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Title

Sociological investigations of human enhancement drugs: the case of microdosing psychedelics

Introduction

Microdosing psychedelics is the regular use of sub-perceptive threshold doses of substances such as lysergic acid diethylamide (LSD) and psilocybin ('magic') mushrooms. Attracting increasing public and scientific attention in numerous countries in recent years, microdosing is portrayed as a trending multi-enhancer that improves cognitive performance, mood, creativity, physical energy, inter-personal relations, and general wellbeing. The practices and discourses of microdosing can be situated in the context of a broader intensified interest in psychedelics marked by new scientific investigations, policy debates and change, and commercial investments.

In this commentary I aim to sketch ways in which microdosing has been emerging as a new facet of human enhancement through drugs. After presenting a narrative based on a multidisciplinary body of literature on human enhancement drugs and microdosing, I will then map out directions for further sociological studies of the phenomenon as well as outlining the different fields such research can contribute to. In the process I hope to probe areas of investigation that resonate with other contributions to this special issue, including the use of new types of enhancement drugs and emergent harms, the relationship between use of enhancement and psychoactive drugs, the various motivations for and populations using enhancement drugs, the continuum of therapy to enhancement, and the impact of socio-cultural and legal contexts on the uses and other responses to human enhancement drugs.

Background

Human enhancement drugs

The enhancement of humans through drugs (HEDs) has sparked intense public debate and increasing interventions and research from the social and health sciences. As new modes of use, attitudes and substances are popularised amongst people of diverse backgrounds, new risks for physical, mental and social health and wellbeing are being identified and assessed (Evans-Brown et al. 2012; Iversen et al. 2016). HEDs may include both licit and illicit substances as well as prescribed and non-prescribed use of licit drugs. Internationally, policy responses vary considerably, ranging from prohibitionist models and criminal sanctions, to public health approaches focusing on harm reduction (Christiansen 2009; Coomber 2014). Philosophical inquiries have explored the ethics of drug use for enhancing cognition, mood, and/or physical ability and appearance, as well as how such practices shape ideas of what it means to be human (Parens 1998; Savulescu & Bostrom 2009).

From a sociological perspective, investigations of how drug-related practices and meanings travel from medical labs to people's homes and from subcultural to mainstream settings speak to paradigms of biomedicalisation (Rose 2007) and pharmaceuticalisation (Coveney et al. 2011) as well as to processes of globalisation and convergence in substance use and culture (Andreasson & Johansson 2019; Liokaftos 2017). Studies of specific fields, such as anti-doping in sport, demonstrate that antagonisms amongst stakeholders, most evident in the case of newly emerging substances or use trends, reflect struggles over distinction, authority and the power to regulate (Dimeo & Møller 2018; Gleaves & Hunt 2014; Liokaftos 2018a).

What is often at stake in such processes are competing societal values and subjectivities that get crystallised in different conceptions of human potential as shown, for example, in the case of anabolic-androgenic steroids (Hoberman 2005). Intertwined with the above are shifting ideas of health and normal functioning that problematise distinctions between enhancement and therapy (Coveney et al., 2011), rendering the very category of HEDs not a static given but a subject of ongoing theoretical elaboration (Van de Ven et al.,

2019). Critical in this anti-essentialist direction are empirical investigations of how individuals and groups engage with and make sense of their substance use in particular temporalities and contexts, such as fitness, running, or bodybuilding (Christiansen et al., 2016; Henning 2015; Monaghan 2001).

Microdosing psychedelics

Although the use of low doses of psychedelics has a long history (Passie 2019), research on microdosing in its current form has only begun to emerge in the last three years. Reflective of the phenomenon's novelty and complexities, there is no agreed scientific definition of microdosing classical psychedelics such as lysergic acid diethylamide (LSD) and psilocybin ('magic') mushrooms (ibid.). Recognising microdosing as a working term with a prevalent societal use, Kuypers et al. (2019) define a microdose as 5–10% of a usual psychoactive dose of psychedelics [e.g. 5–10 µg of LSD according to Fadiman (2011)]. In addition to this pharmacological parameter, Kuypers et al. (2019) also define microdosing in terms of key components relating to its effects, mode of and motivation for use, namely low doses below the perceptual threshold in order not to impair 'normal' functioning, multiple dosing sessions, and the intention to improve one's well-being and enhance their cognitive and/or emotional processes (ibid.: 2).

As with other HEDs (Hoberman 2005), interest in microdosing psychedelics originated in particular social and work environments (e.g. Silicon Valley entrepreneurs and technology experts) and subsequently gained traction in diverse fields, such as studying, sports, and the creative professions. Even though robust epidemiological data are still lacking (Johnson et al., 2018; Winstock 2019), ongoing media attention, popular literature and online activity suggest that microdosing is a growing phenomenon (Anderson et al., 2019; Hupli et al., 2019).

Although reported uses of microdosing include self-medication for depression and anxiety, enhancement seems to be a most prominent use in media reports, anecdotal evidence and published research (Hutten et al., 2019; Johnstad 2018). Significantly, even users whose primary motivations for use were other than enhancement often report enhancement effects. For

example, Lea et al. (2020a) discuss that in their survey-based study exploring motivations, subjective effects and harm reduction for microdosing, cognitive enhancement was a primary motivation only for 18% of their 525 participants, yet 40% of the sample reported positive effects in this domain. Apart from cognitive performance, expected/and or reported benefits typically include enhancement in mood, creativity, physical energy and inter-personal relations (ibid.; Anderson et al. 2019; Polito & Stevenson, 2019). Using an experimental task-based study design, Prochazkova et al. (2018) have shown that microdosing can indeed promote cognitive performance through improvements in both convergent and divergent thinking. Recruiting respondents with self-reported microdosing experience from online forums, Anderson et al. (2019) employed a combination of psychological questionnaires and a task of creativity. Their findings suggest microdosers as compared with controls (non-microdosers) exhibit lower dysfunctional attitudes and negative emotionality, as well as higher wisdom, personality openness and creativity. In the existing randomized, double-blind, placebo-controlled study of microdosing, Yanakieva et al. (2019) administered placebo as well as different microdoses of LSD in order to assess time perception in participants. Microdoses of LSD produced a perception of time dilation in participants, which could be interpreted as evidence of enhancement of selective attention.

Given the very limited clinical evidence on microdosing at this stage, claims regarding its effectiveness for enhancement or therapy in the existing scholarship must be approached with caution as they are based in many cases on subjective experiences reported in questionnaires and/or interviews. This is a limitation that the aforementioned studies recognise in the absence of sufficient clinical evidence on microdosing's effectiveness. More RCTs are deemed necessary, all the more so because microdosing appears to lend itself particularly well to placebo effect given its sub-perceptual use modality. Even though psychedelics are ranked low in terms of harms compared with other substances (Nutt et al., 2010) and microdosing is portrayed as a safer alternative to popularised forms of pharmacological enhancement, adverse effects resulting from use have been reported (Fadiman, 2017; Hutten et al., 2019; Johnstad, 2018; Polito and Stevenson, 2019). As the most popular

psychedelics are controlled substances under the UN Conventions and often illicitly sourced, key concerns include quality, dosage, frequency and duration of use, polypharmacy, and lack of resources for managing potentially overwhelming experiences, all of which can adversely affect mental, physical and social health and wellbeing. Similarly to other HEDs, reliable expertise on microdosing is lacking and self-experimentation with various dosing schedules seems to be common (Hupli et al., 2019; Hutten et al., 2019; Kuyper et al., 2019). In such a context, different stakeholders ranging from users and scientists to entrepreneurs and advocates of drug law reform advance different assessments of risks, definitions of 'proper'/'improper' uses and identities.

Coordinates for sociological investigations of microdosing

Although limited in number, the first sociological studies of microdosing have revealed fascinating dimensions and complexities. Webb et al. (2019) employed semi-structured interviews to examine subjective experiences and understandings of 30 participants with current or past microdosing experience. This study raised questions around the formation and negotiation of narrative identities and values pertaining to classed positions. More specifically, in their embracing of a discourse of healthful lifestyle, responsibility and rationality, microdosers seemed attuned with traditional middle-class values. Engaging with microdosing in an instrumental, measured manner in pursuit of self-improvement goals through, for example, enhanced mood and cognition, was a key part of this picture, as was the creation of social distance between themselves and recreational drug users.

Drawing on the same data set and expanding on the findings of the above study, Beaton et al. (2019) looked into how participants accounted for their microdosing to manage the potential stigma of illegal drug use. Using the conceptual framework of accounts as ways that people align their behaviors with social expectations, the authors noted participants' concern with potential negative judgment from others. In many occasions this led microdosers to keep their drug use secret or, when questioned, to use a variety of justifications to avoid or manage the stigma associated with this behavior. By

emphasizing justifications such as appeal to normality, knowledgeableness, denial of injury, self-sustaining, appeal to loyalties, and self-fulfillment, participants framed microdosing classic psychedelics in a language similar to that used for food supplements. Articulating their substance use in terms of personal enhancement and success allowed them to construe it as socially acceptable.

Petranker et al. (2020) analysed free-text responses of 118 respondents with at least one microdosing experience in the past year who participated in an online survey disseminated on various social media platforms. Two main narratives were identified in this discursive analysis: a) a clinical narrative where individuals engaged with microdosing for self-treating mental health issues such as anxiety and depression, and b) a flourishing narrative where individuals engaged with microdosing for increased productivity and creativity, for example through focused attention. Irrespectively of the overarching narrative they subscribed to, participants shared benefits such as increased feelings of well-being, psychological flexibility and connectedness. Couching their findings in meaning-making theory, the authors speculate the development of microdosing is a response to feelings of disconnection and an ensuing crisis of meaning in post-traditional, secular societies.

In a conceptually oriented piece drawing on critical theory, Gray (2020) contextualizes microdosing in neoliberal higher education where demands for productivity and self-management are mounting for large numbers of academics. For Gray microdosing makes sense inside a wider spreading use of cognitive modification and enhancement drugs that help workers deal with conditions that render them overworked, stressed, and dispirited. In trying to question “the political implications of microdosing when it becomes an individualist responsibility in the managerialism of productivity and emotional capitalism”, Gray points to how “meanings of ‘development’ are changing and the ways they remain related to narratives of progress, themselves deeply embedded in colonial, State, and capitalist apparatuses” (ibid. 3).

Apart from microdosing as an intriguing phenomenon in its own right, these early studies begin to illustrate its analytical significance as a window to larger themes and processes in society and culture. In addition to opening up classical sociological queries around, for example, class, they also point to

key issues in a critical analysis of substance use, including meaning making and socio-cultural frames. Building and expanding on such studies, and with a view to conceptually approaching microdosing as an emerging facet of human enhancement through drugs, I propose to locate the phenomenon at the intersection of different levels of social reality that are dynamically co-constituted. These include individuals' practices, experiences and attitudes as well as the cultural scripts and social developments surrounding these substances and their use. Following this conceptual approach, further research on microdosing could be theoretically oriented by a diverse body of work in the sociology of drug use, health and culture. The negotiation of health, risk and self inherent in illicit substance use reflects complex processes of identity formation (Monaghan 2001) that, in turn, echo epochal shifts in the formation of subjects (Giddens 1991). Our categorisations of substances as human enhancement drugs are not determined (only) by their 'essential' properties but rather emerge and change out of their new and unexpected uses, shifting views of health and wellbeing, and the competing interests of social groups (Hoberman 2005). Moving towards an account of the social constitution of substances, sociological analyses of microdosing psychedelics could enrich a view of things and practices as enacted and signified differentially across intersecting fields of human activity (Bourdieu 1984).

Focusing sociological investigations along these lines, microdosing needs to be situated in greater detail in the larger context of what is referred to as the current 'psychedelics renaissance' (Sessa 2017). Of the diverse and often competing forces making up the psychedelics renaissance, some of the most powerful ones that merit a closer examination are: a) growing scientific research in psychedelics following a decades-long hiatus, mainly in clinical psychiatry and neuroscience, that focuses on their therapeutic potential for mental health. A series of studies demonstrate the significant potential of psychedelics in high doses for treating effectively and with limited risk conditions such as depression (Carhart-Harris 2018; Carhart-Harris et al. 2018), end-of-life anxiety (Griffiths et al. 2016; Ross et al. 2016), substance dependence (Krebs and Johansen 2012) and post-traumatic stress disorder (Mithoefer et al. 2018). New research in this area has been attracting vivid

public interest and re-establishes substances such as LSD, magic mushrooms and the related MDMA as a legitimate topic of investigation; b) a move towards increased commodification of psychedelics. Moving away from a subcultural context to embrace a mainstream globalised model of the 'wellness' industry, entrepreneurs of psychedelics are offering novel products and services. Addressing, and in the process cultivating, a new demographic of customer-users, such entrepreneurs often capitalize on new ways of using psychedelics that have attracted media attention, such as microdosing; and c) an advocacy movement that emphasises psychedelics' role for self-realisation and campaigns for expanded research programmes and drug law reform. Examples of organisations that have spearheaded this movement include the US-based Multidisciplinary Association for Psychedelic Studies (MAPS) and the Heffter Research Institute (US), the Beckley Foundation (UK), and the MIND European Foundation for Psychedelic Science (Germany). Alongside these there is a mushrooming number of psychedelic societies in urban centers and universities of different countries. Working against decades of cultural stigma, strict legislation and resistance in the medical community, this movement has mobilised much of the ongoing policy debates on psychedelics and their legal status. Opinions on microdosing in this camp diverge, as some view it as an appropriation of psychedelics and their countercultural potential unto a capitalism paradigm, while others welcome it as a 'soft' way of mainstreaming psychedelics and fighting back cultural stigma.

Situating microdosing in the aforementioned manner, some of the key questions to (further) pursue would include the following: What are the predominant use trajectories and discourses forming around microdosing psychedelics? In what ways do people approach microdosing as a form of enhancement and how is this related to their practices and attitudes, particularly regarding notions of health, risk and identity? How do current processes of medicalisation, commodification, mainstreaming and law reform in the psychedelics field influence users' perspectives and practices as well as the dynamics amongst key players? What can microdosing and the responses it provokes reveal about different conceptions of human enhancement and potential in the current juncture of the psychedelics renaissance?

Methodologically, qualitative research based on interviews has already begun revealing a rich mosaic of user motivations, perceptions and experiences that complements and deepens the findings of the more numerous survey-based studies (Beaton et al., 2019; Johnstad 2018; Webb et al., 2019). The future inclusion of different groups of research participants would work towards a fuller understanding of the dynamic and multi-faceted development of microdosing. With regard to users, attention could be directed to different pertinent populations, such as young professionals in science, technology and engineering, creatives, and students, as well as those without prior experience with psychedelics.

Given the lack of consensus on what exactly constitutes microdosing pointed out in prior research, targeting different user groups would allow for nuanced insights into how and why different substances or their modes of use are vested with meaning and get experienced in particular ways. In this light, specific themes that have emerged in the literature need to be explored in more detail, including the appreciation of microdosing psychedelics as a form of 'natural' supplement use aligned with healthful living (Webb et al. 2019) as well as the different conceptions of 'development' (Gray 2020), both of which can be connected to wider issues in HEDs research pertaining to the distinction between natural/artificial, healthy/unhealthy as well as notions of human progress and potential.

Apart from users, it would also be important to research other key stakeholders. This could include scientists, entrepreneurs, and use and drug law reform advocates with considerable involvement in the psychedelics field. Incorporating such figures in research designs would be important because their involvement allows them unique insights on the microdosing phenomenon as well as a distinct role in how it is being shaped. I argue that such key figures and the organisations they often belong to are critical in how microdosing gets framed, particularly as authority and expertise remain a key stake at this juncture (Best 2013; Burstein & Linton 2002). The opinions and impact of such figures could be explored directly (e.g. interviews) and/or indirectly (e.g. official communication platforms that afford an opportunity to gauge their activities and the ways these are construed in public discourse).

The methodological pallet could be expanded to include ethnographic methods such as field visits and participant observation. Findings yielded in this manner would converse with existing research that focuses on online worlds, such as online fora and social media (Hupli et al., 2019; Lea et al., 2019). A visible manifestation of the psychedelics renaissance, events such as public talks, conferences, fairs, and art exhibitions dedicated to or related to microdosing have been both multiplying in recent years and attracting people with different experiences, relations and identifications vis-à-vis psychedelics. I argue these are important spaces where the practices, meanings and identities forming around microdosing are socially negotiated. Given the variety of people attending such events (old and new psychedelic community members, as well as outsiders), an ethnographic approach would allow to observe in detail how different knowledges around microdosing and psychedelics get circulated, how key players present their positions and interact with each other and regular participants, how hierarchies of expertise and authority are negotiated, how communities of practice are assembled, and how grassroots debates and mobilisations take place. Such ethnographically collected data will help put into perspective and deepen existing or future survey or interview data and exert a synergistic effect.

In terms of a broader methodological approach, a comparative perspective would help examine microdosing as a phenomenon that has been unfolding in different parts of the globe. For example, researching microdosing in different countries could lead to tracing and evaluating both key similarities and key differences, e.g. in the legal regulation, scientific traditions, health policies, cultural resonance and public debates pertaining to these drugs. Looking into the possible effects factors such as the above can have on, for instance, users' decisions to initiate and/or (dis-)continue use builds on and tests previous findings on microdosing and cognitive enhancement drugs more generally (Cameron et al., 2020; Hupli 2020).

Contributions

Sociological studies such as those outlined above could make the following contributions:

a) Offer in-depth investigations of a developing trend in psychedelic drug use. In doing so, such studies can contribute to the sociology of health, substance use and culture while building on and conversing with fast-developing scholarship in other disciplines. Given the multidisciplinary wave of research on psychedelics underway, sociological studies could both enrich the findings of other research as well as examine the impact the latter has in how the field gets (re-)formed. Following developments as they unfold in the present, sociological research will also provide a detailed frame of reference for comparisons and contrasts with psychedelic practices and meanings in other historical and geo-cultural contexts. Although social science research has already begun to examine the experimental use of microdosing as self-therapy for mental health issues (Lea et al., 2020b), it would be important to trace whether microdosing becomes part of formalised therapeutic protocols (Nutt et al., 2020) and how this could impact on its other uses, including enhancement. Equally importantly, qualitative sociological research could pursue issues around the long-term or perhaps lifelong effects of microdosing that have already been pointed out in previous research as key unknowns at present (Rifkin et al., 2020).

b) Contribute to the empirical and theoretical elaboration of HEDs. Approaching microdosing psychedelics as a case study will contribute to understandings of how we conceptualise the very category of HEDs in particular socio-cultural contexts, and the ways that people signify and integrate enhancement practices in the wider context of their lives. The many empirical parallels that exist between psychedelics and other HEDs regarding their origins, uses, public debates, cultural struggles and policies that have developed around them deserve closer analysis. Microdosing appears particularly promising for examining the therapy/enhancement continuum. As with other HEDs, such as anabolic-androgenic steroids and human growth hormone, scientific research and therapeutic applications of the drugs have the potential for legitimating them in the eyes of existing or potential non-medical users (Beaton et al., 2019). Building on such prior findings, sociological studies could examine in detail how, for example, clinical trials of psychedelics and psychedelics-assisted therapy for mental illness and addiction may affect public opinion and individuals' decisions to engage with

microdosing. Moreover, the profile of the substances themselves as well as the profiles of their users change depending on the larger socio-cultural frame. In the case of psychedelics, for example, certain ways and contexts of using them echo countercultures of the 1960s, while others are compatible with a capitalist paradigm of performance and productivity (Gray 2020; Webb et al., 2019). In this sense microdosing can help examine how and what gets classified as a human enhancement drug and what the different meanings of 'enhancement' may be in different contexts.

c) Add to the scientific evidence base necessary to inform ongoing policy/law debates and public health interventions on human enhancement and psychoactive drugs. For example, the distinct value of qualitative social science work has already been pointed out with regard to harm reduction approaches to microdosing (Lea et al., 2019, 2020a). The topical nature of such research and its value for monitoring the trend has also been highlighted at a stage where clinical research on microdosing remains limited yet prevalence appears to be growing (ibid.) In tracing and analysing new or changing drug-using populations, sociological research can also inform longitudinal approaches to illuminate how drug policy has differential reach and impact depending on substances and groups, as well as the latter's support and intervention needs. Building relations with and bridges across different stakeholders through the use of qualitative methodologies could serve future collaborations and the co-creation of policy, services and interventions. Sociological research would also be valuable should microdosing prove to be both safe and effective as HED. As microdosing lends itself well to a business model of regular use, it would be important to trace and analyse the pressures for legal reform by both market interests and diversifying user groups. As with other HEDs, key questions around the regulation of manufacturing and trading in a global context would need to be explored (Hall & Antonopoulos 2019). Given that proven safety and effectiveness do not always guarantee progressive change at the policy/law level, as demonstrated in the case of STS studies of therapeutic interventions (Gardner et al., 2018), sociological studies could examine in detail the different cultural and political contexts and interests that will determine the regulation of microdosing.

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