief-symptom-Inventory, with additional data collected on self-reported adverse life events and physical/mental health.

Results

Currently using frequent/dependent ATS users experienced more frequent unstable living conditions (27.5%) and psychological distress (59.8%) compared to other groups. A multinomial logistic regression showed that currently abstinent rare/moderate users were more likely to abstain from methamphetamine use (OR=2.48 [CI=1.32-4.68]) and from IDU (OR=6.33 [CI=2.21-18.14]), to avoid ATS use during working hours (OR=6.67 [CI=3.85-11.11]), and not to use ATS for coping reasons (OR=4.55 [CI=2.50-6.67]) compared to the reference group of currently using frequent/dependent users.

Conclusions
People who use ATS frequently and/or at dependent levels are more likely to have experienced social and economic adversity compared to infrequent ATS users. On the other hand, there is a substantial share of users, which show a controlled use pattern and are able to integrate ATS use in their life without severe consequences.

Keywords: Amphetamine-type stimulants, drug use career, quantitative study, risk and protective factor, logistic regression

1. Introduction

Amphetamine-type stimulants (ATS) such as amphetamine ("speed", "pep"), 3,4-Methylenedioxymethamphetamine (MDMA, "Ecstasy") and methamphetamine ("crystal meth") are the second most commonly used class of illicit drugs globally, after cannabis [1]. Evidence from the United Nations Office on Drugs and Crime suggests that ATS production and consumption rates have risen in recent years [2]. Whilst the highest proportion of ATS use takes place in North America and Oceania, wastewater analysis carried out in 140 European cities also shows an upward trend in amphetamine consumption in this region since 2011 [3, 4]. According to European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), 12.3 million (3.7%) of European adults report lifetime amphetamine use, with 13.6 million (4.1%) reporting lifetime MDMA use [5].

ATS consumption, particularly heavy use, is associated with a range of adverse consequences such as psychotic symptoms, cardiovascular disease, blood borne viral infections, and sexually transmitted infections [6]. Around 260,000 adults are affected by amphetamine use disorder [7] in Europe, including (psychological) dependency [8], with over 20,000 people entering specialized amphetamine treatment in 2018 alone [5]. However, there is limited understanding of how best to prevent and treat harmful ATS use [9], and a lack of empirical evidence on which factors influence different patterns of ATS consumption over time [10].

A recent systematic review synthesized existing qualitative data on factors shaping the ATS use at critical time points [10]. Most evidence related to the initiation of ATS use, and suggested that initial consumption was influenced by predominantly individual and social level factors, including a desire to boost performance at work and in sexual relationships, to promote a sense of social 'belonging', and help manage stress and mental ill-health [11-17].

Fewer studies explored factors contributing to increased and/or decreased consumption. Increased ATS use often resulted from users' desire for heightened effects, alongside experiencing a critical life event such as loss of a relationship and lack of social support [18-20], or environmental and ecological stressors such as unstable housing and unemployment [15, 21]. Reasons for decreased use mostly focused on increased awareness of the negative impacts of ATS on users' physical and mental health [14, 19, 22]. Sustained abstinence was associated with having access to appropriate non-using social support networks [23-25] and gaining licit employment [23, 26]. However, the review highlighted a need for further research to identify which factors support reduced ATS consumption or abstinence over the longer term.

The European ATTUNE study (Understanding pathways to stimulant use: a mixed-methods examination of the individual, social and cultural factors shaping illicit stimulant use across Europe) aimed to explore and identify different pathways of ATS use over the life course. In doing so, the study was informed by the life course perspective of drug use [27]. This conceptual framework suggests that the critical phases and transition periods of drug use over the life course, such as initiation, continuation, increase/relapse, and desistance/abstinence, are influenced by individual differences, social dynamics, and environmental factors.

Our previous findings from qualitative interviews identified key turning points for initiation that were linked to pleasure, curiosity, boredom, and declining mental health. Increased use was linked to positive effects experienced at initiation and multiple life-stressors, leading to more intense use. Decreased use was prompted by pivotal events and sustained through continued wellbeing, day-to-day structure, and non-using social networks [28].

In this paper, we present findings from the final phase of the ATTUNE study: a cross-sectional survey of European ATS users and non-users and explore the main research question: Which factors are associated with different (long-term) consumption patterns of ATS use? Subordinate questions that will be further addressed are: How do the members of various consumption pattern groups differ in terms of social integration, living situation, and health and biographical burdens? Are there associations between certain characteristics of ATS use and membership of a particular consumption pattern group?

2. Methods

2.1. Study design

The ATTUNE study was an exploratory, sequential mixed-methods study, theoretically based on the biopsychosocial model of substance use [29] and the life course perspective on drug use [27]. The full study design and study procedures have been described in detail in a published study protocol [30]. In summary, the study comprised three main components: a systematic review and synthesis of qualitative literature [10]; semi-structured qualitative interviews with ATS users and non-users; and a cross-sectional survey questionnaire. Findings presented here are based on the quantitative survey questionnaire, which was conducted in Germany, the Czech Republic, the United Kingdom, the Netherlands and Poland between June 2018 and October 2019.

2.2. Study population

Participants were recruited by a range of means. Service providers from statutory and non-statutory health and social care organizations, and various local third sector groups, acted as gatekeepers, signposting potentially eligible participants to study information, including contact details. Snowballing strategies were used amongst interested individuals to access other participants. Additionally, the study was advertised through flyers distributed in local community areas, drug help facilities, universities, nightlife areas, via social media adverts, and in internet forums. Using non-probability sampling is an accepted method to access 'hard-to-reach' as well as minority populations [31, 32].

Three different groups of adults were targeted for recruitment: 1) current users (defined as having used ATS at least once within the last three months); 2) former users (having previously used ATS but within the previous year); and 3) non-users (never having used ATS despite access and opportunity to do so).

2.3. Inclusion criteria and procedure

In order to be eligible for participation, following inclusion criteria had to be fulfilled: 1) age 18+; 2) being able to take part in the interview (not psychotic, no severe cognitive impairments or language barriers according to interviewer); 3) lifetime use of any ATS (or exposition to ATS in case of the group of non-users); 4) first ATS use at least five years before the survey questionnaire (to ensure participants having had the opportunity to experience changes in their ATS consumption pattern).

Computer assisted personal interviews were administered face-to-face by researchers in the country's native language. All individuals were made familiar with data protection rules and voluntariness of participation. They needed to provide written informed consent in advance. Potential participants were allocated to the appropriate user group (current, former, or non- ATS user) via an electronic screening tool. Surveys took around 60 minutes to complete depending on participant (i.e. complexity of substance use profile). Participants were given compensation (around 20€) as a thank you for their time.

2.4. Measures

2.4.1. Sociodemographics

Sociodemographic data were collected with standard questions on gender, age and ethnicity. The highest completed educational status was assessed using the International Standard Classification of Education [33]. Additional questions included monthly household income, employment status, relationship status, social integration

index [34], and general satisfaction with life [35], (1-7; dichotomized by median split at 5).

2.4.2. Substance use

Standardized screening tools and questionnaires were used to assess current and prior substance use. Three questions from the Alcohol Use Disorders Identification Test-Consumption version (AUDIT-C) [36] were used to assess the level of risk due to alcohol consumption. A score of ≥5 suggesting 'hazardous' or 'harmful' alcohol consumption [37].

Problematic ATS use was assessed using the Severity of Dependence Scale (SDS) [38] in current and former ATS users (scores ≥4 indicates problematic use [39]). We also collected data about injecting drug use and treatment experiences, the usual setting of ATS use, use motives and (self-imposed) consumption rules. The extent of lifetime psychoactive substances was measured by capturing data on: the total numbers of days of use over the lifetime (days in categories: 0d, 1d, 2-5d, 6-10d, 11-20d, 21-50d, 51-100d, 101-500d, 501-1000d, >1000d); in the past year; in the past month and age at onset.

2.4.3. Biographical, health-related and psychological burden

Additional questions were based on the key themes emerging from prior qualitative phases of the ATTUNE study [28, 40], and primarily related to self-reported factors contributing to participants´ biographical burden (e.g. number of stressful life events experienced (e.g. physical/sexual violence, homelessness), imprisonment, or the extent of love and care experienced in childhood (range 1-10)).

Psychological distress of participants was assessed using the Global Severity Index (GSI, range 30 – 80), a subscale of the short version of the Brief-symptom-inventory (BSI-18) [41], dichotomized by median split at 57. Self-reported diagnoses of selected mental disorders were collected, and participants rated their physical and mental health on a scale of one ('very bad') to ten ('excellent'). Finally the extent of sensation seeking was assessed using the Brief Sensation Seeking Scale (1-5) [42], dichotomized via median at 3.5.

2.5. Analyses

Prior to analyses, participants were assigned to a specific type of ATS consumption career, which constituted the outcome variable. Career type was defined as participants´ average lifetime consumption frequency in relation to the duration of ATS career (timespan from first use to current last use).

Participants´ ATS use status in the 12 months immediately prior to interview was considered as the current endpoint of their ATS use career. Lifetime dependent ATS users were identified using the SDS [38], with scores based on the 12-month period during which participants reported their most intensive level of consumption.

First, a five-fold categorical variable representing these distinct ATS career types was constructed: 1. “never used” (0 consumption days), 2. “rarely used” (1-5 consumption days per year (d/y) during ATS consumption career), 3. “moderately used” (6-20 d/y), 4. “frequently used” (21-365 d/y), and 5. “SDS positive” (SDS-score ≥ 4). This variable forms the basis for the construction of the final outcome variable. Since we wanted to explore conditions and accompanying factors for ATS pathways on the one hand, and on the other hand we were interested in the (temporary, i.e. at the time of the survey) outcome of these pathways, the outcome variable was constructed as follows: Preliminary analyses with the five-fold baseline variable showed that the rarely and moderately groups are quite similar and represent rather controlled consumption. The frequently and SDS groups are also similar (a majority of frequent users score positive on the SDS) and tend to represent more risky or problematic consumption careers. Similarities were found among others with regard to life circumstances, biographical burden, social integration, use of ATS and other substances, and characteristics of ATS use. For this reason, the respective career types were merged and supplemented by the information on whether current consumption is still taking place or whether abstinence is present at the time of the interview. As a result, the outcome variable consists of the following career groups: never used (NU); rarely or moderately used – currently abstinent (R/M-A); rarely or moderately used – currently using (R/M-U); frequently used or SDS positive - currently abstinent (F/SDS-A); and frequently used or SDS positive - currently using (F/SDS-U).

We applied a stepwise multinomial logistic regression to identify factors that appear to increase (or reduce) the likelihood of developing a problematic ATS use pattern in terms of frequent or dependent consumption that still continues (F/SDS-U). Potential relevant covariates for the logistic regression models were drawn from theoretical considerations and the results of the literature review.

Statistical significant differences in the descriptive analyses were tested using the Wald X^2-test for categorial variables and employing ANOVAs in case of metric continuous variables. Results were regarded as significant if p-values were < 0.05.

All statistical analyses were conducted using SPSS 22 software [43].

3. Results

3.1. Sample characteristics

After removal of incomplete (N=226), duplicate (N=5; caused by a technical glitch in the database of the CAPI interviews and detected through duplicate internal database IDs), or invalid interviews (N=256; inclusion criteria were not met, but this became apparent not until after the interview; implausible duration; comments by the interviewers), a dataset containing 1458 cases formed the basis for the analyses. Table 1 shows the socio-demographic characteristics of the study participants in total and by ATS career group. The F/SDS-U group was smallest in the UK, while the F/SDS-A group makes up the largest proportion here. Rare or moderate users (abstinent as well as still using), on the other hand, were most frequently found in the German sample and least frequently in the Czech Republic and UK.

Preliminary country-specific analyses of key socioeconomic variables (see table 2) revealed that particularly the samples from Germany and the Netherlands (and with some restrictions also Poland) tend to include well-educated and socially integrated consumers, while the samples from the other countries seem to have included more participants living under difficult conditions. Due to this assumed sampling bias, country-specific analyses were mostly omitted.

The mean age of participants across the entire sample was 30.8 (SD 9.3) years. Although most participants reported living in stable housing conditions, users with frequent or dependent use were less likely to do so than other groups, especially, than non-users. Unemployment and self-reported low level social integration were more common in groups with more intensive ATS use. General satisfaction with life was lowest in the F/SDS-U group.

Please insert table 1 and table 2 here

3.2. ATS use

Almost 90% of ATS users reported lifetime (LT) use of amphetamine as well as MDMA, followed by NPS (40.0%), see table 3. LT use of MDMA was more frequently in the R/M-U group, LT use of methamphetamine or NPS was higher in the F/SDS-U group.

The highest proportion of past year use of methamphetamine was found in the F/SDS-U group (42.9%). Current ATS use (within the last 30 days) was more common in the F/SDS-U group than in the R/M-U group, regardless of the specific type of ATS.

Amongst users, mean age of first use was highest in the R/M-A group (19.0 years; SD: 5.0) and lowest in the F/SDS-U group (17.9; SD: 4.4); whilst the length of ATS use

career was shortest in the first mentioned group (7.0; SD: 6.6) and longest in the last-mentioned one (11.9; SD: 7.4).

Please insert table 3 here

3.3. Other substance use

ATS non-users reported the use of mainly cannabis (96.7%), see table 4. ATS users who were currently abstinent (R/M-A and F/SDS-A) showed higher rates of previous year cannabis use as well as recent cannabis use in the past 30 days compared to other groups. LY and LM use of cocaine was significantly more common in ATS abstinent groups compared to the current ATS users.

About three quarters of the respondents in the two current ATS user groups reported problematic alcohol consumption in the last year. Injecting drug use (IDU) was indicated by nearly one tenth of the total sample with higher rates in the F/SDS-U and F/SDS-A group.

Please insert table 4 here

3.4. Self-perceived ATS consumption

More than half of participants in frequent ATS user groups indicated ATS consumption during working hours. Almost all users in the F/SDS groups mentioned coping related motives for ATS use. 90.7% of the total sample reported following self-imposed consumption rules. Significantly more participants categorized with infrequent or moderate ATS use self-rated their consumption as “never out of control” compared to the groups with frequent or (at some point) dependent ATS use.

3.5. Biographical burden and mental health

On average, people in both F/SDS groups reported experiencing significantly more different critical life events than participants in other groups. Participants from the NU group as well as users from the R/M groups reported having experienced a significantly higher extent of self-perceived parental love and care in childhood. Imprisonment was reported in significantly higher proportions in the F/SDS groups.

Higher rates of self-reported mental health diagnoses (e.g. ADHD, major depression) as well as current psychological distress were associated more often with frequent or dependent ATS use compared to other groups. Sensation seeking was more prevalent in the groups still using ATS (58%).

3.6. Multinomial Logistic Regression Results

Table 5 shows the result of the logistic regression including 16 predictor variables with adjusted odds ratios (OR), p-values and 95% confidence intervals (CI). A highly significant (χ^2=731.33; df=57; p<0.001) likelihood-ratio-test shows the goodness of fit of the total model, indicating a well-defined separation of the career groups by the predictor variables.

Please insert table 5 here

Our results indicate a higher probability for all participants from countries other than UK of belonging to the problematic reference group F/SDS-U. The younger age group is less likely to be found in the two currently abstinent groups (R/M-A: OR=0.40 [CI=.26-.62]; F/SDS-A: OR=0.41 [CI=.27-.63]). Further, currently abstinent ATS users show a more than twofold higher probability of living under stable conditions (R/M-A: OR=2.20 [CI= 1.03-4.68]; F/SDS-A: OR=2.29 [CI=.1.28-4.10]). Users who achieved a high educational status are more likely to be found in groups who developed a controlled ATS use pattern (R/M-A: OR=0.63 [CI=.40-.98]; R/M-U: OR=0.57 [CI=.39-.85]). The same applies to ATS users who never tried cocaine (R/M-A: OR=5.29 [CI=3.19-8.77]; R/M-U: OR=2.06 [CI=1.24-3.41]) or non-prescribed tranquilizers (R/M-A: OR=1.90 [CI=1.20-3.01]; R/M-U: OR=1.53 [CI=1.02-2.30]). Having never used methamphetamine enhances the probability of being in the R/M-A group (OR=2.48 [CI=1.32-4.65]) compared to the reference group. Problematic use of alcohol as well as IDU are associated with those users who continue to use ATS. User groups with frequent or dependent ATS use are more than twice as likely to have utilized drug treatment services. Participants who do not use ATS during working hours, or take ATS for coping reasons, were more likely to report infrequent or moderate consumption over their lifetime (R/M-A: OR=6.67 [CI=3.85-11.11]; R/M-U: OR=5.26 [CI=3.33-6.25] and R/M-A: OR=4.55 [2.50-6.67]; R/M-U: OR=3.03 [1.64-5.56]). A low urge for sensation seeking enhances the probability of being in the abstinent F/SDS group compared to the still using F/SDS group by nearly 50%.

4. Discussion

To our knowledge, this study represents the largest European study to date on ATS consumption careers and factors associated with different consumption patterns. Our findings show that people who use ATS frequently and/or at dependent levels are more likely to have experienced social and economic adversity, such as precarious housing, unemployment, low income, or low social integration, compared to infrequent or non-ATS users. At the same time, frequent and dependent level ATS users were more likely to report polysubstance use [44], which is also likely to

negatively impact these areas. Additionally, we found that frequent and dependent ATS users were more likely than other types of users to have first consumed ATS at a younger age, report a longer drug use career, and the use of methamphetamine. Frequent or dependent ATS users also reported higher levels of biographical burden, compared to other groups, and were more likely to be struggling with mental ill-health.

We found that younger age of first consumption was associated with ongoing ATS use but not the frequency of use, a trend potentially explained by the "maturing out" phenomenon described elsewhere [25, 45]. We also found that factors indicating social deprivation in participants, such as a low educational level, were more often reported by participants with a frequent or dependent ATS use career. Other indicators (low income, lower social integration) only became significant in the descriptive analyses. These associations reflect other evidence highlighting socio-economic deprivation as a key risk factor for problematic substance use [46-49]. Additionally, prior research demonstrates the bi-directional relationship between low socio-economic status and drug use, whereby deprivation can increase the risk of uncontrolled drug use, and in turn heavy drug use can contribute to worsening an individual's socio-economic status [50].

Specific ATS use practices, and consumption of other substances, were also identified as factors contributing to different patterns of ATS consumption. In particular, never taking methamphetamine, cocaine or tranquilizers seemed to act as a protective factor for frequent or dependent ATS use, as well as facilitating periods or continued abstinence. Avoiding injecting drug use was a further protective factor; this administration route leads to a very rapid uptake of psychotropic agents and has been shown to substantially enhance the risk of uncontrolled drug use and dependence in previous research [51, 52]. If substance use got out of control, one way to handle this is seeking for professional drug treatment. Compared to F/SDS-groups, we found significantly smaller shares of treatment utilization in both R/M- groups as well as ORs that indicate a more than twofold higher probability of not having accessed treatment in life. There could be two explanations for this: first, this suggests itself, that comparatively controlled users simply have no need for treatment. On the other hand, this could also be an indication that treatment was not successful (if it aimed for abstinence), as almost half of the frequent/SDS users are currently still using. Participants who were currently abstinent from ATS use were less likely to report having developed alcohol use problems, potentially suggesting heightened capacity for self-control compared to problematic user groups.

The ability to limit substance use to times when it is less likely to interfere with important daily tasks (such as paid work) is another indicator of controlled

consumption, and again, was more often associated with moderate ATS use careers. If ATS is used primarily in a recreational setting for reasons of enjoyment and not in the purpose of self-medication to cope with mental problems, this also seems to support more controlled patterns of use. Experiencing mental ill-health was associated with a greater risk of an ongoing frequent or dependent ATS use career, which is a well described phenomenon in addiction research (e.g. [53-55]). Here, two interpretations are conceivable: Either controlled consumption is a direct consequence of these rules or these individuals are in principle better able to set appropriate priorities in life and can then also follow the rules. Many of the other, multiply burdened persons have also imposed rules on themselves, which, however, have not led to controlled consumption. Finally, we found a significant association between low sensation seeking and (temporary) abstinence in the frequent/dependent using groups. In line with previous studies, this suggests that a reduced urge for sensation-seeking makes it easier for users to reach phases of abstinence [19].

The findings represent a wide range of people using ATS, their biographical background, their burdens as well as their different ways of handling these substances. In particular, the multivariate associations shown can be understood as risk and protective factors contributing to the development of problematic and/or dependent versus controlled, moderate ATS use careers.

4.1. Limitations

A key challenge of this research was how to trace ATS consumption patterns over time using a cross-sectional study design. Our solution was to construct a complex outcome variable combining information on frequency of use, duration of ATS use career, and current use status. Our decision to combine the two groups with more controlled use and the two with potentially problematic use risks blurring existing differences. However, since the SDS does not provide a clinical diagnosis and the groups were similar both in terms of SDS and other key variables, this approach was chosen. In addition, several limitations should be kept in mind when interpreting the results. First, it is possible that some participants experienced periods of abstinence between their first and last current reported consumption of ATS. Likewise, level of consumption is likely to have varied over time. In our study, however, frequency of use was represented by a mean value covering an individual's entire drug use career. Second, our survey participants were a highly heterogeneous group, with differences found between as well as within the five countries involved in data collection. On the one hand, this echoes previous evidence highlighting the heterogeneity of ATS users [10]. However, it may also mean that the different recruitment strategies and fieldwork sites in participating countries have affected our sample, and might subsequently bias country specific results. This makes it difficult to determine if statistically significant

differences are the result of country specific differences in ATS use behavior, or reflect the composition of the sample recruited in each country (i.e. from socially integrated recreational users to marginalized dependent users) that were reached. Due to these concerns, detailed statistical comparisons between countries were not carried out.

4.2. Conclusion

Our results reveal that obviously a large share of ATS users are inconspicuous, "normal" people who use ATS from time to time whether for functional reasons - e.g. to be safer in social situations-, or as an expression of a hedonistic component of a self-determined life. These users represent also the main user type when it comes to other substances [56], but they often remain invisible in research as well as in everyday live. Most research about substance use focusses on abuse and its negative consequences for individuals as well as society (e.g. as economic costs for the health care system). Controlled users usually don´t appear in drug service facilities nor as disintegrated homeless, but given our data, they form a substantial group, which is rather rarely mentioned in research. On the other hand, it is undeniably important to provide the best possible services to people who need help related to their problematic substance use, taking into account their heterogeneity, their varied and complex biographical experiences, and especially their mental health needs.

Acknowledgements

[withheld for review]

Statement of Ethics

All participants provided written informed consent prior to data collection commencing. In GER, UK, PL, CZ, the study has been reviewed and approved by the respective responsible ethics committee. In NL, an ethics vote was not obtained because the criteria for ethical approval are well known to the Dutch team and an ethics vote was never required for many very similar research projects in previous years. The respective names of all ethics committees as well as reference numbers are as follows: [committee name withheld for review], approval number [withheld for review].

Conflict of Interest Statement

Author 2 was funded by a NIHR School for Primary Care Research Fellowship between October 2015 and September 2017 and is currently funded by a NIHR Advanced Fellowship. Author 9 received a speaker's honoraria and travelling expenses from Mundipharma GmbH. All other authors have no conflicts of interest to declare.

Funding Sources

ATTUNE was a collaborative project supported by [funder name withheld for review]. This paper is based on independent research commissioned and funded in England by [funder name withheld for review], grant number [number withheld for review]; in Germany by [funder name withheld for review], grant number [number withheld for review]; in Czech Republic by [funder name withheld for review], grant number [number withheld for review]; in Poland by [funder name withheld for review], grant number [number withheld for review] and in the Netherlands by [funder name withheld for review], grant number [number withheld for review]. The views expressed in this article are those of the authors and not necessarily those of the national funding agencies or [funder name withheld for review].

Author Contributions

Author 1 analyzed the dataset, drafted and wrote the manuscript. Author 1, 2, 3, 4, 5, 6, 7, 8, and 9 contributed substantially to the design and conduction of the work and revised the work critically. In addition to crucial input as regards content, author 2 provided significant help to the language of the article. Author 1, 2, 3, 4, 5, 6, 7, 8, and 9 read and approved the final manuscript and agreed to be accountable for all aspects of the work.

Data Availability Statement

The datasets generated and/or analyzed during the current study are included in this article. Further enquiries can be directed to the corresponding author on reasonable request.

References

1. European Monitoring Centre for Drugs and Drug Addiction. European Drug Report 2019. Luxembourg: Publications Office of the European Union; 2019.
2. United Nations Office on Drugs and Crime. World Drug Report 2018. Vienna: UNODC; 2018.
3. United Nations Office on Drugs and Crime. World Drug Report 2020. Booklet 2: Drug use and health consequences. Vienna: UNODC; 2020.
4. Farrell M, Martin NK, Stockings E, Bórquez A, Cepeda JA, Degenhardt L, et al. Responding to global stimulant use: challenges and opportunities. The Lancet. 2019;394(10209):1652-67.
5. EMCDDA. European Monitoring Centre for Drugs and Drug Addiction. European Drug Report 2019: Trends and Developments. Luxembourg: European Monitoring Centre for Drugs and Drug Addiction; 2019.
6. Degenhardt L, Hall W. Extent of illicit drug use and dependence, and their contribution to the global burden of disease. The Lancet. 2012;379(9810):55-70.
7. Degenhardt L, Charlson F, Ferrari A, Santomauro D, Erskine H, Mantilla-Herrara A, et al. The global burden of disease attributable to alcohol and drug use in 195 countries and territories, 1990-2013;2016: a systematic analysis for the Global Burden of Disease Study 2016. The Lancet Psychiatry. 2018;5(12):987-1012.
8. Best D, Gross S, Vingoe L, Witton J, Strang J. Dangerousness of Drugs: A Guide to the Risks and Harms Associated with Substance Use 2003.
9. Minozzi S, Saulle R, De Crescenzo F, Amato L. Psychosocial interventions for psychostimulant misuse. Cochrane Database Syst Rev. 2016(9).
10. O'Donnell A, Addison M, Spencer L, Zurhold H, Rosenkranz M, McGovern R, et al. Which individual, social and environmental influences shape key phases in the amphetamine type stimulant use trajectory? A systematic narrative review and thematic synthesis of the qualitative literature. Addiction. 2018.
11. Smirnov A, Najman JM, Hayatbakhsh R, Wells H, Legosz M, Kemp R. Young adults' recreational social environment as a predictor of ecstasy use initiation: findings of a population-based prospective study. Addiction. 2013;108(10):1809-17.
12. Kerley KR, Copes H, Griffin OH. Middle-Class Motives for Non-Medical Prescription Stimulant Use among College Students. Deviant Behavior. 2015;36(7):589-603.
13. Sheridan J, Butler R, Wheeler A. Initiation into methamphetamine use: qualitative findings from an exploration of first time use among a group of New Zealand users. J Psychoactive Drugs. 2009;41(1):11-7.
14. Levy KB, O'Grady KE, Wish ED, Arria AM. An in-depth qualitative examination of the ecstasy experience: results of a focus group with ecstasy-using college students. Substance use & misuse. 2005;40(9-10):1427-41.
15. Boeri MW, Harbry L, Gibson D. A Qualitative Exploration of Trajectories Among Suburban Users of Methamphetamine. Journal of ethnographic and qualitative research. 2009;3(3):139-51.
16. Boeri MW, Sterk CE, Elifson KW. Baby Boomer Drug Users: Career Phases, Social Control, and Social Learning Theory. Sociological Inquiry. 2006;76(2):264-91.

17. Boshears P, Boeri M, Harbry L. Addiction and sociality: Perspectives from methamphetamine users in suburban USA. Addict Res Theory. 2011;19(4):289-301.
18. Wu P, Liu X, Fan B. Factors associated with initiation of ecstasy use among US adolescents: findings from a national survey. Drug and alcohol dependence. 2010;106(2-3):193-8.
19. Halkitis PN, Mukherjee PP, Palamar JJ. Multi-level modeling to explain methamphetamine use among gay and bisexual men. Addiction. 2007;102 Suppl 1:76-83.
20. Fast D, Small W, Wood E, Kerr T. Coming 'down here': young people's reflections on becoming entrenched in a local drug scene. Social science & medicine (1982). 2009;69(8):1204-10.
21. O'Brien A, Brecht M-L, Casey C. Narratives of Methamphetamine Abuse: A Qualitative Exploration of Social, Psychological, and Emotional Experiences. Journal of Social Work Practice in the Addictions. 2008;8:343-66.
22. Herbeck DM, Brecht ML, Christou D, Lovinger K. A qualitative study of methamphetamine users' perspectives on barriers and facilitators of drug abstinence. J Psychoactive Drugs. 2014;46(3):215-25.
23. Quinn B, Stoove M, Dietze P. One-year changes in methamphetamine use, dependence and remission in a community-recruited cohort. Journal of Substance Use. 2015.
24. German D, Sherman SG, Sirirojn B, Thomson N, Aramrattana A, Celentano DD. Motivations for methamphetamine cessation among young people in northern Thailand. Addiction. 2006;101(8):1143-52.
25. Green R. “I wonder what age you grow out of it?”: Negotiation of recreational drug use and the transition to adulthood among an Australian ethnographic sample. Drugs: Education, Prevention and Policy. 2016;23(3):202-11.
26. Lasco G. Pampagilas: Methamphetamine in the everyday economic lives of underclass male youths in a Philippine port. International Journal of Drug Policy. 2014;25.
27. Hser YI, Longshore D, Anglin MD. The life course perspective on drug use: a conceptual framework for understanding drug use trajectories. Evaluation review. 2007;31(6):515-47.
28. Addison M, Kaner E, Spencer L, McGovern W, McGovern R, Gilvarry E, et al. Exploring pathways into and out of amphetamine type stimulant use at critical turning points: a qualitative interview study. Health Sociology Review. 2020:1-16.
29. Engel GL. The need for a new medical model: a challenge for biomedicine. Science (New York, NY). 1977;196(4286):129-36.
30. Rosenkranz M, O'Donnell A, Verthein U, Zurhold H, Addison M, Liebregts N, et al. Understanding pathways to stimulant use: a mixed-methods examination of the individual, social and cultural factors shaping illicit stimulant use across Europe (ATTUNE): study protocol. BMJ Open. 2019;9(8):e029476.
31. Etikan I, Musa Sa, Alkassim RS. Comparison of Convenience Sampling and Purposive Sampling. American Journal of Theoretical and Applied Statistics. 2016;5(1):1-4.

32. Shaghaghi A, Bhopal RS, Sheikh A. Approaches to Recruiting 'Hard-To-Reach' Populations into Research: A Review of the Literature. Health promotion perspectives. 2011;1(2):86-94.
33. UNESCO. International Standard Classification of Education (ISCED) 2011 [
34. Beste J, Bethmann A, Gundert S. Social Structure and Living Conditions: Material and Social Situation of Unemployment Benefit Recipients. Nuremberg; 2014.
35. Diener E, Emmons RA, Larsen RJ, Griffin S. The Satisfaction With Life Scale. Journal of personality assessment. 1985;49(1):71-5.
36. Bush K, Kivlahan DR, McDonell MB, Fihn SD, Bradley KA, for the Ambulatory Care Quality Improvement P. The audit alcohol consumption questions (audit-c): An effective brief screening test for problem drinking. Arch Intern Med. 1998;158(16):1789-95.
37. Saunders JB, Aasland OG, Babor TF, De la Fuente JR, Grant M. Development of the alcohol use disorders identification test (AUDIT): WHO collaborative project on early detection of persons with harmful alcohol consumption-II. Addiction. 1993;88(6):791-804.
38. Gossop M, Darke S, Griffiths P, Hando J, Powis B, Hall W, et al. The Severity of Dependence Scale (SDS): psychometric properties of the SDS in English and Australian samples of heroin, cocaine and amphetamine users. Addiction. 1995;90(5):607-14.
39. Topp L, Mattick RP. Choosing a cut-off on the Severity of Dependence Scale (SDS) for amphetamine users. Addiction. 1997;92(7):839-45.
40. Spencer LP, Addison M, Alderson H, McGovern W, McGovern R, Kaner E, et al. 'The drugs did for me what I couldn't do for myself': A qualitative exploration of the relationship between mental health and amphetamine-type stimulant (ATS) use. Substance Abuse: Research and Treatment. 2021;15:11782218211060852.
41. Derogatis LR. BSI 18, Brief Symptom Inventory 18 : administration, scoring and procedures manual. Minneapolis, MN: NCS Pearson, Inc.; 2001.
42. Stephenson MT, Hoyle RH, Palmgreen P, Slater MD. Brief measures of sensation seeking for screening and large-scale surveys. Drug and alcohol dependence. 2003;72(3):279-86.
43. IBM. SPSS Statistics for Windows, Version 22.0. Armonk, New York: IBM Corp. Released 2013.
44. Berndt S, Rosenkranz M, Martens MS, Verthein U. Amphetamine-Type Stimulant Dependence and Association with Concurrent Use of Cocaine, Alcohol, and Cannabis: A Cross-Sectional Study. Eur Addict Res. 2021:1-9.
45. Weber G, Schneider W. Herauswachsen aus der Sucht illegaler Drogen: Selbstheilung, kontrollierter Gebrauch und therapiegestützter Ausstieg ; [Forschungsbericht der Westfälischen Wilhelms-Universität Münster, Institut für Soziologie/Sozialpädagogik i.G.]: Ministerium für Arbeit, Gesundheit und Soziales des Landes Nordrhein-Westfalen; 1992.
46. Rahimian Boogar I, Tabatabaee SM, Tosi J. Attitude to substance abuse: do personality and socio-demographic factors matter? Int J High Risk Behav Addict. 2014;3(3):e16712.
47. Fothergill KE, Ensminger ME, Green KM, Crum RM, Robertson J, Juon H-S. The impact of early school behavior and educational achievement on adult drug use disorders: a prospective study. Drug and alcohol dependence. 2008;92(1-3):191-9.

48. Daniel JZ, Hickman M, Macleod J, Wiles N, Lingford-Hughes A, Farrell M, et al. Is socioeconomic status in early life associated with drug use? A systematic review of the evidence. Drug and alcohol review. 2009;28(2):142-53.
49. Galea S, Ahern J, Vlahov D. Contextual determinants of drug use risk behavior: A theoretic framework. Journal of Urban Health. 2003;80(3):iii50-iii8.
50. Spooner C, Hetherington K. Social Determinants of Drug Use. Sydney; 2004.
51. Strang J, Bearn J, Farrell M, Finch E, Gossop M, Griffiths P, et al. Route of drug use and its implications for drug effect, risk of dependence and health consequences. Drug and alcohol review. 1998;17(2):197-211.
52. Wikler A. On The Nature Of Addiction And Habituation. British Journal of Addiction to Alcohol & Other Drugs. 1961;57(2):73-9.
53. Liang W, Chikritzhs T, Lenton S. Affective disorders and anxiety disorders predict the risk of drug harmful use and dependence. Addiction. 2011;106(6):1126-34.
54. Coughlin LN, Lin LA, Jannausch M, Ilgen MA, Bonar EE. Methamphetamine use among American Indians and Alaska Natives in the United States. Drug and alcohol dependence. 2021;227:108921.
55. Farrell M, Howes S, Taylor C, Lewis G, Jenkins R, Bebbington P, et al. Substance misuse and psychiatric comorbidity: an overview of the OPCS National Psychiatric Morbidity Survey. Addict Behav. 1998;23(6):909-18.
56. Schlag AK. Percentages of problem drug use and their implications for policy making: A review of the literature. Drug Science, Policy and Law. 2020;6:2050324520904540.

Table 1: Sociodemographics and social integration by type of ATS career

	NU N=339	R/M-A N=242	R/M-U N=273	F/SDS-A N=201	F/SDS-U N=403	total N=1458
Nation, % (X^2=100.11; p<.000)						
CZ	16.2	10.7	8.8	6.0	19.4	13.4
PL	23.3	22.3	25.6	21.9	26.1	24.1
GER	25.1	30.6	37.0	23.4	31.5	29.8
NL	14.2	23.6	17.9	17.9	13.4	16.7
UK	21.2	12.8	10.6	30.8	9.7	16.0
Gender, % (X^2=67.25; p<.000)						
female	61.9	44.6	43.6	37.8	33.5	44.4
male	37.5	55.0	55.7	62.2	65.8	55.0
other/ preferred not to indicate	0.6	0.4	0.7	0.0	0.7	0.5
Age, mean (SD) (F=21.25, p<.000)	31.1 (10.3)	32.4 (9.4)	27.2 (6.5)	34.8 (10.2)	29.8 (8.4)	30.8 (9.3)
Current living situation, % (X^2=125.76; p<.000)						
stable	95.9	93.8	94.5	85.6	72.5	87.4
precarious	4.1	6.2	5.5	14.4	27.5	12.6
Highest completed educational status, % (X^2=198.69; p<.000)						
below upper secondary	4.4	10.7	5.5	22.4	31.0	15.5
upper secondary through short-cycle tertiary	48.7	40.9	44.7	58.2	47.9	47.7
bachelor through doctoral	46.9	48.3	49.8	19.4	21.1	36.8
Low income, % (X^2=36.28; p<.000)	25.4	25.2	36.3	34.3	43.4	33.6
Currently unemployed, % (X^2=133.35; p<.000)	15.0	21.5	13.9	43.3	43.7	27.7
Currently in relationship, % (X^2=43.85; p<.000)	62.5	64.0	50.2	46.8	43.2	52.9
Social integration index (1-10), mean (SD) (F=11.06, p<.000)	7.3 (2.0)	6.9 (2.2)	7.3 (1.9)	6.5 (2.4)	6.4 (2.4)	6.9 (2.2)
(Rather) not satisfied with life in general (median split), % (X^2=35.85; p<.000)	48.4	47.5	42.9	57.7	63.3	52.6

Notes:
NU: never used; R/M-A: rare/moderate use - currently abstinent; R/M-U: rare/moderate use - currently using; F/SDS-A: frequently used and/or SDS positive - currently abstinent; F/SDS-U: frequently used and/or SDS positive - currently using.
CZ: Czech Republic; PL: Poland; UK: United Kingdom; NL: the Netherlands; GER: Germany.
SD: standard deviation.

Statistical significance was tested using Wald X^2 tests for categorial variables and ANOVAs for metric variables. Results with $p< 0.05$ are regarded as statistically significant.

Table 2: Selected sociodemographics by country

	CZ N=195	PL N=352	GER N=434	NL N=244	UK N=233	total N=1458
Current living situation: precarious, % (X^2=139.29; p<.000)	28.7	21.9	2.8	1.6	15.0	12.6
Educational status: below upper secondary, % (X^2= 158.52; p<.000)	40.5	9.9	12.0	3.7	21.9	15.5
Currently unemployed, % (X^2= 165.97; p<.000)	35.9	26.1	16.4	14.3	58.4	27.7
Social integration index (1-10), mean (SD) (F=30.20, p<.000)	6.7 (2.5)	7.3 (2.1)	6.3 (2.5)	7.7 (1.6)	6.1 (2.1)	6.9 (2.2)
(Rather) not satisfied with life in general (median split), % (X^2=134.14; p<.000)	69.2	63.1	48.4	23.0	61.8	52.6

Notes:
CZ: Czech Republic; PL: Poland; GER: Germany; NL: the Netherlands; UK: United Kingdom.
SD: standard deviation.
Statistical significance was tested using Wald X^2 tests for categorial variables and ANOVAs for metric variables. Results with $p< 0.05$ are regarded as statistically significant.

Table 3: ATS use by type of ATS career

		R/M-A N=242	R/M-U N=273	F/SDS-A N=201	F/SDS-U N=403	total N=1119
Any ATS, %	LT	100.0	100.0	100.0	100.0	100.0
(X^2=1102.43; p<.000)	LY	0.0	100.0	0.0	100.0	60.4
(X^2=289.81; p<.000)	LM	0.0	30.4	0.0	50.9	25.7
Amphetamine, % (X^2=72.24; p<.000)	LT	71.5	85.0	94.0	93.1	86.6
(X^2=658.86; p<.000)	LY	0.0	65.6	0.0	76.9	43.7
(X^2=213.82; p<.000)	LM	0.0	17.2	0.0	30.8	15.3
MDMA, % (X^2=12.04; p<.007)	LT	83.9	93.0	85.1	85.9	87.0
(X^2=563.32; p<.000)	LY	0.0	77.7	0.0	61.8	41.2
(X^2=100.25; p<.000)	LM	0.0	14.3	0.0	19.4	10.5
Methamphetamine, % (X^2=88.30; p<.000)	LT	14.0	17.9	20.9	42.9	26.6
(X^2=192.85; p<.000)	LY	0.0	6.2	0.0	29.5	12.2
(X^2=128.94; p<.000)	LM	0.0	1.5	0.0	13.6	5.3
NPS, % (X^2=51.21; p<.000)	LT	25.6	42.5	30.8	51.6	40.0
(X^2=157.94; p<.000)	LY	0.0	18.3	0.0	31.0	15.6
(X^2=66.91; p<.000)	LM	0.0	2.2	0.0	5.7	2.6
ATS medicine, % (X^2=17.74; p<.000)	LT	21.1	31.5	21.4	33.5	28.2
(X^2=83.05; p<.000)	LY	0.0	12.5	0.0	17.9	9.5
(X^2=33.84; p<.000)	LM	0.0	1.5	0.0	4.5	2.0
Age at first use of any ATS, mean (SD) (F=3.48, p<.015)		19.0 (5.0)	18.6 (4.2)	18.1 (4.5)	17.9 (4.4)	18.3 (4.5)
Duration of ATS use career (years), mean (SD) (F=26.90, p<.000)		7.0 (6.6)	9.1 (6.1)	9.9 (7.3)	11.9 (7.4)	9.8 (7.2)

Notes:

R/M-A: rare/moderate use - currently abstinent; R/M-U: rare/moderate use - currently using; F/SDS-A: frequently used and/or SDS positive - currently abstinent; F/SDS-U: frequently used and/or SDS positive - currently using.

NPS: new psychoactive stimulants

ATS medicine: (non-prescribed) medicine containing ATS agents

LT: lifetime; LY: last year; LM: last month.

SD: standard deviation

Statistical significance was tested using Wald X^2 tests for categorial variables and ANOVAs for metric variables. Results with $p< 0.05$ are regarded as statistically significant.

Table 4: Conditions and accompanying factors of ATS use by type of ATS career

		NU N=339	R/M-A N=242	R/M-U N=273	F/SDS-A N=201	F/SDS-U N=403	total N=1458
Other substance use							
Cannabis, % (X^2=166.72; p<.000)	LT	96.7	97.1	96.0	97.0	96.8	96.7
(X^2=286.29; p<.000)	LY	55.4	86.1	42.8	84.4	71.0	55.4
(X^2=177.28; p<.000)	LM	33.5	55.3	21.9	54.3	44.2	33.5
Cocaine, % (X^2=487.85; p<.000)	LT	58.3	76.6	79.1	82.9	75.3	58.3
(X^2=425.55; p<.000)	LY	14.0	60.1	14.9	60.0	42.0	14.0
(X^2=113.82; p<.000)	LM	2.1	16.5	4.0	19.1	12.1	2.1
Non-prescribed tranquilizer, % (X^2=115.21; p<.000)	LT	21.1	27.8	36.8	41.9	33.1	21.1
(X^2=116.44; p<.000)	LY	5.4	15.4	5.0	26.1	15.2	5.4
(X^2=30.57; p<.000)	LM	0.0	3.7	1.5	6.2	3.4	0.0
Problematic substance use							
AUDIT-C positive LY (♂ ≥ 5, ♀ ≥ 4), % (X^2=74.71; p<.000)		53.0	54.2	75.9	47.2	72.1	61.9
Injecting drug use LT, % (X^2=142.19; p<.000)		0.6	2.5	3.3	12.9	22.3	9.1
Addiction treatment/ counselling LT, % (X^2=246.47; p<.000)		8.8	13.6	12.5	45.8	49.1	26.5
Characteristics of ATS use							
		-	R/M-A N=242	R/M-U N=273	F/SDS-A N=201	F/SDS-U N=403	total N=1119
ATS use motive coping, % (X^2=115.30; p<.000)		-	64.5	76.9	91.5	94.5	83.2
ATS use on workdays (daytime), % (X^2=244.13; p<.000)		-	13.2	12.1	55.2	59.1	37.0
Following consumption rules, % (X^2=20.98; p<.000)		-	89.7	96.7	84.6	90.3	90.7
ATS use was never out of control, % (X^2=321.78; p<.000)		-	92.6	87.2	40.8	39.0	62.6
Biographical burden							
		NU N=339	R/M-A N=242	R/M-U N=273	F/SDS-A N=201	F/SDS-U N=403	total N=1458
Count of negative life events dimensions affected, mean (SD) (F=154,55, p<.000)		3.1 (2.2)	3.4 (2.3)	2.8 (2.1)	4.7 (2.7)	4.2 (2.6)	3.6 (2.5)
Experience of love and care in childhood (1-10), mean (SD) (F=14.41, p<.000)		7.6 (2.3)	7.3 (2.4)	7.5 (2.2)	6.5 (2.7)	6.5 (2.7)	7.1 (2.5)
Imprisonment LT, % (X^2=90,78; p<.000)		2.1	7.9	4.8	18.4	20.6	10.9
Health & Mind							
diagnosed mental health problem, % (X^2=36,74; p<.000)		38.9	36.8	33.5	57.0	48.3	42.6

Psychological distress acc. to GSI (median split), % (X^2=57,46; p<.000)	40.7	38.4	33.7	48.8	59.8	45.4
Rather sensation seeking (median split), % (X^2=81,72; p<.000)	28.6%	41.3%	57.9%	45.3%	58.0%	46.6%

Notes:

NU: never used; R/M-A: rare/moderate use - currently abstinent; R/M-U: rare/moderate use - currently using; F/SDS-A: frequently used and/or SDS positive - currently abstinent; F/SDS-U: frequently used and/or SDS positive - currently using.

LT: lifetime; LY: last year; LM: last month.

SD: standard deviation

GSI: Global Severity Index

Statistical significance was tested using Wald X^2 tests for categorial variables and ANOVAs for metric variables. Results with $p < 0.05$ are regarded as statistically significant.

Table 5: Logistic regression model for prediction of allocation to ATS use career type combined with current outcome: abstinent or currently using

	R/M-A N=242		R/M-U N=273		F/SDS-A N=201	
	OR [CI]	Sig.	OR [CI]	Sig.	OR [CI]	Sig.
Nation (Ref: UK) CZ	1.05 [.38-2.90]	0.919	0.52 [.20-1.35]	0.180	**0.14** [.05-.37]	0.000
PL	**0.38** [.18-0.82]	0.014	**0.36** [.17-.75]	0.006	**0.16** [.08-.30]	0.000
DE	0.55 [.24-1.25]	0.156	**0.42** [.19-.92]	0.030	**0.27** [.13-.55]	0.000
NL	**0.37** [.17-.84]	0.017	**0.19** [.09-.43]	0.000	**0.29** [.14-.60]	0.001
Age < 29 years (Ref: ≥29 years)	**0.40** [.26-.62]	0.000	1.17 [.77-1.79]	0.458	**0.41** [.27-.63]	0.000
Current living situation stable (Ref: precarious)	**2.20** [1.03-4.68]	0.041	1.88 [.91-3.89]	0.091	**2.29** [1.28-4.10]	0.005
Educational status low/medium (Ref: high)	**0.63** [.40-.98]	0.040	**0.57** [.39-.85]	0.006	1.43 [.87-2.33]	0.158
No methamphetamine use lifetime (Ref: yes)	**2.48** [1.32-4.65]	0.005	1.46 [.86-2.45]	0.159	1.53 [.90-2.60]	0.113
No cocaine use lifetime (Ref: yes)	**5.29** [3.19-8.77]	0.000	**2.06** [1.24-3.41]	0.005	**2.37** [1.39-4.04]	0.001
No use of non-prescribed tranquilizer lifetime (Ref: yes)	**1.90** [1.20-3.01]	0.006	**1.53** [1.02-2.30]	0.040	1.34 [.88-2.04]	0.172
AUDIT-C negative (Ref: positive)	**2.93** [1.87-4.61]	0.000	1.29 [.85-2.03]	0.261	**3.40** [2.25-5.16]	0.000
No IDU lifetime (Ref: yes)	**6.33** [2.21-18.14]	0.001	2.56 [1.00-6.4]	0.050	**2.97** [1.53-5.77]	0.001
No drug treatment lifetime (Ref: yes)	**2.38** [1.33-4.17]	0.003	**2.17** [1.33-3.70]	0.003	1.10 [0.69-1.75]	0.678
No ATS use on working days during daytime (Ref: yes)	**6.67** [3.85-11.11]	0.000	**5.26** [3.33-6.25]	0.000	1.15 [0.74-1.79]	0.535
No ATS use motive “coping” (Ref: yes)	**4.55** [2.50-6.67]	0.000	**3.03** [1.64-5.56]	0.000	1.14 [0.54-2.38]	0.738
No mental health problem (Ref: yes)	1.27 [.83-1.96]	0.276	**1.58** [1.07-2.35]	0.022	**1.90** [1.24-2.91]	0.003
Low sensation seeking (Ref: high)	1.49 [.98-2.27]	0.064	0.95 [.64-1.40]	0.781	**1.49** [1.00-2.23]	0.049
No consumption rules (Ref: yes)	1.83 [.86-3.90]	0.116	0.56 [.23-1.42]	0.224	1.69 [.91-3.16]	0.097
Number of critical life events	1.07 [.98-1.18]	0.151	0.94 [.86-1.03]	0.197	**1.10** [1.01-1.19]	0.036

Notes:
R/M-A: rare/moderate use - currently abstinent; R/M-U: rare/moderate use - currently using; F/SDS-A: frequently used and/or SDS positive - currently abstinent; F/SDS-U: frequently used and/or SDS positive - currently using.
CZ: Czech Republic; PL: Poland; UK: United Kingdom; NL: the Netherlands; GER: Germany.
SD: standard deviation
IDU: Injecting drug use

Ref: Reference category
OR: (adjusted) odds ratio (represents the odds ratio for the specific variable controlling for all other variables in the model)
CI: Confidence interval

Results with $p< 0.05$ are regarded as statistically significant. Significant results are highlighted in bold.

Reference category of dependent variable: frequently used and/or SDS positive – currently using
Model Fit: $\chi^2=731.33$; df=57; $p<0.001$
Pseudo R^2 statistics: Nagelkerke: .525; Cox & Snell: .490