

RESEARCH ARTICLE



Societal perspectives on psychedelics use in clinical context: Development of Concerns and Openness towards Psychedelic Scale (COPS)

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ABSTRACT

Introduction: Psychedelics are gaining recognition for their therapeutic potential in mental health treatment, yet societal attitudes remain divided, influenced by both skepticism and curiosity. This study aimed to develop and validate a scale assessing attitudes toward psychedelics.

Methods: Study 1 (n = 1000, convenience sample) explored the factor structure, identifying two dimensions: Openness toward Psychedelics and Concerns toward Psychedelics. Study 2 (n = 843, representative Polish sample) confirmed the scale's validity.

Results: The Concerns factor negatively correlated with meaning in life, while the Openness factor was positively associated with openness to experience, agreeableness, conscientiousness, mindfulness, meaning in life, and nature-relatedness. These associations suggest that individuals with greater openness and psychological flexibility may hold more favorable views on psychedelics.

Discussion: The Concerns and Openness towards Psychedelics Scale (COPS) is a psychometrically sound tool for assessing attitudes toward psychedelics. Its meaningful correlations with established psychological constructs underscore its utility in research and public health. By providing insight into societal perceptions, COPS may help inform discussions on psychedelic therapy, policy, and education, ultimately fostering a more nuanced understanding of their potential benefits and risks.

ARTICLE HISTORY

Received 3 September 2024

Revised 26 November 2024

Accepted 17 February 2025

KEYWORDS

Psychedelics; societal attitudes; psychometric validation; scale; Concerns of Psychedelics; Openness towards Psychedelics

Introduction

Psychoactive substances encompass a broad range of compounds, from everyday stimulants like caffeine to hallucinogens. Among the latter, psychedelics are notable for their profound effects on perception, cognition (Preller and Vollenweider 2016) and ability to alter states of consciousness through their action on the brain's serotonin system (López-Giménez and González-Maeso 2018). Classic psychedelics specifically refer to compounds that primarily act as agonists at the 5-HT_{2A} serotonin receptors, including lysergic acid diethylamide (LSD), psilocybin, *N,N*-Dimethyltryptamine (DMT), and mescaline, which are believed to mediate their distinctive psychoactive effects (Nichols 2016).

Historically, psychedelics have been used for centuries in traditional healing practices and sacred rituals, owing to their natural occurrence in various plants and fungi (Schultes 1969). The synthesis of psychedelics in

the twentieth century, including Hofmann's discovery of LSD in 1943, sparked interest in their psychiatric and neurological applications (Grinspoon 1981). The interest grew with the discovery of serotonin and its structural similarity to LSD, highlighting psychedelics' potential in exploring the biological foundations of mental disorders (Gaddum and Hameed 1954). However, the 1970s and '80s brought growing concerns over the safety of psychedelics, exacerbated by the 'War on Drugs'. The Controlled Substances Act of 1970 classified psychedelics as 'drugs of abuse', leading to widespread stigmatisation and entrenched negative perceptions, fuelled by misinformation and politicisation that continue to influence society's attitudes until today (Belouin and Henningfield 2018).

The global mental health crisis has exposed the limitations of existing treatments like selective serotonin reuptake inhibitors (SSRIs), which often show limited

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 Supplemental data for this article is available online at <https://doi.org/10.1080/19585969.2025.2470426>

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efficacy and have side effects (Saha et al. 2021). With nearly a billion people affected by mental disorders in 2019, there is an urgent need for innovative therapies (WHO 2022). Psychedelics are increasingly seen as promising alternatives, potentially addressing the root causes of mental health conditions rather than just alleviating symptoms (Carhart-Harris et al. 2018; Davis et al. 2019). Moreover, experimental studies suggest promising therapeutic outcomes with psychedelics, such as psilocybin, for treatment-resistant depression, with evidence of significant symptom reduction in short-term assessments (Goodwin et al. 2022).

As research into psychedelics advances, a critical question emerges: what is the true value of this research if societal attitudes continue to lean towards scepticism or, at best, remain ambivalent? Public acceptance and support are crucial for integrating psychedelic treatments into mainstream mental health care, making it essential to understand and shape societal perspectives alongside scientific inquiry.

Societal perspectives on psychedelics

Recent years have seen a growing body of research exploring societal attitudes towards psychedelics, cross various groups of mental health experts: psychiatrists (Barnett et al. 2018, 2022), counsellors (Hearn et al. 2022), clinical psychologists (Davis et al. 2022), NHS psychiatrists (Page et al. 2021), and healthcare professionals involved in cancer and palliative care (Reynolds et al. 2021). While the perspectives of these groups may significantly influence the acceptance and use of psychedelic therapies in society, it is equally important to expand research to encompass the views of the general public, as society's perspectives on psychedelics are crucial for evaluating whether scientific advancements can overcome long-standing misinformation.

Current studies examining the views of college students on the medicinal value of hallucinogens (Wildberger et al. 2017) mental health service users' opinions on psilocybin-assisted therapy (Corrigan et al. 2022), and individuals with eating disorders (Harding et al. 2021) have paved the way for broader societal insights. Building on this foundation, a comprehensive systematic review by Wells et al. (2024), analysing 29 studies across diverse groups—including health professionals, patients, and the public—reveals generally low knowledge of psychedelic-assisted psychotherapy (PAP) despite a growing interest in its potential. Favourable attitudes were more likely among younger individuals and those with personal experience of psychedelics, while significant legal, ethical, and practical

concerns remain key barriers to broader societal acceptance and implementation.

Present study

Overcoming entrenched misconceptions about psychedelics poses significant challenges, given the substantial stigma these substances have faced. However, a new cultural narrative is emerging, promoting a lifestyle aligned with nature, mindfulness, and psychedelics (Holas and Kamińska 2023). Conversations about psychedelics are increasingly visible on social media, in medical discourse, and in mainstream media, reflecting a shift in societal attitudes that parallels the scientific 'psychedelic renaissance' (Anderson et al. 2019). This shift suggests a growing public interest in novel therapeutic options amidst a fast-paced, overwhelming world (Lea et al. 2020). To effectively investigate societal attitudes towards psychedelics, appropriate tools are essential. Existing studies have predominantly used custom questionnaires tailored to specific research needs (Wildberger et al. 2017; Barnett et al. 2018, 2022; Harding et al. 2021; Niles et al. 2021; Reynolds et al. 2021; Davis et al. 2022; Hearn et al. 2022; Li et al. 2023; Schmidt et al. 2023; Wang et al. 2023). Recently, Dr. Žuljević et al. developed and validated the Attitudes on Psychedelics Questionnaire (APQ), a 20-item tool designed to assess a broad spectrum of attitudes, including perceptions of legal status, general effects, risks, and openness to both recreational and medical uses of psychedelics (Žuljević et al. 2022). In contrast, our study adopts a more focused approach, specifically examining perceptions of psychedelics in therapeutic contexts. Unlike the APQ, our scale excludes perceptions related to other uses, such as personal growth, spiritual or religious purposes, or recreational use. To enhance usability in clinical settings, our scale is intentionally shorter—half the length of the APQ. Its structure is informed by both clinical considerations and factor analysis, which identified two distinct dimensions. These dimensions, reflected in our subscales, focus on openness to psychedelic-assisted therapy and associated concerns, enabling a nuanced assessment of attitudes towards clinical applications.

The present research aims to develop this streamlined scale and evaluate its psychometric properties in Study 1, followed by an assessment of its validity in Study 2. Specifically, we assessed key psychometric properties, including structural validity (*via* Exploratory and Confirmatory Factor Analysis), internal consistency, and construct validity through hypothesis testing, adhering to the standards proposed by Mokkink et al. (2010).

Study 1

Methods

Study 1 had a cross-sectional design. The data was collected between April and May 2022. The survey was distributed primarily through social media platforms, such as Facebook, allowing for the inclusion of participants from diverse backgrounds and with various beliefs. The survey was posted in groups covering a range of topics and further spread through word of mouth.

Participants

Participants were required to be at least 18 years old and hold Polish nationality. A total of 1,000 individuals took part, with a gender distribution of 61.7% female gender, 36.2% male gender, and 2.1% identifying as 'other' or unspecified. Ages ranged from 18 to 75 years ($M=27.84$, $SD=8.64$), with 75% being 32 or younger. Educationally, 45.1% had completed secondary education, 25.3% had master's degrees, 26.6% had bachelor's degrees, and 1.1% held PhDs or higher. Most participants (51.9%) lived in cities with over 500k residents, while 12.5% resided in villages, ensuring diverse representation. Ethics approval was acquired from the ethics committee of the University of Warsaw.

Development of Concerns and Openness towards Psychedelic Scale (COPS)

As a first step, the selection of items for the primary scale was guided by a review of existing research and measurement tools. We identified three pivotal areas in psychedelic research and in research on attitudes towards psychedelics (Wells et al. 2024). Subsequently, by analysing items from other surveys, we constructed our own items, drawing inspiration from those already available. This process resulted in the generation of an initial item pool. In total, we created 24 items, with response options ranging from 1 (Strongly disagree) to 5 (Strongly agree); see Table 1 below.

To elaborate, the first identified area was the perceived potential therapeutic benefits of psychedelics (Wildberger et al. 2017). For instance, Wildberger et al. (2017) included the item, 'Hallucinogens can be addictive', which corresponds to our item, 'Psychedelics are physically addictive'. Similarly, their item, 'Hallucinogenic drugs can be a therapeutic tool for those with severe mental disorders', aligns with our item, 'If my partner or family member were struggling with mental health issues, I would/should encourage them to participate in psychedelic therapy'. The second area focused on willingness to consider or engage in psychedelic therapy (Corrigan et al. 2022). For example, Corrigan et al. (2022) included the item, 'I would accept psilocybin

Table 1. Factor loadings.

	Factor 1	Factor 2
I am curious about the topic of therapeutic properties of psychedelics.	.796	.053
Research on the therapeutic properties of psychedelics should be reliably continued at all times.	.793	.171
People should be educated about psychedelics, how they work and their therapeutic properties.	.781	.091
Information provided by the media about psychedelics should be presented objectively and according to scientific evidence.	.713	.234
I believe that it can be beneficial for a person to take part in psychedelic therapy if they are seeking help and have indications for it.	.680	-.152
Information and guidance on how to use psychedelics safely and responsibly should be available to the public.	.636	-.083
The government should sponsor clinical trials developing therapies involving psychedelics.	.617	-.172
I have no objection to my partner using psychedelics under the supervision of a qualified professional.	.603	-.355
I am curious to experience the effects of psychedelic substances.	.586	-.165
If psychedelic-assisted therapy were legal in my country, I would be willing to participate in it.	.550	-.332
I believe that psychedelics used for therapeutic purposes should be legal and widely available.	.529	-.310
If my partner or family member were struggling with mental health issues, I would/should encourage them to participate in psychedelic therapy.	.469	-.402
When properly dosed by a professional, psychedelics can lead to lasting, positive changes in personality.	.442	-.404
I am concerned about the effects of psychedelic substances on my psyche.	.076	.838
I am afraid of the consequences of the effects of psychedelics on my physical health.	-.043	.802
Psychedelics can cause permanent brain damage.	.037	.696
I believe that psychedelics are narcotics.	.055	.686
Psychedelics are physically addictive.	-.188	.605
I have no objection to people close to me taking psychedelics on a regular basis.	-.353	.525
Psychedelic substances should not be classified in the same category as drugs, such as cocaine, heroin, or crack.	-.283	.450
Even when used properly, psychedelics have only negative effects on the psyche and mental health of the user.	-.457	.413
I would never use any psychedelic substance, even in the presence of a qualified professional.	-.563	.340
I would not choose to participate in psychedelic therapy, even if it helped me to improve my mental health.	-.577	.316
Psychedelics should be banned globally, just as addictive substances like cocaine and heroin are.	-.491	.396

Bold values for $p < .05$.

with psychological support if a doctor recommended it', which corresponds to our item, 'I believe that it can be beneficial for a person to take part in psychedelic therapy if they are seeking help and have indications for it'. Lastly, the third area addressed concerns about the safety and potential risks associated with psychedelic use (Barnett et al. 2018, 2022; Davis et al. 2022). Barnett's item, 'Medical use of psychedelics should be legalised', aligns with our item, 'I believe that psychedelics used for therapeutic purposes should be legal and widely available'. Additionally, their item, 'The federal government should fund research into potential psychedelic treatments for mental health and substance use disorders', corresponds to our item, 'The government should sponsor clinical trials developing therapies involving psychedelics'. Moreover, Davis et al. (2022) included the item, 'The use of psychedelics is unsafe even under medical supervision', which corresponds to our items, 'Even when used properly, psychedelics have only negative effects on the psyche and mental health of the user', and 'I would never use any psychedelic substance, even in the presence of a qualified professional'. As all items were originally in Polish, the second stage required editing for the language's simplicity and clarity. A bilingual psychology student translated them into English, and a separate back-translation into Polish was completed by an entrepreneur. In the last stage of the creation, the final version of the scale was then reviewed and refined through discussions with two psychedelic researchers and a master's-level psychology student.

Results and discussion

Because we did not assume a specific factor structure of our scale, we used an exploratory principal component factor analysis with Oblimin rotation to test the internal structure of the scale. The KMO measure of sampling adequacy was .97, which suggested that there was a sufficient amount of shared variance between the items to merit a factor analysis (i.e., $>.70$; Kaiser 1974). In the initial analysis, the Kaiser criterion (eigenvalue >1) was applied, resulting in the extraction of three factors which explained almost 60% of the total variance. However, the parallel analysis using (O'Connor 2000) syntax for SPSS suggested the extraction of two factors. Consequently, the principal-axis factor analysis was re-conducted with the extraction of two factors. The first factor explained 49% of the variance (eigenvalue = 11.70) whereas the second factor explained 7% of the variance (eigenvalue = 1.62). Table 1 presents the factor loadings of

all items. We interpreted the first factor as curiosity and openness towards psychedelics (i.e., Openness towards Psychedelics, OtP). This reflects an open-minded attitude towards utilising psychedelics for therapeutic purposes and a keen interest in acquiring reliable information about the effects of these substances. The second factor includes items that express concerns about psychedelics and worry that they might have a negative impact on health. We labelled it Concerns of Psychedelics (CoP). For the final version of the Concerns and Openness towards Psychedelic Scale (COPS) we selected five items from each scale with the highest loadings (see Table 1). The two-factor structure found in the current study aligns with existing literature, which often highlights the dual nature of societal attitudes towards psychedelics—ranging from curiosity and acceptance to fear and scepticism (Barnett et al. 2018; Žuljević et al. 2022).

Study 2

In Study 2 we tested the validity of the Concerns and Openness towards Psychedelic Scale (COPS) by examining its structure (Confirmatory Factor Analysis) and associations with demographic factors (age), Big Five personality traits, nature relatedness, dispositional mindfulness, psychological inflexibility, and meaning in life. We hypothesised that openness to experience (OtP) would correlate with higher levels of openness to experience, extraversion, agreeableness, nature relatedness, mindfulness, psychological flexibility, and meaning in life.

We anticipated that individuals with high openness to experience would be more accepting of psychedelics due to their receptivity to novel experiences and non-conventional beliefs (McCrae and Costa 1997; MacLean et al. 2011). We also expected a positive association between OtP and nature relatedness, as those connected to nature are more likely to explore natural substances for psychological and spiritual growth (Nisbet et al. 2009; Davis et al. 2019). Although, not all psychedelics are natural, with obvious examples of LSD, the majority of classic psychedelics are derived from mushrooms (psilocybin) or plants (e.g., ayahuasca or peyotl). Additionally, we predicted a correlation with mindfulness, which is linked to openness, curiosity, and a flexible, accepting attitude—traits that align with OtP (Baer et al. 2006; Jankowski and Holas 2014). We also expected a link between OtP and psychological flexibility, as embracing uncertainty and negative emotions is crucial in psychedelic-assisted therapy (Schmidt et al. 2023). Finally, we anticipated that

individuals open to psychedelics would have a higher sense of meaning in life, as psychedelics often foster profound personal insights (Griffiths et al. 2016).

For Concerns of Psychedelics, we hypothesised associations with higher neuroticism and psychological inflexibility, and lower meaning in life. Neuroticism, linked to anxiety and negative emotionality, could amplify Concerns of psychedelics' unpredictable nature. Psychological inflexibility may increase concerns due to resistance to challenging experiences (Levin et al. 2014). Lower meaning in life could also heighten Concerns, as these traits relate to difficulty in finding personal relevance or accepting disorienting experiences (Steger et al. 2006).

Methods

Participants

The present research project was undertaken in May 2023 involving a national random-quota sample of adults, encompassing individuals aged 18 years and older, totalling 843 participants (446 women and 397 men), with an average age of ~45 years. The selection of participants aimed for representativeness, mirroring the demographic distribution of adults residing in Poland in terms of gender, age, and urban or rural residence. The research was executed by a reputable company utilising a Polish nationwide research panel, which adhered to the rigorous standards outlined in the Interviewer Quality Control Program (PKJPA) certificate, ensuring the reliability and excellence of the research services provided. Utilising the company's online platform (Ariadna), participants engaged with the survey anonymously and voluntarily. Before participation, all individuals provided informed consent and received compensation in the form of tokens from the survey company. Additionally, the project received approval from the ethics committee of the Faculty of Psychology at the University of Warsaw.

Measures

Concerns and Openness towards Psychedelic (COPS) Scale

The COPS Scale comprises ten items selected during Study 1, divided into two subscales: Concerns about Psychedelics (CoP) and Openness towards Psychedelics (OtP). Both the Polish and English versions of the COPS Scale are provided in Supplement 1. Each item is rated on a five-point Likert scale (1=Strongly disagree to 5=Strongly agree). A higher score on the CoP subscale indicates a more open attitude towards psychedelics,

whereas a higher score on the OtP subscale reflects greater concerns about psychedelics. Internal consistency for the subscales in the current study was high, with Cronbach's alpha values of .82 for Openness and .85 for Concerns.

Ten Item Personality Inventory (TIPI) in the Polish version (Sorokowska et al. 2014) was used to assess Big Five personality traits. The TIPI measures each of the Big Five dimensions with two items. This measure has a 7-point Likert-type response format, from 1 (*very inaccurate*) to 7 (*very accurate*). There are two items per scale (the inter-item correlations ranged between .24 and .40). As noted by the original authors (Gosling et al. 2003), the goal of the TIPI was to create a very short (two items per scale) instrument that optimised validity over internal consistency (which typically results in relatively low alpha and inter-item correlations).

Nature Relatedness Scale is a 6-item measure that assesses subjective connectedness with the natural environment. Participants respond to statements (e.g., *My relationship to nature is an important part of who I am*) using a 5-point Likert scale (1=*strongly disagree*, 5=*strongly agree*) and items are averaged with higher scores indicating stronger connectedness. Internal consistency of the scale was assessed at (alpha=.85).

The Cognitive and Affective Mindfulness Scale-Revised (CAMS-R) (Feldman et al. 2007) is a 12-item measure designed to capture a broad conceptualisation of mindfulness with language that is not specific to any particular type of meditation training. Participants respond to items (e.g., *I am able to focus on the present moment*) using a 4-point Likert scale (1=*rarely* to 4=*almost always*). Internal consistency of the scale was (alpha=.89).

The Acceptance and Action Questionnaire-II (AAQ-II) is a measure of psychological flexibility (Bond et al. 2011). It consists of seven items (e.g., *My painful experiences and memories make it difficult for me to live a life that I would value.*) where participants rated their agreement on a 7-point Likert scale (1=*never true* to 7=*always*). Internal consistency of the scale was (alpha=.95).

The Multidimensional Existential Meaning Scale (MEMS) (George and Park 2017) was used to measure meaning in life on three dimensions: comprehension (e.g., *My life makes sense*), purpose (e.g., *I have overarching goals that guide me in my life*), and mattering (e.g., *I know what my life is*). Participants rated each of the 15 items on a 7-point scale from 1 (*very strongly disagree*) to 7 (*very strongly agree*). Alphas for the scales were: .93 (comprehension), .94 purpose, and .84 (mattering).

Results

First, we tested the factor structure of the scale using Confirmatory Factor Analysis. The model revealed a good fit to the data ($\chi^2_{(26)}=175.50$; $p<.001$; CFI=.96; RMSEA=.083 [90%CI: .071, .094], SRMR=.083). The factor loadings are presented in Figure 1.

In Table 2, we present correlations of COPS with outcome measures. The analysis revealed several significant results, however, we interpret only the correlations exceeding 0.10 (i.e., 1% of explained variance). Generally, we confirmed most of the expected associations between COPS and other variables. As anticipated, OtP was positively associated with openness to experience, including nature relatedness, psychological flexibility, mindfulness, and meaning in life. These findings support our theoretical framework, suggesting that openness to psychedelics extends beyond mere curiosity or novelty-seeking and reflects a deeper alignment with psychological openness and holistic well-being. Concerns of Psychedelics scale were associated with lower levels of meaning in life as hypothesised. However, we failed to confirm other expected associations, with neuroticism and inflexibility, where the correlations were relatively weak, not exceeding .10. These findings contribute to a nuanced understanding of how

individual differences shape attitudes towards psychedelics, offering insights into the interplay between personality traits, psychological dispositions, and existential factors in shaping both openness and concerns towards psychedelic experiences.

Additionally, participants obtained higher mean scores on Openness than on Concerns dimension. This result is consistent with previous findings showing that people generally score higher on dimensions related to openness towards psychedelics than on dimensions related to fear of psychedelics (Žuljević et al. 2022).

General discussion

In the current research, we developed a new psychometric tool to measure attitudes towards psychedelics used in therapeutic context. Across two studies we tested the factor structure of the scale (Study 1) and its validity (Study 2). As a result, we described a concise, two-dimensional measure of attitudes towards psychedelics with good psychometric properties. We identified two factors capturing various aspects of societal perceptions of psychedelics used in therapy. We labelled the first factor 'Openness towards

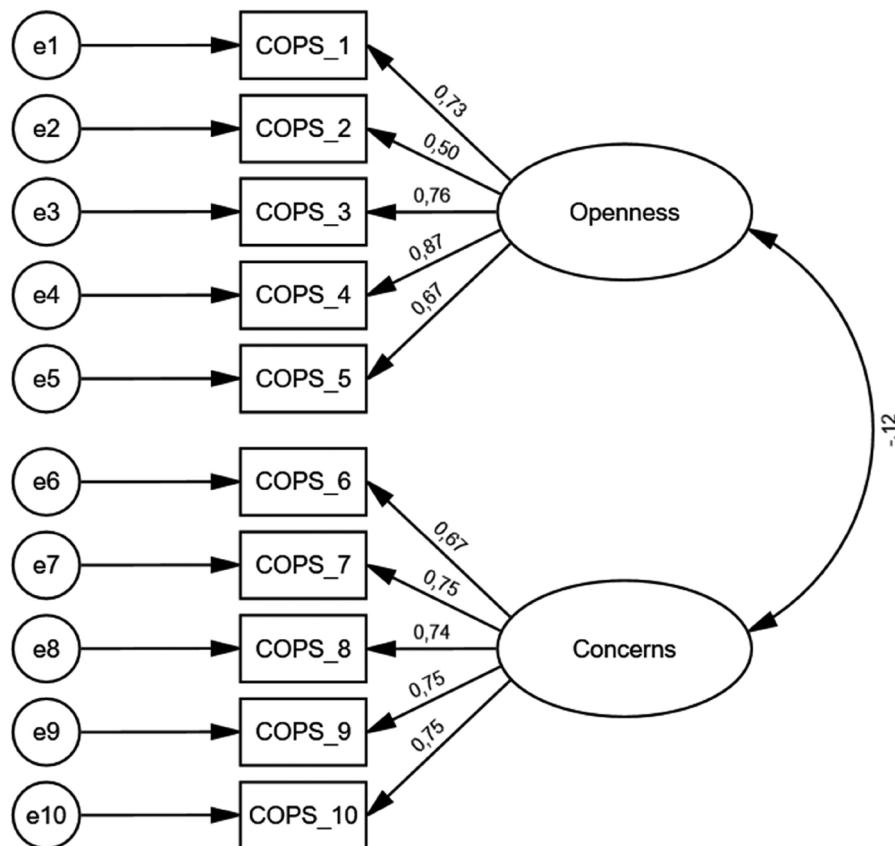


Figure 1. Factor loadings of the Concerns and Openness towards Psychedelics Scale.

Table 2. Descriptive statistics and correlations of openness and concerns of psychedelics with other variables.

	Openness	Concerns
Age	.168**	.017
Neuroticism	-.051	-.010
Extraversion	.068*	-.025
Openness to experience	.186**	-.001
Agreeableness	.127**	-.029
Conscientiousness	.206**	-.074*
Nature relatedness	.341**	-.071*
CAMS-R	.121**	-.093**
Inflexibility (AAQ)	.101**	-.090**
Comprehension (MEMS)	.114**	-.129**
Purpose (MEMS)	.137**	-.129**
Mattering (MEMS)	.043	-.079*
Mean	18.72	12.57
SD	3.45	3.53
Skew	-0.33	-.03
Min	5	5
Max	25	25

AAQ: Acceptance and Action Questionnaire; CAMS-R: Cognitive and Affective Mindfulness Scale-Revised; MEMS: Multidimensional Existential Meaning Scale.

* $p < .05$.

** $p < .01$.

Psychedelics' (OtP). It represents a curiosity and open-mindedness towards the therapeutic use of psychedelics, along with a desire for reliable information about their effects. The items associated with this factor indicate a positive and exploratory attitude, reflecting the growing interest in psychedelics as potential mental health treatments. The second factor, labelled 'Concerns of Psychedelics' (CoP), encompassed concerns about the potential negative impact of psychedelics on health. This factor includes items that express worry and apprehension, which could be indicative of the lingering stigma and fears surrounding the use of these substances, despite emerging evidence of their therapeutic benefits.

The two factors of attitudes towards psychedelics presented distinct associations with our outcome variables. Openness towards Psychedelics was positively correlated with most personality traits, i.e., openness to experience, agreeableness, conscientiousness, as well as nature relatedness, meaning in life, and mindfulness. The strongest correlation was observed with nature relatedness, indicating a moderate relationship where individuals connected to nature are more likely to be open to psychedelics, which is in line with the previous findings (Lyons and Carhart-Harris 2018; Kettner et al. 2019). The correlation between openness to experience and OtP aligns with previous research (MacLean et al. 2011), highlighting that individuals who are naturally receptive to new and diverse experiences are more likely to accept and explore psychedelic substances. This finding reinforces the notion that openness to psychedelics is intricately linked to a broader acceptance of non-conventional beliefs and

alternative therapeutic practices. The association between nature relatedness and OtP suggests that individuals with a strong connection to nature are more inclined to explore naturally derived substances—such as most psychedelic classes—for psychological and spiritual growth (Davis et al. 2019). This connection suggests that the inclination towards psychedelics may be part of a broader ecological consciousness, where individuals seek experiences that enhance their sense of interconnectedness with the natural world. Accordingly, the correlation between OtP and nature relatedness aligns with the enhanced sense of connectedness with all living beings, or with nature as a whole, often reported during psychedelic-occasioned mystical experiences (e.g., Griffiths et al. 2008). Interestingly, it was found that lifetime experiences with classic psychedelics predict pro-environmental behaviour through an increase in nature relatedness, underscoring the relevance of this connection in the context of psychedelics (Forstmann and Sagioglou 2017). This appreciation of nature, along with an aesthetic preference for natural environments, may also explain why many individuals choose such settings for their psychedelic experiences (e.g., Holas and Kamińska *in press*).

Similarly, the positive relationship between mindfulness and OtP was consistent with our expectations. Mindfulness, characterised by a non-judgmental awareness of the present moment, is closely aligned with an open and curious attitude (Baer et al. 2006). Our findings corroborate the idea that mindful individuals, who are often drawn to holistic and integrative approaches to health, are more likely to be open to psychedelic therapies (Felder et al. 2022). This relationship may also reflect the synergistic effects of mindfulness-based interventions and psychedelic treatments (Holas and Kamińska 2023). The observed association between psychological flexibility and OtP further highlights the role of this trait in facilitating acceptance of psychedelic experiences. Psychological flexibility, marked by low experiential avoidance, encourages individuals to embrace uncertainty and challenging emotions, which are often encountered in psychedelic-assisted therapy (Schmidt et al. 2023). This finding supports the idea that individuals who are psychologically flexible may be more receptive to the profound and sometimes unsettling experiences that psychedelics can induce. The relationship between conscientiousness and OtP might initially seem counterintuitive, as conscientious individuals are typically characterised by their preference for order and discipline. However, they often have a strong focus on health, well-being, and personal growth (Bogg and

Roberts 2004). This health-oriented aspect of conscientiousness can drive an interest in exploring therapeutic and controlled uses of psychedelics. OtP can be related to agreeableness because agreeable individuals are empathetic, tolerant, and value interpersonal connectedness—qualities that align with the enhanced empathy, social bonding, and prosocial behaviours often reported in psychedelic experiences (Griffiths et al. 2006; MacLean et al. 2011). Intriguingly, we found that OtP is related to older age. We think the reason behind could be as older individuals often seek meaningful experiences and personal growth, and psychedelics are increasingly recognised for their potential to enhance psychological well-being, reduce existential anxiety, and provide profound insights, particularly in later stages of life (Barrett et al. 2016; Griffiths et al. 2016). Finally, the positive correlation between meaning in life and OtP aligns with the notion that individuals high in openness to experience derive meaning through exploration and challenging traditional perspectives (Lavigne et al. 2013). Psychedelics, known for promoting profound personal insights and a heightened sense of meaning, likely appeal to individuals who are already inclined to seek deeper existential understanding (Griffiths et al. 2016).

Concerns of Psychedelics factor were linked to lower levels of mindfulness and meaning in life. Individuals with a weak sense of meaning might be generally worse equipped to face challenging experiences, as they are less likely to perceive such experiences as part of a broader, meaningful narrative. The inverse relationship between meaning in life and CoP suggests that individuals who struggle to find meaning may perceive psychedelic experiences as irrelevant or even threatening to their sense of self. This finding is consistent with previous research indicating that a lower sense of meaning can magnify concerns and fears related to potentially disorienting experiences (Steger et al. 2006). In the case of Concerns dimension, we failed to find other meaningful associations with remaining variables. Most importantly, we did not find a correlation between CoP and neuroticism. Neuroticism is a broad trait encompassing various emotional tendencies, such as anxiety, depression, anger, and vulnerability (McCrae and Costa 1997). It is possible that the specific aspect of neuroticism most relevant to fear or concerns was not sufficiently captured or was outweighed by other facets of neuroticism in the study, given we used a very short measure of Big Five. For example, individuals high in neuroticism might also have traits like anger or hostility, which could manifest as curiosity or defiance rather than fear or concern when faced with the idea of using psychedelics

(Widiger and Oltmanns 2017). There is also a possibility that the absence of a significant correlation between CoP and neuroticism may stem from a fundamental difference in the nature of concerns about psychedelics compared to the internalised worries that characterise neuroticism. Concerns about psychedelics may primarily reflect exogenous sources, such as perceived risks of physical or psychological harm associated with psychedelic use. These types of concerns might be based more on external information (e.g., media, societal warnings, or anecdotal reports) rather than the type of internal, generalised anxiety often associated with neuroticism. Neurotic individuals tend to experience worry that is endogenous—linked to internal and persistent patterns of thinking rather than specific external threats (e.g., Weiss and Deary 2020). Therefore, neuroticism may not predict concerns about psychedelics if those concerns are not internalised in the same way as more generalised anxiety or self-focused preoccupations. Finally, the relatively weak association between CoP and psychological inflexibility suggests that a resistance to confronting challenging internal experiences is not central for CoP and this attitude might have other sources.

Overall, the observed small effect sizes in the relationships between concerns and openness towards psychedelics (COPS) and the included variables (all below 0.20) underscore the likelihood that additional, more significant factors may influence these attitudes. This opens avenues for investigating broader psychological, social, and cultural determinants of these attitudes. Sociocultural norms and political ideologies seem to be particularly influential in this context. For instance, a recent study by Valtonen et al. (2023) demonstrated that political orientation correlates with the use of complementary and alternative medicine; individuals with a preference for political parties that advocate for expanded freedoms were more inclined to use such services. This aligns with previous findings by Carhart-Harris and Nutt (2017), who suggested that political conservatism is associated with greater scepticism towards psychedelics, partly due to their historical connections with countercultural movements. While personality traits like conscientiousness and openness showed some correlation in our study, other traits like sensation seeking could be even more influential. Research by Puente et al. (2008) found that sensation seeking tendencies are mediated by positive attitudes towards drug use, such as alcohol and MDMA. Investigating these traits, alongside political and socio-cultural factors, could reveal stronger associations and may provide a more nuanced understanding of what drives attitudes towards psychedelics, offering insights

into how different communities perceive and engage with these substances for therapeutic use. In addition, past psychedelic use can be included as a convergent validity measure. Research suggests that personal experiences with psychedelics influence positive perceptions, which impacts their attitudes towards psychedelics as therapeutic tools in mental health care among psychologists (Luoma et al. 2023; Holas and Kaminska *in press*). Additionally, a survey of addiction specialists showed a strong association between positive attitudes and familiarity with psychedelic literature, though some concerns persist about their addictive potential (Kim and Suzuki 2023).

The main limitation of the study is reliance on self-reported data, which may introduce selection biases. To mitigate this, we included sampling a diverse demographic of participants and emphasising that all opinions were valuable, whereas the second study was conducted on a representative sample of Poles. A caveat remains regarding the generalisability of our findings, as Poland is an ethnically and culturally homogeneous country. We recommend that future studies validate and analyse CAPS in more ethnically, geographically, and culturally diverse populations. We made an effort to capture possible nuances in the translation of the scale into English. However, cultural differences may still be present, potentially impacting the comparability of results between the Polish and English versions. Therefore, further research in other cultural contexts is needed. It would be beneficial to validate the scale in specific groups, such as mental health professionals and patient populations. Moreover, the scale holds potential for use in clinical psychedelic research, including Psilocybin studies, to explore whether CAPS scores are predictive of clinical outcomes. Investigating differences in CAPS scores based on prior psychedelic experience would also be valuable, necessitating larger samples of individuals with such experiences to enhance the statistical power and reliability of findings.

Conclusions

We proposed a reliable and valid tool for assessing attitudes towards psychedelics, which can be used in various contexts, including evaluating educational interventions, informing public health campaigns, and understanding the factors that influence people's willingness to consider psychedelic-assisted therapy. Moreover, the distinction between openness and concerns towards psychedelics highlights the need for balanced educational efforts that address both the potential benefits and

risks of these substances. As societal interest in psychedelics continues to grow, it is crucial to understand and address the underlying factors that contribute to both acceptance and apprehension.

Author contributions

PH: designed and executed both studies, assisted with data analysis, and was primarily responsible for writing the paper. JK: helped with both studies design and execution, and helped write the paper. MZ: data analysis and helped write the paper. All authors approved the final version of the manuscript for submission.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Funding

PH was supported during work on this manuscript by the grant nr PSP 501-D125-20-0004316 received in the program 'Excellence Initiative—Research University'.

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Data availability statement

Copies of all measures and the raw data are available at: <https://osf.io/4u8b3/>.

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