Revealing myths and negative attitudes: A statistical analysis of knowledge and attitudes towards users of illicit drugs

Andreas Røysland Aarnes

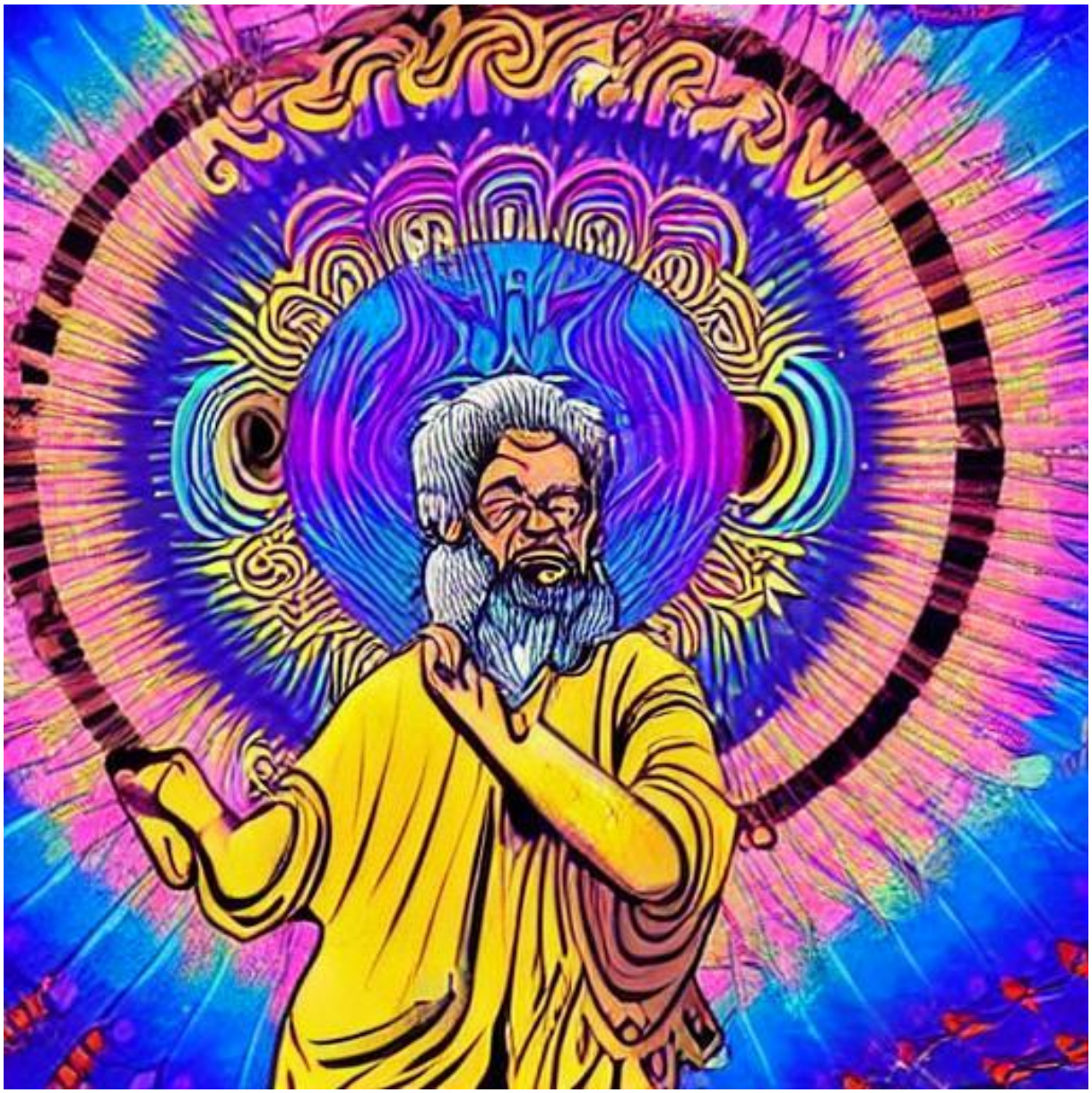
Det samfunnsvitenskapelige fakultet, Institutt for sosialfag, Bachelor i psykologi

Bachelor thesis

Supervisor: Lilla Magyari

Stavanger, 25.04.2023

Word count: 7984



"Throughout history, great thinkers like Socrates have been perceived as threats to stability and order for their willingness to challenge conventional wisdom; however, it is through their courageous defiance of the status quo that we have achieved progress, and punishing those who deviate only serves to impede the pursuit of truth and obstruct the path to enlightenment."

- Quote and artwork produced using OpenAI (n.d.) and OpenArt AI (n.d.)

Abstract

Myths surrounding LSD have been distorting the public's beliefs for decades. The implications reach beyond the individual victims' stigma and may restrict a scientific debate around legislation of drugs in Norway. Whether believing in myths about LSD is associated with negative attitudes towards LSD users, will be investigated in this study. To answer this research question, a purposive sample (N = 44) responded to a survey mapping experience with illicit drugs, attitudes towards LSD users, as well as beliefs about LSD. Exploratory factor analysis verified two variables, *Knowledge* (α = .94) and *Avoidance* (α = .88), which substantiated a statistical analysis between these variables and the respondents' drug experience. Most participants were found to agree with several myths about LSD and the majority remained naïve to its therapeutic potential. A significant negative correlation was found between knowledge about LSD and wanting to avoid users of psychedelic drugs (r. -.81, $p < .001$). Knowing someone having tried psychedelic drugs was associated with more correct knowledge and less negative attitudes. A larger sample is needed to increase the validity of these findings, and further studies are warranted to investigate causal effects.

Sammendrag

Myter om LSD har forvrengt samfunnets syn på dette rusmiddelet i flere tiår. Dette medfører stigma mot brukere og forhindrer en vitenskapelig debatt rundt lovgivning av narkotiske stoffer i Norge. Dette studiet vil undersøke i hvilken grad det å tro på myter rundt LSD er assosiert med negative holdninger til brukere av LSD. For å besvare dette forskningsspørsmålet deltok en målrettet gruppe (N = 44) i en spørreundersøkelse som kartla ruserfaring, holdninger og kunnskap om LSD. En utforskende faktoranalyse verifiserte to variabler, *Kunnskap* (α = .94) og *Unngåelse* (α = .88), som underbygget en statistisk analyse mellom variablene og deltagernes erfaring med rusmidler. De fleste deltagerne var enig i flere av mytene rundt farene ved LSD og majoriteten var uvitende om stoffets terapeutiske potensiale. En signifikant negativ korrelasjon ble funnet mellom kunnskap om LSD og hvorvidt man ønsker å unngå brukere av psykedeliske stoffer (r. -.81, $p < .001$). De som hadde bekjentskaper som hadde prøvd psykedeliske stoffer viste seg å ha høyere kunnskap og mindre negative holdninger. Et større utvalg av deltagere er nødvendig for å øke validiteten til disse funnene, og videre studier behøves for å undersøke årsakssammenhenger.

Introduction 7

What are psychedelic drugs? 8

The moral panic surrounding LSD 9

Revival of research and increase in recreational use 10

Positive attitudes to psilocybin 11

The myths about LSD 11

Research question 13

Methods 15

Participants 15

Ethical statement 15

Procedure 15

Materials 16

Data processing and statistical analysis 17

Results 20

Descriptive statistics 20

Factor extraction and reliability analysis 21

The effect of age and gender on *Knowledge* and *Attitude* 23

Bivariate correlation between *Knowledge* and *Attitude* 24

Regression model for participants with no experience 25

The effect of *Experience* on *Knowledge* and *Avoidance* 27

Cannabis-only users' attitude towards users of psychedelic drugs 29

Discussion 30

Knowledge and belief in myths 30

Knowledge and its association to attitudes 30

Is experience necessary for less negative attitudes? 31

Limitations 32

Implications of findings 35

Conclusion 37

Data availability statement 38

References 39

Appendices 44

Appendix A: Questionnaire 44

Appendix B: Questionnaire results 47

Appendix C: Exploratory factor analysis 47

Appendix D: Various test statistics 52

Introduction

This study investigates the link between knowledge of lysergic acid diethylamide (LSD) and explicit attitude towards users of this illicit, and supposedly therapeutic, drug. Albarracin and Shavitt (2018) regards attitudes as evaluative reactions, on a spectrum from negative to positive, towards a target. The target may be an idea based on a value, such as the acceptance of people using drugs. Such attitudes can be generalized, for example by considering all illicit drugs as dangerous, or all drug users as criminals.

Dillon (2016) found that 51% of 1035 respondents from a public survey in Ireland agreed that drug users scared them and 64% would not live nearby someone addicted to drugs. A gap in the research literature inhibit these findings to be generalized to the Norwegian population, and it remains uncertain whether such attitudes are relevant towards users of psychedelic drugs. However, indications of attitudes abound throughout the Norwegian society, and these are closely linked to criminalization. Dahle (2022) points to what he considers an unfortunate split in who has a say in matters of drug law enforcement, with the police and its closely associated lobby on one side, and drug users on the other. These voices may influence people's attitudes and generalize across to drug users, substantiating stereotyping and labelling.

Being labeled "junkies" is arguably based on a drugs legal status, says a user of psychedelic drugs (Høifødt, 2018). Even though the most updated research regarding the facts about LSD are published by national health authorities (FHI, 2022), there is no wonder that both facts and attitudes in our society are split when considering scare stories by the police: «You might just walk upon a roof and believe you can fly", says a police officer in Stavanger in a response to the increase in LSD (Mjelva, 2018, own translation). Such beliefs and other myths about LSD will soon be presented in more detail. The fear mongering from the police is not surprising considering the

highly controversial policy monopolist Norsk Narkotikapolitiforening (NNPF), a private lobby organization influencing both drug law enforcement and supposed drug education (Pedersen, 2023; Dahle, 2022). Misconceptions are even voiced by Norway's former minister of justice, reasoning that drugs are dangerous because they are illegal (Stolt-Nielsen, 2016).

Amongst the Scandinavian countries, Norway is the country with highest drug enforcement intensity on all measures in a study by Moeller (2019). In 2021 a drug reform involving decriminalization of a number of drugs was voted down, heavily influenced by NPPF (Dahle, 2022; Jakobsen, 2021), echoing the 60 year old vision of a Norwegian society free from drugs (Schiøtz, 2017). However, punishment and ignorance arguably have its negative effects, as it may undermine the health education messages (Nutt et al., 2007) and lead to stigma and discrimination towards drug users, such as refusing them to buy health insurance (Vikingstad, 2022).

What are psychedelic drugs?

Psychedelic drugs, or "psychedelics", are entheogenic substances that can alter consciousness in profound ways: Ingestion is associated with a number of cognitive, emotional and neurological effects (Aday et al., 2021), which hold therapeutic potential including life-altering and existential insights and experiences that can lead to changes in habitual orientation (Gashi et al., 2021; Høifødt, 2018). Medicinal use of these substances dates back several thousand years (Carhart-Harris & Goodwin, 2017).

Psychedelics are commonly categorized by the experienced effects (Høifødt, 2018), often reduced to a "hallucinogenic" for the possible perceptual side-effects. Neurologically they are grouped by their serotonin 5-HT_{2A} receptor agonist properties (Carhart-Harris & Goodwin, 2017). Given the different conceptions of the term, this study focus on "classic psychedelics", such as LSD and psilocybin (a naturally occurring psychedelic compound found in several fungi), not

regarding “club drugs” with psychedelic-like properties, such as MDMA/ecstasy, which have a different risk profile than the classic psychedelics (Freese et al., 2002; NIDA, 2020).

Although the literature can point to several differences amongst classic psychedelics, including between LSD and psilocybin, the effects are arguably more dependent on non-biological factors than the substances themselves. Non-biological factors include those of the widely accepted “set and setting” theory by Leary (1963, as cited in Hartogsohn, 2016). *Set*, or mindset, includes personality, preparation, expectation and intention, and *setting* includes the external factors of the environment, including physical, social and cultural factors.

Therapeutic effects are particularly high in clinical trials (Carhart-Harris & Goodwin, 2017), evidently by high control over set and setting. However, it is worth noting that most people do psychedelic drugs illegally. These settings are often considered therapeutic, and a majority of users report high positive persisting effects, such as personal and spiritual meaning and psychological insight (Sweeney et al., 2022).

The moral panic surrounding LSD

A surge of research on the therapeutic effects of psychedelic drugs started in the 1950’s, not long after the synthetization of LSD (Carhart-Harris & Goodwin, 2017) and Western encounters with the Mesoamerican cultures using psychedelic compounds medicinally. However, it was the impact and embrace by the counterculture in the 1960’s, rather than its contemporary branch of research, that led to a polarization of attitudes and a policy change led by Nixon’s “war on drugs” (Pollan, 2018). Although psychedelic drugs weren’t as common in Norway, the increase in cannabis use amongst adolescents put drugs on the agenda. Norway soon adopted the vision of a drug-free state, and LSD became illegal following the UN convention of psychotropic substances of 1971 (Lovdata, 1971; Schiøtz, 2017).

What followed can be understood as a "moral panic" around the drug (Goode, 2008, p.533). Most therapeutic trials were stopped, and the vast amount of research, lacking the double-blind standard of modern research, was quickly written off as a closed chapter in the failure of psychedelic research. At Modum Nervesanatorium in Norway, LSD psychotherapy continued under the radar long into the 70's, a subject of high controversy when revealed to the public in 1992, thereafter being subject to a public investigation on unethical research (Haave & Pedersen, 2021; NOU, 2003).

Revival of research and increase in recreational use

Today, research on psychedelic drugs have seen a renewal, with trials showing promising results within treatment of obsessive-compulsive disorder, end-of-life psychological distress, addiction, and major depressive disorder (Carhart-Harris & Goodwin, 2017; Griffiths et al., 2016). A revival of research has also occurred in a Norwegian context, with clinical trials using psilocybin being conducted by PsykForsk at the Hospital in Østfold (Baksaas, 2021).

Psychedelics have also increased in popularity in subcultures outside the established institutions. This includes therapy facilitated by "trip-sitters" (Tønset, 2021), shamanistic ceremonies (Vold, 2019), or within exclusive psychedelic communities (Høifødt, 2018).

In the past decades, psychedelics have also been associated with different contexts. This includes the rave subculture, where club drugs are more prevalent than the classic psychedelics (Anderson & Kavanaugh, 2007), and the phenomena of sub-perceptual micro-dosing claimed to affect attention and mood positively (Kuypers et al., 2019).

Increased drug seizures indicate that recreational use is on the rise in Norway (RUSinfo, n.d.), and the Global Drugs Survey (GDS) reports a near doubling in the prevalence of psilocybin and LSD in Western countries over the last 7 years (Winstock et al., 2021). The most recent

national student survey in Norway, SHoT, reports that 6% of men and 2% of women have tried either LSD or psilocybin in the past year (Sivertsen & Johansen, 2022). However, it remains unknown in which setting they are being used.

Positive attitudes to psilocybin

The new wave of research and increased prevalence of use may explain a change in attitudes towards psychedelic drugs. A study by Jacobsen et al. (2021) revealed that 8% of a representative sample of 1078 Norwegian had tried psilocybin, a surprisingly high number compared to national statistics on a variety of drugs (FHI, 2023). The study by Jacobsen and colleagues presented the participants with a vignette underlining several decades of research showing the drug's therapeutic effect. A surprising 51% of the respondents were positive to trying psilocybin in a medical context. The researchers point out that both Norwegians' trust in health care services and the positive framing may explain the results. The positive framing may also explain a previously underreported prevalence of use. As students' attitudes towards cannabis are more positive now than a few years ago (Sivertsen & Johansen, 2022), echoing a global trend, it may be that Norwegians are influenced by the recent legalization of psilocybin in Oregon and Colorado, as well as the increase of clinical trials worldwide (Ducharme, 2023).

Although psychedelic drugs may be treated as *one thing*, there is considerably more controversy associated with LSD (Jacobsen et al., 2021), perhaps also explaining why the new wave of research is focused on the less controversial drug psilocybin (Pollan, 2018).

The myths about LSD

Around 50 years ago, following the criminalization of LSD, exaggerated media claims flourished. Goode (2008) suggest stories corresponding to the public's notions of LSD partly explain this phenomenon. While the stories may be based on anecdotal evidence and research now regarded as

flawed, the media and Nixon's antidrug campaign may have perpetuated a preconceived notion of LSD which Goode refers to as "sensitization" (p. 533) in which negative stereotypes were developed.

Beliefs surrounding LSD include that it represents a severe threat to mental health and can lead to psychosis, that it's addictive, lethal, more dangerous than other drugs, and that it increases the risk of fatal accidents and suicidal behavior. Other beliefs, such as "flashbacks" are disputed within the scientific consensus and will not be discussed here.

Ranked amongst both psychiatrists and independent experts in an assessment on harm of drugs, Nutt et al. (2007) rates LSD amongst the least harmful, considering physical harm to self, dependence and societal health care costs. LSD scored lower than tobacco on all measures. Heroin and cocaine scored first and second in all categories respectively, closely followed by alcohol. LSD is not considered an addictive substance and there is no evidence for physical dependence (FHI, 2022; Nutt et al., 2007). LSD represent one of the very few drugs where a lethal overdose has not yet been found (Haden & Woods, 2020). The Global Drug Survey (Winstock et al., 2021) report rates of Emergency Medical Treatment (EMT) amongst users of LSD over the past year to be in the order of 0.3% for older users (> 25 years) and 1.5% for younger users, whereas EMT rates among people drinking alcohol are 2% (GDS statistics from Sweden).

One may conclude that classic psychedelics carry less risk to both users and society than most other recreational drugs including alcohol, however this does no warrant use without caution, and several of these studies do not take into account the frequency of use.

On the contrary to harm, Krebs and Johansen (2013) found that lifetime use of LSD and other psychedelics was associated with lower rates of serious psychological distress compared to not having done such drugs. A more recent publication by Yang et al. (2022) found inconsistencies

to these claims and point to an increased association between past year use of psychedelic drugs and psychological distress, depression and suicidality. However, as the researchers in this study focused on past year use, they point out that users of psychedelics may be medicating already existing psychological differences. Needless to say, these huge populational studies may suffer from a range of confounding factors, for instance the group characteristics of psychedelic users, including being more likely to have experience with all classes of illicit drugs, have higher education and are more likely to be single (Krebs & Johansen, 2013). In addition, the distinction between medicinal, micro-dosing, and recreational use remains unaddressed in these studies.

The statistics do not dispute the number of individual cases where accidents *do* happen, and perhaps such stories start the myth propagation. In any case, such incidents are not more particular to LSD users than amongst the general populace.

Research question

The knowledge about LSD spans from a distorted view regarding its facts to a growing group of people using psychedelics for its therapeutic effects. With little data on Norwegians' attitudes towards LSD, the research question put forward in this study is: How do knowledge and experience about LSD predict attitudes towards users of LSD?

The following hypotheses are put forward:

H1. People holding false myths about LSD have more negative attitudes towards users of LSD compared to people with a higher degree of knowledge.

H2. People without first- or second-hand experience with LSD that hold high knowledge, also have negative attitude towards LSD users, but less so than the above. Second-hand experience is herein referred to as knowing someone who have used psychedelic drugs

H3. People with first- or second-hand experience with LSD also have knowledge about LSD, and express less negative attitudes towards users of LSD. However, there might be a difference in attitude and knowledge depending on the nature of the second-hand relationship (i.e., whether knowing of friends *or* family having tried the substance).

H4. People with experience of other drugs, such as MDMA, express less negative attitudes towards users of LSD.

Methods

Participants

Two hundred and fifty participants were recruited by purposive sampling, leveraging the researcher's professional network. Participation was voluntary and unpaid. The response rate was 18%. The final sample (N = 44) included 32 women, 10 men, and 2 other/unspecified, M_{age} = 39,98, SD = 12,55, age-range 21-65. Participants were Norwegian speaking and had an education of at least 3 years of University.

Ethical statement

Participants were ensured their anonymity as well as the anonymity of their work organization. They were reminded that participation was voluntary and that they could skip questions or withdraw from the study without reason. Participants provided informed consent by reading the study's purpose and procedure, contact details for questions, and then clicking a button to indicate their agreement to participate.

No direct personal details were asked. Indirect personal data, including age and gender, could not be traced as data was collected from different groups, which remain anonymous. Data was collected using the SSL-encrypted questionnaire management tool Nettskjema.no (UiO, 2020). Even though data collection included sensitive topics such as first-hand experience with illicit drugs, the Health Research Law (Helseforskningsloven) remain irrelevant in this case and no reporting to Sikt (formerly NSD) was necessary. These details were clarified with Sikt.

Procedure

Participants were presented with the information that the study was part of a bachelor thesis at UiS. Further, the participants were informed about the nature of the study, what data would be collected, and that participation would take around three minutes. The information included that

the study aimed to chart perspectives on LSD by responding to statements regarding LSD and past encounters with illicit drugs.

Consent to this information took participants to 17 statements with beliefs and attitudes with Likert-scale response options. On the final page of the survey the participants were asked about their drug experience using checkbox response alternatives. Finally, they were asked about gender and age. The questionnaire is available in Appendix A.

Materials

The questionnaire is an operationalization of three constructs: Knowledge, attitude and experience.

Knowledge and attitude were operationalized with 17 statements modified and translated to Norwegian using items from Goodstadt et al. (1978) Drug Attitude Scale (DAS), including the Hallucinogen Subscale and General Drug Use Subscale, and a drug poll distributed in Dublin (Dillon, 2016). Some of the statements were created by the researcher based on commonly held myths about LSD (Fadiman, 2011; Goode, 2008).

Taherdoost's (2019) recommendation to use a 7-point Likert scale was followed. The scale was presented as a line with seven markers where the first was labelled "Strongly disagree", the fourth "Don't know" and the seventh "Strongly agree". Clicking the line would highlight the marker and the value would appear.

The first 11 items were phrased as statements conveying the commonly held myths, such as *"LSD cannot be controlled – it will take over your life*" (item: *Not_controlled*), and negative attitudes, i.e. "*I stay away from people using LSD"* (item: *Stay_away*). The next 6 items were reversed and included statements such as the positive therapeutic effect of LSD, e.g., "*LSD can improve people's lives"* (item: *Improve_lives*).

When asking about the participants' experience, in addition to LSD, other categories included "magic mushrooms or other psychedelic drugs", MDMA/ecstasy, alcohol, cannabis, and "other illicit drugs". Participants were also asked whether they knew of friends, and/or of family, having experience with some of these drugs.

Data processing and statistical analysis

Exploratory factor analysis

The items mapping knowledge and attitudes were analyzed in an exploratory factor analysis (EFA), forming the basis for the computation of two variables: *Knowledge* and *Avoidance*. EFA was conducted using IBM SPSS v. 28.0.1.1 to detect latent variables, delete potential problematic items and reduce the data to a low number of factors (Field, 2013). *Principal axis factoring*, a factor extraction method less sensitive to non-normal data, was used since Mardia (1970) test for multivariate skewness was violated ($p = 0.020$). An oblique rotational method *(direct oblimin with* $\delta = 0$) was used as the factors were expected to correlate. The EFA was reiterated until a satisfactory solution could be interpreted from the statistical measures.

A number of criteria and heuristics were used during the EFA. This included confirmation of a significant ($p > .05$) Bartlett's test of sphericity. Furthermore, an acceptable (> .50) Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was required (Hutcheson and Sofroniou, 1999, as cited in Field, 2013). The same criterion was used for KMO statistics for each item. An item with several intercorrelations below .4, indicating an unrelated item (Costello & Osborne, 2005) or additional unexplored factors, were investigated. High intercorrelations (> .9) could mean that one of the items do not add any additional information to the dataset and bias the factorial solution with collinearity. In addition, collinearity was assessed by the requirement of the R-matrix determinant to be below 0.00001 (Field, 2013). Items explaining little common variance were

investigated. The number of extracted factors was based on Kaiser's (1960, as cited in Field, 2013) eigenvalue cut-off criterion of 1. Although the number of participants is too low to follow this heuristic, not locking the analysis to an a priori factor expectation would allow other latent variables to emerge. To conclude on factors and their associated items, an absolute rotated factor loading of .5 for "practical significance" (p. 111) was used as a minimum (Hair et al., 1998, as cited in Habing, 2003), also considering Steven's (2003, as cited in Field, 2013) criterion of .722 for statistical significance (for N = 50). Finally, Field's (2013) heuristic of an item having a relative loading of minimum 75% onto its respective factor was evaluated.

Although small samples commonly are highlighted as a problem when doing EFA, Costello and Osborne (2005) concludes that the strength of the data, investigated by the above criteria, determines the validity of the analysis.

Reliability analysis and computation of new variables

A reliability analysis using Cronbach's (1951) α was conducted on the two new variables, *Knowledge* and *Avoidance*, representing the factors substantiated by the EFA. The variables were computed by taking the arithmetic mean of the factors' respective items.

The participants response regarding drug experience was used to compute a third variable, *Experience*, which was categorical:

1. No experience with LSD or other psychedelics (N = 24); including subcategories:
    A. No experience with any illicit drugs (N = 17)
    B. Experience with cannabis and no other illicit drugs (N = 7)
2. Second-hand experience, friends/family have tried psychedelics (N = 10);
3. First-hand experience with psychedelics (N = 10).

Statistical analyses of Knowledge, Avoidance and Experience

The variables were tested for normality using the Kolmogorov-Smirnov test and Shapiro-Wilk test. The Levene statistic (based on means) and Krustal-Wallis tests were conducted across the categorical variables to confirm homogeneity of variance within *Knowledge* and *Avoidance,* and detect significant differences in age across the groups, respectively. These test statistics are summarized in Appendix D.

A two-tailed bivariate correlation was conducted to compute Pearson r between *Avoidance* and *Knowledge*. Spearman's ρ was calculated for comparison since the normality for *Avoidance* was under scrutiny. The data was analyzed for the effects of outliers using cross-plots and residuals analysis.

Simple linear regression models, using *Knowledge* as predictor, and *Avoidance* as response variable, were computed for group 1 and group 2 in *Experience*.

A one-way ANOVA was conducted to compare the means of *Knowledge* and *Avoidance* between the three groups in *Experience.* Further analysis was conducted using planned contrasts. The analysis tested for both a quadratic and linear trend. Effect size was reported using ω.

T-tests were done to compare the means between respondents in the subcategories of *Experience*, group 1A and 1B, for the variables *Knowledge* and *Avoidance*.

Results

Descriptive statistics

This section summarizes the questionnaire results. For complete descriptive statistics, which is relevant to understand the non-normal nature of these data, the reader is referred to Appendix B. The questionnaire is found in Appendix A.

Belief in myths. On a scale from 1 to 7 (1 = "strongly disagree", 4 = "don't know", 7 = "strongly agree") the participants responded with a mean value of 5.55 (SD = 1.65) when presented with a statement that LSD represents a significant risk to mental health. 70.5 % agreed to this statement (5 or higher) and 40.9% strongly agreed (value = 7). 68.2% agreed that it is too dangerous to experiment with LSD, and 50% strongly agreed (M = 5.41, SD = 1.97). Furthermore, 54.5% believed that LSD can lead to suicide and fatal accidents. 20.5% strongly agreed (M = 4.91, SD = 1.49). 34.1% agreed that LSD is highly addictive, but 50.0% did not know. A mean value of 4.32 (SD = 1.65) resulted from the statement regarding LSD as a substance that cannot be controlled and will take over your life. 29.5% agreed that you can overdose on LSD and 56.8% did not know (M = 4.43, SD = 1.58). 9.1% agreed that LSD is a bigger societal problem than alcohol, but 31.8% did not know (M = 2.95, SD = 1.64).

Attitudes towards users. 36.4% agreed (5 or higher) that LSD users are a burden to society (M = 3.75, SD = 2.00). 38.6% of respondents would stay away from LSD users (M = 3.77, SD = 2.17) and 40.9% do not want an LSD user as neighbor (M = 4.20, SD = 2.12). 18.2% and 20.5% strongly agreed (value = 7) with the two latter statements respectively. 34.1% reported that they are afraid of people taking LSD, and 11.4% strongly agreed to this (M = 3.64, SD = 1.97). 25.0% respond that they do not think there is anything wrong using LSD if it makes people feel good, but 54.5% disagree (M=3.07, SD = 1.57).

Decriminalization. 34.1% agree that LSD users are criminals (M = 4.11, SD = 1.91). Regarding decriminalization, 27.3% are open to this whereas 11.4% strongly agree. However, 47.8% disagree to this statement, including 36.4% strongly disagreeing.

LSD can improve lives. 22.7% agreed that LSD can improve people's lives (5 or higher). and 45.5% do not know (value = 4, M = 3.68. SD = 1.79). 25.0% believed that LSD can improve people's lives if used responsibly, and 45.5% did not know (3.66. SD = 1.57). 27.3% agreed that there is no harm in the occasional use of LSD (M = 3.45. SD = 1.96). 27.3% say it's ok to use LSD if you know what you are doing (M = 3.39. SD = 2.03).

Experience. Out of the 44 participants, 24 had no first- or second-hand experience with LSD or other psychedelic drugs. The remaining 20 participants had second-hand experience (knowing friends having tried psychedelic drugs) of which 10 also had first-hand experience.

Most participants with first-hand experience of psychedelic drugs had tried several types of drugs. The respondents first-hand experience is summarized in Table 1.

Table 1

Participants response of first-hand experience.

Participant drug experience	N	%
Alcohol	43	97.7
Cannabis	21	47.7
Cannabis, no other drugs	11	25.0
Any psychedelic drugs	10	22.7
LSD	7	15.9
LSD, no other psychedelics	1	2.3
Other psychedelic drugs	9	20.5
MDMA/ecstasy	4	9.1
MDMA, not tried LSD	0	0
Other illegal drugs	5	11.4
Not tried psychedelics	1	2.3

Factor extraction and reliability analysis

Two factors resulted from the exploratory factor analysis. Factor 1, *Knowledge* (α = .94, M = 3.46, SD = 1.41), has an initial eigenvalue of 7.39, with 59.1% variance explained and a rotation sum of squared loadings of 6.58. It contains the following 9 items: *Ok to use, Not controlled (reversed), Improve responsibly, Dangerous (reversed), Fatal (reversed), No harm, Risk (reversed), Overdose (reversed),* and *Worse than alcohol (reversed).* Factor 2, *Avoidance* (α = .88, M = 3.88, SD = 1.88), has an initial eigenvalue of 1.23, with 7.6% explained variance, and a rotation sum of squared loadings of 5.20. It contains the following 3 items: *Not neighbor, Stay Away,* and *Afraid*. Table 2 includes a summary of the rotated factor loadings.

Table 2

Summary of final exploratory factor analysis.

Item	Factor 1 "Knowledge"	Factor 2 "Avoidance"	Relative loading (%)
Not_controlled	**.875**	-.060	94
Fatal	**.854**	-.085	91
Ok_to_use	**-.772**	-.215	78
Overdose	**.772**	-.085	90
Dangerous	**.687**	.238	74
Risk	**.665**	.309	68
No_harm	**-.635**	-.231	73
Worse_than_alcohol	**.611**	-.066	90
Improve_responsibly	**-.586**	-.267	69
Not_neighbour	.001	**.954**	100
Afraid	.011	**.838**	99
Stay_away	.093	**.669**	88
Eigenvalues	7.39	1.23	
% of variance	59.1	7.6	
Squared rotation sum	6.58	5.20	
α	.94	.88	

Note: Practically significant rotated factor loadings in bold. Relative loadings in red do not meet the criteria of minimum 75%.

The two-parted factorial solution was obtained after running the EFA six times. The final analysis included 12 items out of the initial 17. The KMO measure was .86 and all individual KMO

values were above .78. Bartlett's test statistic was $\chi^2(66) = 435.9$ ($p < .001$). The R-matrix revealed no high (> .9) intercorrelations, and no items with several low (< .4) intercorrelations (two items, *Worse_than_alcohol* and *Afraid*, did have low intercorrelation to two other items). The determinant of the R-matrix was 0.000011, just above the criteria of 0.00001. Details of the entire EFA is summarized in Appendix C.

Items belonging to *Knowledge* with a positive factor loading were reversed, as the EFA supported the idea that myths about LSD and facts about LSD could be factored together. Reliability analyses were conducted for items belonging to *Knowledge* ($\alpha = .94$) and *Avoidance* ($\alpha = .88$). Two new variables called *Knowledge* and *Avoidance* were computed by calculating the means of their respective items. These variables are not integers as their respective items, thus any value between 3.5 and 4.5 will hereafter be regarded as the midpoint ("don't know"). For *Knowledge*, the scale is from 1 to 7, with any value lower than 3.5 representing, on average, an agreement with myths and ignorance of LSD's therapeutic potential (i.e., poor knowledge), and values above 4.5 may be regarded high knowledge. For *Avoidance,* an increasing value on the scale from 1 to 7 represents an increasing degree of negative attitudes. However, values below 3.5 are more correctly understood as a disagreement with negative attitudes (i.e., *not* holding negative attitudes), while values above 4.5 represent an agreement.

The effect of age and gender on *Knowledge* and *Attitude*

A significant negative correlation was found between *Knowledge* and the age of the participants, $\rho = -.33$, $p = .032$. This is considered a small effect size (Cohen, 1992). There was no effect of age on *Avoidance*, $\rho = .20$, $p = .204$.

Due to the low number of male participants (N = 12), the sample was deemed too small to tie the differences in responses to gender in a reliable way.

Bivariate correlation between *Knowledge* and *Attitude*

To investigate hypothesis 1 (H1), whether people that hold false myths about LSD have more negative attitudes towards users of LSD than people with a higher level of knowledge, a bivariate correlation was conducted between *Knowledge* and *Avoidance.* The correlation between the two computed factors was found to be r -.81 ($p < .001$), which is considered a large effect (Cohen, 1992). The result was obtained after removal of one outlier (value 1,1, Figure 1).

The correlational analysis verifies H1 by showing an association between having poor knowledge about LSD (*Knowledge* < 3.5) and wanting to avoid LSD users (*Avoidance* > 4.5). On the opposite end, having high knowledge about LSD (*Knowledge* > 4.5) correlates with not having negative attitudes (*Avoidance* < 3.5). The correlation is summarized in Table 3 and shown in , Figure 1.

Table 3

Correlation between Knowledge and Avoidance.

Variables	Knowledge	Avoidance
Knowledge	-	
Avoidance	-.81**	-
M[a]	3.46	3.87
SE	0.21	0.28
α	.94	.88

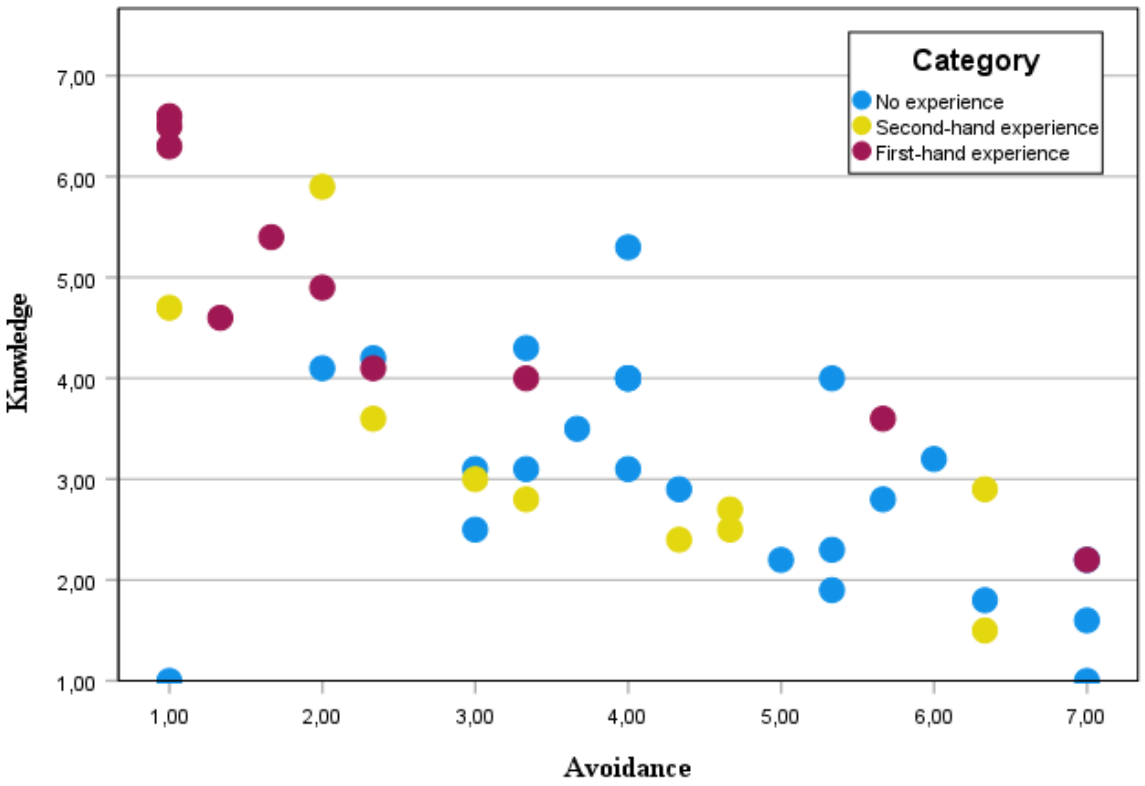
**statistically significant ($p < .001$).

Attitudes towards decriminalization

Attitudes where further investigated with a bivariate correlation revealing a significant effect between *Knowledge* and the item *Decriminalize*, $\rho = .51$, $p < .001$, indicating that the more knowledge one has about LSD, the more open the person is for decriminalization. A correlation between *Avoidance* and *Decriminalize* revealed a similar effect size, $\rho = -.52$ $p < .001$.

Figure 1

Scatterplot of Knowledge and Avoidance. r -.81 (p < .001) after removal of one outlier (value 1,1). For *Knowledge*, values below 3.5 indicate an agreement in myths about LSD, while values above 4.5 indicate correct knowledge. For *Avoidance*, values below 3.5 indicate a disagreement with negative attitudes, while values above 4.5 an agreement. Values are colored after the categorical variable *Experience*.



Regression model for participants with no experience

To investigate hypothesis 2 (H2), whether people without first- or second-hand experience with LSD that hold correct knowledge, also have negative attitude towards LSD users (but less so than in H1), a regression model was made. H2 could not be verified by the data sample since too few participants (N = 1) without experience qualified as having knowledge (*Knowledge* > 4.5). Histograms and PP-plots did not confirm normally distributed residuals, and one datapoint was removed (residual = -4.54) prior to running the model. A linear regression using *Knowledge* as predictor and *Avoidance* as dependent variable, yielded a constant of 7.16 (SE = 0.73, p < .001)

and a β-coefficient of -0.95 ($p < .001$), for the respondents without first- or second-hand experience ($N = 23$, excluded $N = 1$). The goodness of fit is given by $R^2 = .44$, with a significant F-statistic of 38.49 ($p < .001$). The same procedure was done for the group consisting of participants with second-hand experience. The results are summarized in Table 4 and Figure 2.

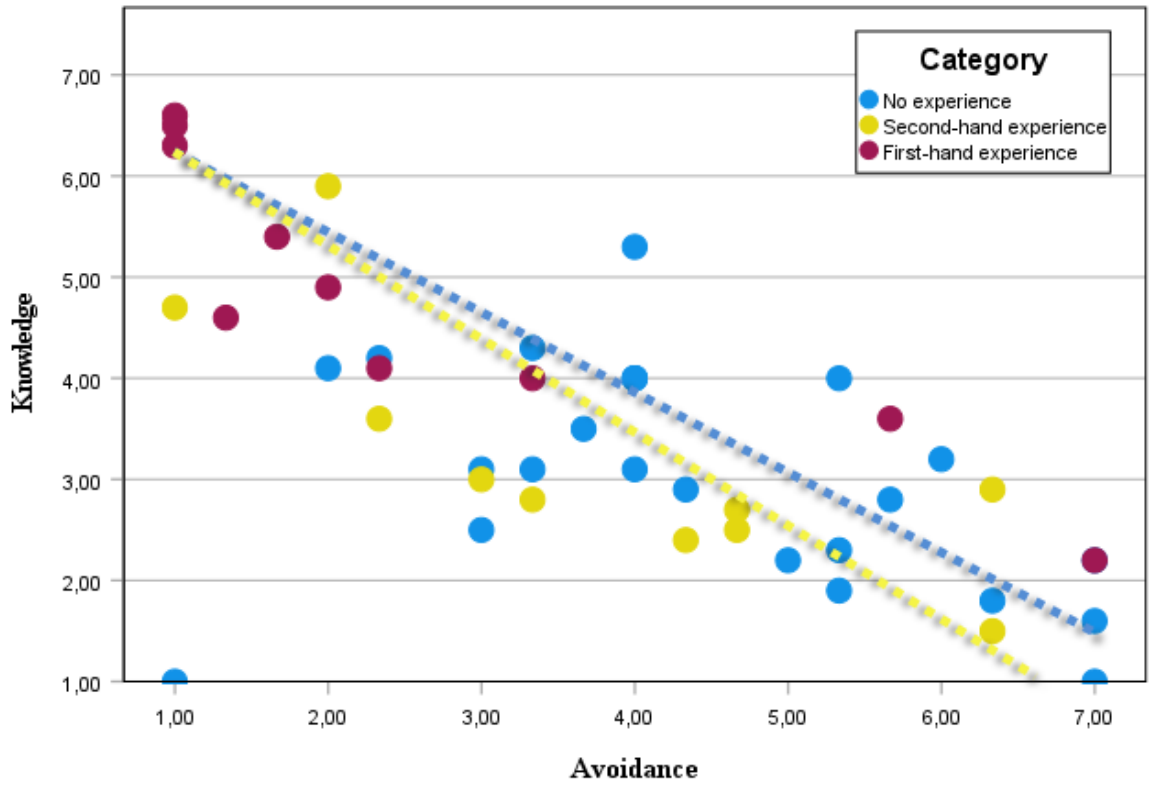
Table 4

Linear regression models. Knowledge was used as predictor of *Avoidance* for group 1 and 2 in *Experience*.

Level of experience	N	B	SE B	β	p	R^2
1	23	7.16	0.73	- 0.95	< .001	.44
2	10	7.35	1.07	- 1.11	< .001	.56
3	10	-	-	-	-	-

Figure 2

Linear regression models. Linear models shown with dashed lines for the first two levels of Experience.



The first regression model may predict the attitudes of people that have no experience and high knowledge. Using the linear model, one may predict that participants with knowledge above 4.3 do not want to avoid LSD users (avoidance < 3.5), rejecting H2 and rather suggesting that this group do not have negative attitudes towards LSD users. For comparison, the linear model for those with second-hand experience shows a shift towards a lower score on *Avoidance* for the same level of *Knowledge.* For first-hand users of psychedelic drugs, no model was calculated because other factors, such as the number of times a person had used psychedelic drugs, warrant different subgroups, for which the sample size here is too small.

The effect of *Experience* on *Knowledge* and *Avoidance*

Hypothesis 3 (H3) posit that people with first- or second-hand experience with LSD also have knowledge about LSD and express less negative attitudes towards users of LSD. Although, the difference between the three levels of experience is evident from the cross-plot and regression models in the previous section, a one-way ANOVA was conducted for a stronger verification. Descriptive statistics for the three levels of *Experience* are summarized in Table 7.

Table 5.

A one-way ANOVA confirmed a significant effect of *Experience* on *Knowledge*, $F(2, 41) = 8.12$, $p = .001$, $\omega = .49$. A significant linear trend was found, $F(1, 41) = 13.7$, $p = .001$ $\omega = .51$. A second ANOVA showed a smaller, yet significant, effect of *Experience* on *Avoidance*, $F(2,41) = 3.58$, $p = .037$, $\omega = .32$. A significant linear trend was found, $F(1,41) = 6.99$, $p = .012$, $\omega = .13$. The results are summarized in Table 6.

Despite the linear trends indicating a pattern across the groups for *Knowledge* and *Avoidance,* the planned contrasts (Table 7) revealed that having second-hand experience did not significantly increase knowledge, $t(41) = 0.43$, $p = .67$, $p = .07$, nor decrease *Avoidance,* $t(41) = -$

.92, p = .36, r =.33, compared to having no experience. All other pairwise comparisons are summarized in Table 7.

Table 5

Descriptive statistics for the three levels of experience (1 = no experience, 2 = second-hand experience, 3 = first-hand experience).

		Knowledge		**Avoidance**	
Level of experience	N	Mean[a]	Standard deviation	Mean[a]	Standard deviation
1	24	3.00	1.12	4.42	1.62
2	10	3.20	1.26	3.80	1.79
3	10	4.82	1.42	2.63	2.10
Total	44	3.46	1.41	3.87	1.88

[a]Values on a scale from 1 (Strongly disagree), 4 (Don't know), to 7 (Strongly agree).

Table 6

ANOVA statistics on the effect of experience on knowledge and avoidance.

	Knowledge			**Avoidance**		
	F(2,41)	p	ω	F(2,41)	p	ω
Between groups	8.12	.001	.49	3.58	.067	.32
Linear term	13.7	.001	.51	6.99	.012	.13

Table 7

Planned contrasts for ANOVA.

	Level of experience		
Contrast	None	Second-hand	First-hand
1	-2	1	1
2	-1	1	0
3	-1	0	1
4	0	-1	1

As part of H3, the nature of the second-hand experience, whether being friends or family, could have an effect on knowledge and attitude. As there were no respondents that knew family members that had used LSD or other psychedelics, that did not also have first-hand experience and friends with experience with these drugs, this part of H3 could not be investigated.

Table 8

Test statistics for the planned contrasts.

	Knowledge			Avoidance		
Contrast	t(41)	p	r	t(41)	p	r
1	2.72	**.009**	.39	-2.24	**.031**	.33
2	0.43	.672	.07	-0.92	.361	.14
3	3.96	**<.001**	.53	-2.67	**.011**	.39
4	2.97	**.005**	.42	-1.47	.149	.22

Note: Statistically significant values in bold: $p < .05$.

Cannabis-only users' attitude towards users of psychedelic drugs

Hypothesis 4 (H4) offer an investigation towards people with experience of other drugs, such as MDMA, to see if they express less negative attitudes towards users of LSD. All respondents that admitted to having tried MDMA (N = 4) had also tried LSD, and only one respondent that had experience with other illicit drugs had not tried psychedelic drugs (see Table 1). A comparison between two subgroups of respondents with no experience with psychedelics was, however, possible: Group 1A (N = 17) included respondents with no experience with any illicit drugs, while respondents in group 1B (N = 7) had experience with cannabis and no other illicit drugs. None of the respondents in groups 1A and 1B had first or second-hand experience with psychedelic drugs. T-tests revealed that having used cannabis had a significant effect on *Knowledge* about LSD, $t(22) = -2.21$, $p = .038$, $r = .47$, but no effect on *Avoidance*, $t(22) = 1.50$, $p = .149$, $r = .49$.

Discussion

The purpose if this study is to shed light on the high degree of distorted facts around LSD and investigate whether these beliefs are associated with negative attitudes towards LSD users, which may cause stigma and discrimination towards users of psychedelic drugs. The research question posed is to investigate whether people's knowledge and experience with LSD can predict attitudes.

Knowledge and belief in myths

The majority of the respondents revealed that they believe in a high number of myths about LSD, which still flourish in the media, rather than being influenced by Norwegian health authority information (FHI, 2022). Furthermore, the majority remained naïve to its therapeutic potential, with an informed minority mostly having first-hand experience with psychedelics. The changing attitudes towards psilocybin found by Jacobsen et al. (2021), may not be generalizable to the more controversial drug LSD. However, the participants in Jacobsen and colleagues' study were presented with medical facts, suggesting that knowledge may influence attitudes. The current study presented the participants with statements that were mostly false, which may have affected the respondents' attitudes negatively.

Knowledge and its association to attitudes

Around 40% of the respondents in this study express negative attitudes towards LSD users. This result is not surprising when compared to the results from Ireland regarding attitudes towards drug addicts (Dillon, 2016). The results from the current study thus suggest that LSD users are regarded as stereotypical drug addicts by 40% of the respondents. A bivariate correlation between the variables *Knowledge* and *Avoidance* corroborate hypothesis 1 (H1), positing that people holding false myths about LSD have more negative attitudes towards users of LSD compared to people with a higher degree of knowledge. The effect size was large and significant (r -.81, $p < .001$, see

Figure 1). Furthermore, correlational statistics found *Knowledge* to be positively associated with being open to decriminalization of LSD ($\rho = .51$, $p < .001$). *Avoidance* had a negative correlation to decriminalization ($\rho = -.52$, $p < .001$), suggesting negative attitudes towards LSD users to be associated with attitudes related to drug law enforcement. Whether the law in Norway, being the strictest amongst Scandinavian countries on matters of drugs (Moeller, 2019), is indicative of the populations' attitudes, remains partly unanswered, and judging by the effect of the correlations, knowledge seem to be a more important factor. *Knowledge* had a negative correlation to age ($\rho = -.33$, $p = .032$), suggesting a more informed younger generation. However, the effect was not present between *Avoidance* and age ($\rho = .20$, $p = .204$). A t-test between respondents who had tried cannabis and those with no drug experience (including not knowing anyone having tried psychedelic drugs), revealed a significant effect on *Knowledge* about LSD, ($t(22) = -2.21$, $p = .038$, $r = .47$). The effect of having tried cannabis was not observed on *Avoidance* ($t(22) = 1.50$, $p = .149$, $r = .49$). Hypothesis 4 (H4), positing that people with experience of other drugs have higher knowledge and less negative attitudes towards LSD users, thus remains partly supported.

Is experience necessary for less negative attitudes?

Even with a large effect size (r. -.81) between *Knowledge* and *Avoidance*, it is only with first-hand experience with psychedelic drugs that negative attitudes are non-existent. Although not supported by the planned contrasts in the ANOVA, a significant linear trend was found revealing increased E*xperience* to have an effect on increased *Knowledge* ($F(1, 41) = 13.7$, $p = .001$ $\omega = .51$), and decreased *Avoidance* ($F(1,41) = 6.99$, $p = .012$, $\omega = .13$). This might imply that knowing someone who has tried psychedelics changes ones' attitudes, but the effect size was small. The ANOVAs support H3, positing that a higher degree of experience is associated with higher knowledge and lower negative attitudes.

It may seem self-evident that having such acquaintances or being a first-hand user is unassociated with negative attitudes. The important question remaining is whether lack of negative attitudes can be seen amongst people without first- or second-hand experience. A linear regression model for this subsample verified *Knowledge* as a significant predictor to *Avoidance* ($B = 7.16$, $\beta = -0.95$, $R^2 = .44$, $p < .001$). The model predicts that with high knowledge people will have less negative attitudes (low *Avoidance*). H2 seeks to investigate whether people without first- or second-hand experience with LSD that hold high knowledge, also have negative attitude towards LSD users, but less so than people without knowledge. The linear model, with a gradient similar to that of the bivariate correlation, suggest on the contrary, that with a certain amount of knowledge, attitudes will not be negative. H2 is limited by the dataset which do not include people with high knowledge and no experience. So, while a linear model may be significant, practically it may not be valid, and thus H2 remains open. H2 may be further questioned by those having tried cannabis who *did* have more knowledge, but no significant difference in attitude. It remains the topic of other studies to investigate whether a knowledge intervention could predict a decrease in negative attitudes.

Limitations

Sample size

The sample size is small, and this reduces the confidence in several of the results. This is evident by the large standard error of the regression model reflecting poor accuracy of the predictability. While normality tests confirmed a null hypothesis of normality, visual inspections and kurtosis indicate that these assumptions may be called into question, further placing doubt on whether an ANOVA was appropriate. Small sample size may also explain discrepancies between the ANOVA models and the associated linear trends.

A larger sample might include people with knowledge about LSD and no experience, which would strengthen the evaluation of H2. Furthermore, people knowing only of family having tried drugs, or a subsample of people having experience with club drugs and not LSD, could allow further statistical inferences not warranted by this sample.

Although the external validity is low due to sample size, generalization is further compromised by the purposive data collection of a non-representable sample. The overall higher prevalence of all drugs compared to national statistics might on one hand represent the characteristics of people being interested in responding to the survey, which had a response rate as low as 18%, or reflect the group characteristics presented by Krebs and Johansen (2013), including highly educated people. The high prevalence of use *did* allow for statistical comparisons which one would believe required a larger sample, but nonetheless the statistical power is not large enough for wider generalizations.

Due to the controversy of the topic one management group refused to distribute the questionnaire to its employees. The challenges related to data collection may represent wider implications of studying the topic of LSD and gaining a representative sample. To ensure a large enough sample including several workplaces (protecting the anonymity of the participants) an additional group of students was included in the final sample. Arguably this made the sample more homogenous as the students belonged to the same educational program.

Construct validity

Factor analysis. The exploratory factor analysis allowed for removal of items to strengthen the validity of the constructs. Further studies may shed more light on the influence of law enforcement on attitudes towards drug users. In this study, items related to drug users being

criminals or regarding one's position to decriminalization, did not intercorrelate to substantiate a third factor, nor did they match the remaining items.

The meaning of constructs. The interpreted factors substantiating the variables *Knowledge* and *Avoidance*, although strengthened by a factor analysis, are limited by the items they consist of. For example, some items underlying *Knowledge* may in the context of the questionnaire more likely be understood as an attitude. Whether it is ok to use psychedelics if you know what you are doing (item *Ok_to_use*) was in Goodstadt et al. (1978) Drug Attitude Scale classified as a statement related to attitude. However, the factor analysis revealed that this item had a significantly higher loading to *Knowledge*. Keeping this in mind, it is important to realize that the high correlation between *Knowledge* and *Avoidance* is additionally strengthened by items with high cross-loadings. In this sense, *Knowledge* remains to a certain degree a measure of beliefs, related to an attitude.

Survey limitations

While an improved questionnaire might detect a third factor related to law enforcement, additional unaddressed topics are lacking, as in many other studies. This includes mapping the setting of peoples' experience with psychedelics, whether being done recreationally, therapeutically, or as subperceptual micro-doses. The effect these differences have on a person's experience vary substantially and may also explain the inconsistent findings in the populational studies by Krebs and Johansen (2013) and Yang et al. (2022). Furthermore, what the effect of the setting has on a person's attitude and knowledge may differ significantly. In addition, the array of different psychedelic drugs was not separated in this study, except for the main drug in question, LSD. To avoid recognizing MDMA as a psychedelic drug, this particular drug was given its own response checkbox.

Implications of findings

The findings in this study should be treated with caution due to the low sample size, nonetheless it represents the first study to address specific attitudes towards LSD users in Norway. Additionally, the significant correlation between *Knowledge* and *Avoidance* have a large effect size, which is likely to remain visible, at least to some degree, in larger samples.

A question remaining, proposed in this study, is whether knowledge can change attitudes on this matter. Further studies are needed to explore this possible causal effect. In addition, more statistical power is necessary to verify the influence of second-hand experience on attitudes. Interestingly, given the prevalence of use found in this study, also supported by Jacobsen and colleagues' (2021) findings, it is likely that many people know someone that have experience with the use of psychedelic drugs. Not surprising given the strict laws and stigma, most people choose not to speak out about their experiences. This may inhibit dissolution of drug addict stereotypes and development of different attitudes. Although there is a link between attitudes towards users and attitudes towards decriminalization, the findings in this study suggest that knowledge has the largest effect.

Decriminalization of a number of drugs was voted down in parliament in 2021 in Norway (Dahle, 2022). At the time the debate was heavily situated around cannabis, where attitudes have changed on a global scale in the recent decade. The act of decriminalization also involved psilocybin which can be found in Norway's pastures, but the synthetic compound LSD remained out of the question. While cannabis may have its own myths and scare stories, the topic of accepting psychedelic drugs either as decriminalized substances or as accepted medicine, may be inhibited by the beliefs of the general public. Even though Norwegians show high trust in their health care system, this study suggest that the old myths about LSD prevail – myths that arguably

are kept alive by certain authorities. Pre-existing attitudes might hinder gaining knowledge, as evident by NNPFs influence under the vote on decriminalization. The topic of psychedelics remain slightly different, due to the therapeutic potential and lower degree of harm than most other drugs, including cannabis and alcohol. As 97.7% of the sample have experience with alcohol and 47.7% with cannabis, knowing that LSD is a safer drug could be a dissonance hard to untangle. While the use of psychedelics is on the rise, the potential of distorted facts to negatively influence health education messages might also affect the set and setting of the psychedelic experience itself and as such be regarded a risk factor. In both cases, whether informing the general public or users of the drug, correct information remains essential.

Conclusion

This study supports that a majority believe in myths about LSD and remain naïve to its therapeutic potential. The correlation between knowledge is negatively associated with negative attitudes, meaning that holding on to the myths about LSD is associated with wanting to avoid LSD users. These findings suggest that LSD users may be viewed as stereotypical drug addicts. It is likely that law enforcement has an effect on these attitudes. While being younger or having experience with cannabis was shown to be associated with more knowledge about LSD, this study did not find these factors to have an effect on attitude towards LSD users. However, knowing someone that have used psychedelics was seen to affect both knowledge and attitudes, but it remains a question for further studies whether knowledge interventions can change attitudes.

Data availability statement

The data is classified as “open” (UiS, 2020). The raw data supporting this study will be made available by the author upon request without undue reservation.

References

Aday, J. S., Davis, A. K., Mitzkovitz, C. M., Bloesch, E. K., & Davoli, C. C. (2021, Apr 9). Predicting Reactions to Psychedelic Drugs: A Systematic Review of States and Traits Related to Acute Drug Effects. *ACS Pharmacol Transl Sci, 4*(2), 424-435. https://doi.org/10.1021/acsptsci.1c00014

Albarracin, D., & Shavitt, S. (2018). Attitudes and attitude change. *Annual review of psychology, 69*, 299-327. https://doi.org/10.1146/annurev-psych-122216-011911

Anderson, T. L., & Kavanaugh, P. R. (2007, 2007/11/01). A 'Rave' Review: Conceptual Interests and Analytical Shifts in Research on Rave Culture [https://doi.org/10.1111/j.1751-9020.2007.00034.x]. *Sociology Compass, 1*(2), 499-519. https://doi.org/https://doi.org/10.1111/j.1751-9020.2007.00034.x

Baksaas, J. M. (2021). Psykedelisk sopp kan bli ny behandling mot depresjon. *Psykologisk.no*. https://psykologisk.no/2021/12/psykedelisk-sopp-kan-bli-ny-behandling-mot-depresjon/

Carhart-Harris, R. L., & Goodwin, G. M. (2017, 2017/10/01). The Therapeutic Potential of Psychedelic Drugs: Past, Present, and Future. *Neuropsychopharmacology, 42*(11), 2105-2113. https://doi.org/10.1038/npp.2017.84

Cohen, J. (1992). Statistical Power Analysis. *Current Directions in Psychological Science, 1*(3), 98-101. https://doi.org/10.1111/1467-8721.ep10768783

Costello, A. B., & Osborne, J. (2005, 01/01). Best Practices in Exploratory Factor Analysis: Four Recommendations for Getting the Most From Your Analysis. *Practical Assessment, Research & Evaluation, 10*, 1-9.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 16*, 297-334. https://doi.org/10.1007/BF02310555

Dahle, P. (2022). *Policing and Policy: Officer Perspectives on Norwegian Drug Enforcement in a Time of Its Transformation* NTNU].

Dillon, L. (2016). *Results of Poll in October 2016 into attitudes to drug use and to people who use drugs.* Citiwide. https://www.drugsandalcohol.ie/26840/

Ducharme, J. (2023). Psychedelics May Be Part of U.S. Medicine Sooner Than You Think. *Time*. https://time.com/6253702/psychedelics-psilocybin-mdma-legalization/

Fadiman, J. (2011). *Psychedelic Explorer's Guide. Safe, Therapeutic, and Sacred Journeys*. Park Street Press,U.S.

FHI. (2022). *LSD*. FHI. Retrieved 07.04.2023 from https://nhi.no/psykisk-helse/rus-og-avhengighet/narkotiske-stoffer/lsd/

FHI. (2023). *Narkotikabruk i Norge*. FHI. https://www.fhi.no/nettpub/narkotikainorge/bruk-av-narkotika/narkotikabruk-i-norge/

Field, A. (2013). *Discovering Statistics Using IBM SPSS Statistics* (4 ed.). SAGE Publications.

Freese, T. E., Miotto, K., & Reback, C. J. (2002, 2002/09/01/). The effects and consequences of selected club drugs. *Journal of Substance Abuse Treatment, 23*(2), 151-156. https://doi.org/https://doi.org/10.1016/S0740-5472(02)00267-2

Gashi, L., Sandberg, S., & Pedersen, W. (2021, 01/01). Making "bad trips" good: How users of psychedelics narratively transform challenging trips into valuable experiences. *International Journal of Drug Policy, 87*, 102997. https://doi.org/10.1016/j.drugpo.2020.102997

Goode, E. (2008, 2008/07/01). moral panics and disproportionality: the case of LSD use in the sixties. *Deviant Behavior*, *29*(6), 533-543. https://doi.org/10.1080/01639620701839377

Goodstadt, M. S., Cook, G., Magid, S., & Gruson, V. (1978, Nov). The Drug Attitudes Scale (DAS): its development and evaluation. *Int J Addict, 13*(8), 1307-1317. https://doi.org/10.3109/10826087809039344

Griffiths, R. R., Johnson, M. W., Carducci, M. A., Umbricht, A., Richards, W. A., Richards, B. D., Cosimano, M. P., & Klinedinst, M. A. (2016, 2016/12/01). Psilocybin produces substantial and sustained decreases in depression and anxiety in patients with life-threatening cancer: A randomized double-blind trial. *Journal of Psychopharmacology, 30*(12), 1181-1197. https://doi.org/10.1177/0269881116675513

Haave, P., & Pedersen, W. (2021). The Promise and Demise of LSD Psychotherapy in Norway. *Social History of Medicine, 34*(2), 399-416. https://doi.org/10.1093/shm/hkz128

Habing, B. (2003). *Exploratory Factor Analysis*. University of South Carolina. https://people.stat.sc.edu/habing/courses/530efa.pdf

Haden, M., & Woods, B. (2020, 01/01). LSD Overdoses: Three Case Reports. *Journal of Studies on Alcohol and Drugs, 81*, 115-118. https://doi.org/10.15288/jsad.2020.81.115

Hartogsohn, I. (2016, Dec). Set and setting, psychedelics and the placebo response: An extra-pharmacological perspective on psychopharmacology. *Journal of psychopharmacology (Oxford, England), 30*(12), 1259-1267. https://doi.org/10.1177/0269881116677852

Høifødt, A. M. (2018). *The Value of Experience: Psychedelics, phenomenology and contemporary perspectives on drug use* University of Oslo]. https://www.duo.uio.no/handle/10852/63815?locale-attribute=en

Jacobsen, H., Stubhaug, A., Holmøy, B., Kvam, T.-M., & Reme, S. (2021, 04/15). Have Norwegians tried psilocybin, and do they accept it as a medicine? *Journal of Psychedelic Studies, 5*. https://doi.org/10.1556/2054.2021.00167

Jakobsen, S. E. (2021). No decriminalisation of drugs in Norway yet: Being caught with a joint can still have major consequences. *sciencenorway.no*. https://sciencenorway.no/addiction-cannabis-crime/no-decriminalisation-of-drugs-in-norway-yet-being-caught-with-a-joint-can-still-have-major-consequences/2054646

Krebs, T. S., & Johansen, P.-Ø. (2013). Psychedelics and Mental Health: A Population Study. *PLOS ONE, 8*(8). https://doi.org/10.1371/journal.pone.0063972

Kuypers, K. P., Ng, L., Erritzoe, D., Knudsen, G. M., Nichols, C. D., Nichols, D. E., Pani, L., Soula, A., & Nutt, D. (2019, Sep). Microdosing psychedelics: More questions than answers? An overview and suggestions for future research. *Journal of psychopharmacology (Oxford, England), 33*(9), 1039-1057. https://doi.org/10.1177/0269881119857204

Lovdata. (1971). *Konvensjon om psykotrope stoffer*. Retrieved 10.04.2023 from https://lovdata.no/dokument/TRAKTAT/traktat/1971-02-21-1

Mardia, K. V. (1970). Measures of Multivariate Skewness and Kurtosis with Applications. *Biometrika, 57*(3), 519-530. https://doi.org/10.2307/2334770

Mjelva, J. K. (2018). Vi trenger ikke tidligere tiders skremselspropaganda om LSD. *Stavanger Aftenblad*. https://www.aftenbladet.no/meninger/debatt/i/zLKy44/vi-trenger-ikke-tidligere-tiders-skremselspropaganda-om-lsd

Moeller, K. (2019, 2019/11/01/). Sisters are never alike? Drug control intensity in the Nordic countries. *International Journal of Drug Policy, 73*, 141-145. https://doi.org/https://doi.org/10.1016/j.drugpo.2019.06.004

NIDA. (2020). *MDMA (Ecstasy/Molly) DrugFacts*. National Institute on Drug Abuse (NIDA). Retrieved 08.04.2023 from https://nida.nih.gov/publications/drugfacts/mdma-ecstasymolly

NNPF. (2023). *Norsk Narkotikapolitiforening*. https://nnpf.no/

NOU. (2003). *NOU 2003: 33*. Norsk Offentlig Utredning. https://www.regjeringen.no/no/dokumenter/nou-2003-33/id149032/?ch=1

Nutt, D., King, L. A., Saulsbury, W., & Blakemore, C. (2007). Development of a rational scale to assess the harm of drugs of potential misuse. *The Lancet, 369*(9566), 1047-1053. https://doi.org/10.1016/S0140-6736(07)60464-4

Pedersen, W. (2023). *Hvordan fikk private Norsk Narkotikapolitiforening så mye makt?* Morgenbladet. https://www.morgenbladet.no/ideer/2023/04/13/hvordan-fikk-private-norsk-narkotikapolitiforening-sa-mye-makt/

Pollan, M. (2018). *How to Change Your Mind: What the New Science of Psychedelics Teaches Us About Consciousness, Dying, Addiction, Depression, and Transcendence*. Penguin Press.

RUSinfo. (n.d.). *Fakta om LSD*. RUSinfo. Retrieved 15.03 from https://rusinfo.no/fakta-om-rusmidler/lsd/

Schiøtz, A. (2017). Rus i Norge – politiske og medisinske tilnærminger i historisk lys. *Idunn, 20*(1). https://www.idunn.no/doi/10.18261/issn.2464-3076-2017-01-01

Sivertsen, B., & Johansen, M. S. (2022). *Studentenes helse- og trivselsundersøkelse 2022 [Students' Health and Wellbeing Study 2022]*. Studentsamskipnaden SiO.

Stolt-Nielsen, H. (2016). *Kritiserer Anundsens «cannabis-bevis»: Brukte upublisert eksamensoppgave*. NRK. https://www.nrk.no/norge/kritiserer-anundsens-_cannabis-bevis__-brukte-upublisert-eksamensoppgave-1.13126432

Sweeney, M. M., Nayak, S., Hurwitz, E. S., Mitchell, L. N., Swift, T. C., & Griffiths, R. R. (2022). Comparison of psychedelic and near-death or other non-ordinary experiences in changing attitudes about death and dying. *PLOS ONE, 17*(8), e0271926. https://doi.org/10.1371/journal.pone.0271926

Taherdoost, H. (2019, 06/01). What Is the Best Response Scale for Survey and Questionnaire Design; Review of Different Lengths of Rating Scale / Attitude Scale / Likert Scale.

Tønset, T. S. (2021). *Tripsitterne*. NRK. https://www.nrk.no/osloogviken/xl/_hakon_-lever-av-a-vaere-tripsitter-_-vil-helbrede-psykisk-syke-med-ulovlig-mdma_-lsd-og-fleinsopp-1.15679779

UiO. (2020). *Teknisk systembeskrivelse for Nettskjema*. University of Oslo. https://www.uio.no/tjenester/it/adm-app/nettskjema/mer-om/systembeskrivelse/

UiS. (2020). *Classification of Information*. University of Stavanger. https://www.uis.no/en/regulations/classification-of-information

Vikingstad, T.-A. (2022). Han var åpen om rusbruken. Nå får ikke Christian Øie forsikring. *Stavanger Aftenblad*. https://www.aftenbladet.no/lokalt/i/dnW1gB/han-var-aapen-om-rusbruken-naa-faar-ikke-christian-oeie-forsikring

Vold, E. H. (2019). *Psykoaktiv plantemedisin sprer seg til Norge*. NRK. https://www.nrk.no/rogaland/psykoaktiv-plantemedisin-sprer-seg-til-norge-1.14489490

Winstock, A. R., Maier, L. J., Zhuparris, A., Davies, E., Puljevic, C., Kuypers, K. P. C., Ferris, J. A., & Barratt, M. J. (2021). *Global Drug Survey (GDS) 2021 Key Findings Report*. https://www.globaldrugsurvey.com/wp-content/uploads/2021/12/Report2021_global.pdf

Yang, K. H., Han, B. H., & Palamar, J. J. (2022, 2022/09/01/). Past-year hallucinogen use in relation to psychological distress, depression, and suicidality among US adults. *Addictive Behaviors*, *132*, 107343. https://doi.org/https://doi.org/10.1016/j.addbeh.2022.107343

Appendices

Appendix A: Questionnaire

I hvor stor grad er du enig i følgende påstander? (1 = Helt uenig, 4 = Vet ikke, 7 = Helt enig) */ To what extent do you agree to the following statements? (1 = Strongly disagree, 4 = Don't know, 7 = Strongly agree)* [variable name]

1. LSD utgjør en betydelig risiko for psykisk helse */ LSD represent a significant risk to mental health* [Risk]
2. Det er altfor farlig å eksperimentere med LSD */ It is too dangerous to experiment with LSD* [Dangerous]
3. LSD kan ikke kontrolleres - det tar over livet ditt */ LSD cannot be controlled – it will take over your life* [Not_controlled]
4. LSD er et større samfunnsproblem enn alkohol */ LSD is a bigger societal problem than alcohol* [Worse_than_alcohol]
5. LSD kan føre til overdose */ LSD can lead to overdose* [Overdose]
6. LSD øker risikoen for selvmord og fatale ulykker */ LSD increases the risk for suicide and fatal accidents* [Fatal]
7. Folk som bruker LSD er en byrde for samfunnet */ People who use LSD are a burden to society* [Burden]
8. Jeg tar avstand fra folk som ruser seg på LSD */ I stay away from people using LSD* [Stay_away]
9. Jeg ønsker ikke en nabo som bruker LSD */ I do not wish to have a neighbour who use LSD* [Not_neighbour]
10. Jeg er redd folk som bruker LSD */ I am afraid of people who use LSD* [Afraid]

11. Brukere av LSD er kriminelle */ LSD users are criminal* [Criminals]
12. Det gjør ingen skade å bruke LSD en sjelden gang */ There is no harm in the occational use of LSD* [No_harm]
13. LSD bør avkriminaliseres */ LSD should be decriminalized* [Decriminalize]
14. LSD kan forbedre livet til folk */ LSD can improve people's lives* [Improve_lives]
15. Det er ingenting galt i at folk bruker LSD dersom det får dem til å føle seg bra */ There is nothing wrong in people using LSD if it it makes them feel good* [Nothing_wrong]
16. LSD forbedrer livene til de som bruker det ansvarlig */ LSD improves the lives of those who use it responsibly* [Improve_responsibly]
17. Det er greit å bruke LSD hvis man vet hva man går inn for */ It is ok to use LSD if you know what you're doing* [Ok_to_use]

Vennligst besvar spørsmålene ved å krysse av alle relevante svar */ Please respond the following questions by ticking all relevant boxes*

1. Jeg har prøvd følgende rusmidler */ I have used the following drugs*
    a. Alkohol */ Alcohol*
    b. Cannabis
    c. LSD
    d. MDMA/ecstacy
    e. Fleinsopp eller andre psykedeliske stoffer */ Liberty cap or other psychedelic drugs*
    f. Andre illegale stoffer */ Other illegal drugs*
    g. Ingen */ None*

1b. Hvor mange ganger har du prøvd LSD, fleinsopp eller andre psykedeliske stoffer / *How many times have you tried LSD, liberty cap, or other psychedelic drugs*

   a. 1 gang */ once*
   b. 2 ganger */ twice*
   c. 3 ganger eller mer */ three times or more*

2. Jeg har venner som jeg vet har prøvd følgende rusmidler */ I have friends who I know have tried the following drugs.*
   a. LSD
   b. MDMA/ecstacy
   c. Fleinsopp eller andre psykedeliske stoffer */ Liberty cap or other psychedelic drugs*
   d. Andre illegale stoffer */ Other illegal drugs*
3. Jeg har familie som jeg vet har prøvd følgende rusmidler */ I have family who I know have tried the following drugs*
   a. LSD
   b. MDMA/ecstacy
   c. Fleinsopp eller andre psykedeliske stoffer */ Liberty cap or other psychedelic drugs*
   d. Andre illegale stoffer */ Other illegal drugs*
4. Vennligst oppgi kjønn */ Please state your gender*
   a. Kvinne */ Female*
   b. Mann */ Male*
   c. Annet/ønsker ikke å oppgi */ Other/do not wish to state*

5. Vennligst oppgi alder */ Please state age*

    a.

Appendix B: Questionnaire results

Table 9

Descriptive statistics for survey results.

Item	Mean	SD	Median	Mode	Skewness	Kurtosis
Risk	5.55	1.65	6	7	-0.915	-0.324
Dangerous	5.41	1.97	6.5	7	-0.912	-0.499
Not_controlled	4.32	1.65	4	4	-0.278	0.199
Worse_than_alcohol	2.95	1.64	3	4	0.638	0.060
Overdose	4.43	1.58	4	4	0.057	-0.090
Fatal	4.91	1.49	5	4	-0.278	-0.078
Burden	3.75	2.00	4	4	-0.040	-1.180
Stay_away	3.77	2.17	4	1	0.192	-1.328
Not_neighbour	4.20	2.12	4	4	-0.128	-1.224
Afraid	3.64	1.97	4	1	0.190	-1.020
Criminals	4.11	1.91	4	4	0.125	-0.876
No_harm	3.45	1.96	4	4	0.295	-1.006
Decriminalize	3.30	2.11	4	1	0.323	-1.133
Improve_lives	3.68	1.79	4	4	-0.005	-0.691
Nothing_wrong	3.07	1.82	3	1	0.329	-0.960
Improve_responsibly	3.66	1.57	4	4	-0.422	-0.341
Ok_to_use	3.39	2.03	3	1	0.410	-0.992

Note: Scale is a 7-point Likert-scale (1 = strongly disagree, 4 = don't know, 7 = strongly agree).

Appendix C: Exploratory factor analysis

The exploratory factor analysis (EFA) was run six times. In all cases the KMO statistic was above .8 ("Meritoriuous", Hutcheson and Sofroniou, 1999, as cited in Field, 2013, p. 685) and all individual KMO values (the diagonal of the anti-image matrix) were above .5. Bartlett's test of sphericity was significant (>.001) in all cases. In iteration 5 and 6 the potential issue of collinearity was solved with a determinant of the R-matrix above 0.00001.

Table 10

KMO statistics and Bartlett's test for all EFA runs.

Analysis number	KMO	Bartlett's test of sphericity	R determinant
1	.813	$\chi 2(136) = 652.7$**	0.0000000171
2	.835	$\chi 2(120) = 635.2$**	0.0000000324
3	.816	$\chi 2(91) = 578.0$**	0.000000203
4	.850	$\chi 2(78) = 517.0$**	0.00000116
5	.828	$\chi 2(66) = 421.1$**	0.0000162[a]
6	.862	$\chi 2(136) = 435.9$**	0.0000110[a]

**p < .001. [a] > 0.00001

Items were removed stepwise for each iteration. The number of items, excluded items and number of factors are summarized in Table 11.

Table 11

Number of items, items removed and number of factors for all EFA runs.

Analysis number	Number of items	Additional items excluded	Number of factors
1	17	-	3
2	16	Criminals	2
3	15	Decriminalize	2
4	13	Burden, Improve_lives	2
5	12	Ok_to_use [a]	2
6	12	Nothing_wrong	2

[a] This item was put back in analysis 6.

Table 12

Eigenvalues, extraction- and rotation- sums of squared loadings for Factor 1.

	Factor 1		
Analysis number	Eigenvalue	Extraction sum of squared loading (% of variance)	Rotation sum of squared loading
1	9.575	9.283 (54.6%)	8.707
2	9.475	9.148 (57.2%)	8.674
3	8.700	8.395 (60.0%)	7.940
4	8.097	7.803 (60.0%)	7.403
5	7.244	6.925 (57.7%)	6.454
6	7.390	7.088 (59.1%)	6.575

Table 13

Eigenvalues, extraction- and rotation- sums of squared loadings for Factor 2.

Factor 2			
Analysis number	Eigenvalue	Extraction sum of squared loading (% of variance)	Rotation sum of squared loading
1	1.383	1.028 (6.05%)	6.773
2	1.315	1.004 (6.27%)	6.684
3	1.266	0.938 (6.70%)	6.002
4	1.251	0.948 (7.29%)	5.484
5	1.246	0.933 (7.77%)	5.063
6	1.234	0.914 (7.62%)	5.195

Table 14

Eigenvalues, extraction- and rotation- sums of squared loadings for Factor 3

Factor 3			
Analysis number	Eigenvalue	Extraction sum of squared loading (% of variance)	Rotation sum of squared loading
1	1.209	0.083 (4.88%)	1.142
2	0.980	-	-
3	0.852	-	-
4	0.826	-	-
5	0.783	-	-
6	0.760	-	-

Analysis 1. In this preliminary exploratory factor analysis, a three-parted solution is reached. Factor 1 and 2 represent the constructs "Knowledge" and "Attitude", with some ambiguity with regards to the operationalized questionnaire. Factor 1 include items *Not_controlled, Fatal, Ok_to_use, Nothing_wrong, Dangerous, Overdose, Risk, Improve_responsibly, No_harm, Worse_than_alcohol* and *Decriminalize*. Factor 2 include items *Not_neighbour, Afraid, Stay_away.* Also items *Burden* and *Improve_lives* load onto factor 2, but just below practical significance. Also, *Burden* load highly onto factor 3 (.404), and *Improve_lives* load onto factor 1 (-.523) and factor 3 (.535). The last item, *Criminals*, represent the third factor, with a non-significant loading of .426 and a higher loading from *Improve_lives*.

One problematic item, *Criminals*, seem to represent some latent construct and does not intercorrelate. This is evident when looking at the inter-correlations, where the item has a low ($r < .3$) correlation to 12 other items. Its communalities is only .268. This item causes a third factor to emerge in the analysis. But the factor is problematic due to cross-loading from other items. After this first analysis item *Criminals* is removed. In addition, the following observations have been made:

- Items *Worse_than_alcohol* and *Decriminalize* have been marked as potentially problematic items, as they have low correlations to two other items each. They show particularly low communalities (.338 and .413 respectively). *Worse_than_alcohol,* explaining far less common variance, may be explained by less people believing that LSD was a bigger societal problem than alcohol. Exclusion of this item would be warranted, but will evaluated together with other measures. *Decriminalize* may represent a third factor, but there are too few items to support this.
- There is an issue with multicollinearity. This will be dealt with later. Note that item O*k_to_use* correlate highly ($r = .9$) to *Nothing_wrong.*

Analysis 2-4. The second run converged into a two-parted factorial solution. Factor 1 includes items *Not_controlled, Fatal, Ok_to_use, Nothing_wrong, Dangerous, Overdose, Risk, Improve_responsibly, No_harm, Worse_than_alcohol* and *Decriminalize.* Factor 2 include items *Not_neighbour, Afraid, Stay_away* and *Burden.*

Item *Decriminalize* have a loading below practical significance. It may also be of note that the relative loading is less than 75%. The same is the case for item *Improve_lives*. Factor 2 have one ambiguous item, *Burden*, which is just at the level of practical significance, but the relative loading is only 69%.

Table 15

Pattern matrix for the second run of the EFA.

Items	Factor 1	Factor 2
Not_controlled	**0,912**	-0,121
Ok_to_use	**-0,869**	-0,104
Nothing_wrong	**-0,860**	-0,011
Fatal	**0,856**	-0,108
Dangerous	**0,753**	0,159
Overdose	**0,727**	-0,079
Risk	**0,714**	0,242
Improve_responsibly	**-0,654**	-0,206
No_harm	**-0,628**	-0,209
Worse_than_alcohol	**0,612**	-0,056
Improve_lives	**-0,534**	-0,281
Decriminalize	**-0,465**	-0,183
Not_neighbour	-0,027	**0,981**
Afraid	0,006	**0,851**
Stay_away	0,078	**0,684**
Burden	0,219	**0,500**

After this second exploratory factor analysis, it is clear that *Decriminalize* should be removed from the analysis. Item *Improve_lives* is less clear and will be kept in the next run.

Item *Burden* is also ambiguous based on the statistical measures. However, looking at what factor 2 "Attitude" consist of, the factor would represent a more narrow construct if *Burden* is removed. With only three items: *Not_neighbour*, *Afraid* and *Stay_away*, factor 2 would more clearly represent a specific attitude: "Avoidance".

The analysis is run again twice while stepwise removing the items discussed above, as removing them all at once may result in an unexpected good solution being missed.

Analysis 5-6. A satisfactory factorial solution was reached but there is still an issue with multicollinearity. *Ok_to_use* and *Nothing_wrong* have an intercorrelation of .90, just at threshold. Looking at the histograms for those variables, they show the exact same distribution. It might be argued, bearing in mind the questions from the questionnaire, that one of these items is enough, and that the second does not add any valuable information to the data. The factor analysis is rerun

two times, first without *Ok_to_use*, and second without *Nothing_wrong* (keeping *Ok_to_use).* Both solutions give a determinant higher than 0.00001, now indicating that singularity in the R-matrix is no longer an issue. However, it might be argued that the issue of multicollinearity is not an issue, as the factorial solution does not change dramatically when taking out one of the two items. Removing item *Ok_to_use* results in the best solution based on loadings in the pattern matrix. Other statistical measures do not change significantly if one or the other item is removed from the analysis.

Table 16

Descriptive statistics for items Nothing_wrong and Ok_to_use.

	Nothing_wrong	**Ok_to_use**
Mean	3.07	3.39
SD	0.274	0.305
Skewness	0.329	0.410
Kurtosis	-0.960	-0.992

The final analysis is summarized in Table 2. The 4 items *Dangerous, Risk, No_harm* and *Improve_responsibly* show a slightly higher relative cross-loading in the final iteration, compared to that of iteration 4. This could mean that previous results were more unstable due to collinearity However, all variables pass the criteria for practical significance, and indeed removing more items would lead to a too large loss of data, thus the exploratory factor analysis is finalized after the sixth iteration.

Appendix D: Various test statistics

Table 17

Tests for normality. Note bold values highlighting that Avoidance just passed Shapiro-Wilk's test which may partly be explained by high kurtosis. The Kolmorogov-Smirnov (KS) test for Knowledge (group 2) was significant, and so was the SW test for Avoidance (group 3). In

addition, the kurtosis and skewness of these groups strengthen the suspicion that these groups may not be normally distributed.

Test for normality					
Variable	Categorical (*Experience*)	Kolmogorov-Smirnov	Shapiro-Wilk	Kurtosis	Skewness
Knowledge	1,2,3 (df = 44)	.101 (p = .20*)	.967 (p = .245)	-.186	.473
Avoidance	1,2,3 (df = 44)	.089 (p = .20*)	**.949 (p = .052)**	-1.039	.081
Knowledge	1A (df = 17)	.132 (p = .20*)	.952 (p = .484)	-.811	-.103
Knowledge	1B (df = 7)	.185 (p = .20*)	.961 (p = .828)	1.165	-.459
Avoidance	1A (df = 17)	.140 (p = .20*)	.941 (p = .334)	-.045	-.329
Avoidance	1B (df = 7)	.180 (p = .20*)	.917 (p = .445)	-1.484	.197
Knowledge	1 (df = 24)	,147 (p = .195)	,967 (p = .601)	-,557	-,072
Knowledge	2 (df = 10)	**.263 (p = .048)**	,888 (p = .159)	1,514	1,193
Knowledge	3 (df = 10)	,152 (p = 20*)	,947 (p = .639)	-,408	-,336
Avoidance	1 (df = 24)	,143 (p = 20*)	,966 (p = .570)	-,487	-,054
Avoidance	2 (df = 10)	,122 (p = .20*)	,953 (p = .701)	-,894	,059
Avoidance	3 (df = 10)	,257 (p = .061)	**,790 (p = .011)**	,927	1,416

**Lower bound of true significance*

Table 18

Levene's test for the various categorical parameters testing homogeneity of variance. Significant values are highlighted in bold. T-test results where equal variance is not assumed is then used.

Levene's test statistics		
Categorical variable (categories)	Knowledge	Avoidance
Experience (1,2,3)	.349 (p = .71)	.346 (p = .71)
Experience (1,2)	.004 (p = .95)	.191 (p = .665)
Experience (2,3)	.317 (p = .581)	.102 (p = .754)
Experience (1,3)	.723 (p = .401)	.635 (p = .431)
Experience (1A,1B)	.054 (p = .818)	.660 (p = .425)

Krustal-Wallis test. Kruskal-Wallis tests were conducted to determine whether there were significant differences in the age distribution among the independent groups of the categorical variables *Experience*, *Number_of_times* and *Cannabis*. The Kruskal-Wallis test statistic (df = 2) was 5.14 (p = .076), 0.94 (p = .625) and 0.97 (p = .324) for the three variables respectively. The null hypothesis of no significant differences in age distribution among the three groups was confirmed (p > .05), indicating that there were no significant differences in age distribution among the groups. The table below show the age distributions across the independent groups.

Table 19

Age distribution across groups of the categorical variables.

	Experience			Number_of_times			Cannabis		
Group	N	Mean	SD	N	Mean	SD	N	Mean	SD
1	24	43.79	12.39	3	37.67	10.21	17	45.42	12.18
2	10*	36.22	10.29	1	23.00	-	7	39.86	12.93
3	10	34.20	12.61	6	34.33	14.57			
Total	44	39.98	12.55	10	34.20	12.61			

*1 value missing

Krustal-Wallis tests were also conducted to determine significant differences in gender across the same groups. The Krustal-Wallis test statistics (df = 2) for *Experience*, *Number_of_times* and *Cannabis* were 3.60 (p = .166), 4.20 (p = .122), and 1.03 (p = .311) respectively. However, the sample was mainly female (N = 32) with a small number of men (N = 10) and unspecified (N = 2). Clearly the sample is too small to detect significant differences in gender thus no covariant corrections were possible in later analysis.