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(REVIEW ARTICLE)

The impact of female hormones on psychedelic effects: Implications for mood, relationships, and menopausal health

Kerem Kemal Soylemez *, Emma Marie de Boo, Aysil Susuzlu and Joanne Lusher

School of Psychology, Regent's University London, London NW1 4NS, UK.

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Abstract

Female hormones such as estrogen and progesterone play crucial roles when it comes to regulating mood, cognition and overall well-being. These hormones interact with serotonin receptors, which are also targeted by psychedelics, potentially influencing their effects. Existing literature suggests that sex differences are evident in response to psychedelics, with women often experiencing more intense psychoactive effects in comparison to men. These differences can be attributed to variations in body fat distribution, hormonal levels and neurobiological pathways. Additionally, social differences amongst genders, including societal expectations, further shape the psychedelic experience, impacting emotional processing and trip intensity. There is promising evidence which suggests that psychedelics might improve romantic relationships by enhancing emotional bonds, increasing openness and fostering deeper connections. Furthermore, psychedelics may offer relief from menopausal symptoms, such as mood swings and depression by modulating serotonin levels and promoting neuroplasticity. This review explores this intricate relationship between female hormones and psychedelics, whilst focusing on hormonal functions, gender differences in psychedelic responses and their impact on romantic relationships and menopausal symptoms. The interplay between female hormones and psychedelics presents a complex yet promising area of research. As such, understanding gender related differences in response to psychedelics is essential for optimizing therapeutic responses to enhance women's health and well-being.

Keywords: Psychedelics; Hormones; Estrogen; Female Experiences; Menopause; Review

1. Introduction

The resurgence of interest in psychedelics has marked a new chapter in mental health research and therapeutic practices. Substances such as psilocybin, lysergic acid diethylamide (LSD), and N, N-Dimethyltryptamine (DMT) are now gaining mainstream recognition for their potential in treating a range of psychological disorders including depression, anxiety, post-traumatic stress disorder (PTSD), and addiction. With the increasing number of studies supporting their efficacy and safety in controlled settings, psychedelics are being reconsidered as legitimate tools in psychiatry [1].

However, the majority of existing studies overlook some crucial variables such as biological sex and gender [2]. Female hormones like estrogen and progesterone, which are known to influence mood, cognition, and overall psychological well-being, interact with serotonin systems that are also targeted by psychedelics [3]. This hormonal modulation could significantly shape the psychedelic experience in women.

This review considers how female hormones influence responses to psychedelics, emphasizing both biological and social dimensions. The functions of estrogen and progesterone in the brain will be explored, along with the neurochemical pathways influenced by psychedelics, and the gender-specific physiological and psychological

* Corresponding author: Kerem Kemal Soylemez

experiences that arise from their use. By doing so, we highlight the importance of considering sex and gender differences to enhance therapeutic outcomes and optimize mental health interventions for women.

2. Hormonal Overview: Oestrogen, Progesterone and the Brain

Estrogen and progesterone are the primary female sex hormones, playing pivotal roles beyond reproductive health [4]. In the brain, these hormones exert widespread effects on neurodevelopment, synaptic plasticity, and neurotransmitter systems [5].

Estrogen, particularly estradiol, is known to enhance cognitive function, mood regulation, and neuroprotection [6]. Behl [6] explains how it modulates neurotransmitter systems including dopamine, norepinephrine, and especially serotonin. Moreover, estrogen increases the density of serotonin receptors, boosts serotonin synthesis, and inhibits monoamine oxidase, the enzyme responsible for serotonin breakdown. These actions contribute to its antidepressant and anxiolytic properties.

As Rapkin [7] confirms, progesterone, while traditionally associated with reproductive functions, also influences brain function. It has neuroprotective effects, enhances GABAergic (gamma-aminobutyric acid) transmission, and modulates mood and anxiety [8]. Its metabolites, like allopregnanolone, are potent positive modulators of GABA-A receptors, contributing to its calming effects [9].

Hormonal fluctuations across the menstrual cycle significantly impact mood and cognition [10]. For instance, the premenstrual phase, marked by a drop in estrogen and progesterone, is often associated with mood swings, irritability, and increased vulnerability to stress [11]. Pregnancy, characterized by heightened levels of these hormones, is a period of increased emotional sensitivity, while menopause brings a steep decline in hormonal levels, often leading to depression, cognitive changes, and sleep disturbances [12].

These hormonal dynamics underscore the importance of considering endocrine status in studies of psychedelic effects. As serotonin is a key target of psychedelics, the interaction between female hormones and serotonergic signaling could significantly alter the subjective and therapeutic experiences of these substances [13].

3. Psychedelics and Serotonergic System

Classic psychedelics primarily exert their effects through the serotonin system, particularly by acting as agonists at the 5-HT2A receptor [14]. This receptor is abundant in cortical regions involved in perception, cognition, and emotion, including the prefrontal cortex and anterior cingulate cortex. The activation of the 5-HT2A receptor leads to altered sensory processing, emotional modulation, and the hallmark psychedelic affects such as ego dissolution, synesthesia, and enhanced interconnectedness, Geyer explains.

Psilocybin, for example, is metabolized into psilocin, which closely resembles serotonin and binds with high affinity to 5-HT2A receptors [15]. LSD, while also binding to 5-HT2A receptors, exhibits a broader receptor profile, interacting with dopaminergic and adrenergic receptors as well [16]. DMT, which is endogenously present in small amounts in the human body, similarly acts as a serotonin receptor agonist and produces intense, immersive visual and emotional experiences [17]. These interactions result in downstream effects including increased glutamate release in the prefrontal cortex and disruption of the default mode network (DMN), a brain network associated with self-referential thought [18]. According to Gattuso [18], the temporary deactivation of the DMN is thought to underlie the sense of ego dissolution and heightened unity often reported during psychedelic experiences.

Importantly, female hormones, particularly estrogen, modulate the serotonergic system in ways that may amplify or attenuate these effects [19]. Estrogen not only increases serotonin synthesis and receptor density but also enhances neuronal sensitivity to serotonergic stimulation. This implies that women in high-estrogen phases (such as the late follicular phase of the menstrual cycle) may experience more pronounced effects due to greater 5-HT2A receptor responsiveness. Conversely, during the luteal or menstrual phases, when estrogen levels drop, the intensity and quality of the psychedelic experience may differ, potentially influencing both efficacy and side effect profiles [20]. Understanding the nuances of these interactions is critical for optimizing dosing, timing, and integration of psychedelic therapy, particularly for women.

4. Biological Sex Differences in Psychedelic Response

Women do not only experience fluctuations in hormones within the monthly cycle, but throughout their lives. From puberty to menopause, and beyond, hormonal states shift due to natural life stages, reproductive events, and external influences such as hormonal contraception or hormone replacement therapy [21]. These dynamic changes in hormonal milieu can influence a wide array of physiological and psychological processes, including how women respond to psychoactive substances like psychedelics. Recognizing this complexity is essential to fully understanding sex differences in psychedelic experiences and outcomes. Evidence from the literature further indicates that men and women may respond differently to psychedelics [20]. These differences are attributed to various biological factors including body fat composition, hormonal profiles, drug metabolism, and neurochemical pathways.

Women typically have a higher percentage of body fat, which may influence the pharmacokinetics of lipophilic substances like psychedelics, affecting drug distribution, storage, and clearance. Additionally, hormonal fluctuations can significantly impact the metabolism of psychedelics through modulation of liver enzymes such as cytochrome P450 isoforms [22]. For instance, estrogen has been shown to inhibit certain metabolic pathways, potentially prolonging the effects of psychedelic substances in women [23].

Indeed, preclinical animal studies demonstrate that female rodents show greater sensitivity to serotonergic compounds [24]. For example, female rats often display an increased head-twitch response to 5-HT2A agonists, an established proxy for hallucinogenic activity. These effects appear to be cyclical, aligning with estrous phases that mimic hormonal fluctuations seen in the human menstrual cycle. In human studies, qualitative and quantitative differences are also apparent. Women frequently report more emotionally intense and introspective experiences during psychedelic sessions [25]. They are more likely to experience emotional breakthroughs and greater perceived therapeutic insight. In contrast, men may report more visual phenomena or cognitive effects, though these generalizations are not absolute. Functional brain imaging has shed light on underlying mechanisms, revealing sex-based differences in brain network dynamics [26]. Under psychedelics, women show heightened activation in limbic regions such as the amygdala and hippocampus; these areas are involved in emotion regulation and memory. This could explain the stronger affective responses and emotional catharsis reported by female participants. Moreover, increased connectivity between the default mode network and salience networks in women under psychedelics suggests that self-referential and emotionally salient processing is more deeply engaged [27].

To better understand how sex-based biological variables influence the pharmacokinetics of psychedelics, Table 1 summarizes the key differences between men and women in the absorption and metabolism, of psilocybin, LSD, and DMT. The table also includes some microdosing data, to illustrate the growing clinical and popular interest in sub-perceptual dosing strategies. By highlighting how hormonal status, body composition, and enzyme activity contribute to these variations, this summary supports the need for more sex-specific considerations in psychedelic therapy and research design.

Table 1 Pharmacokinetics of Classic Psychedelics and Microdosing

	Psilocybin / Psilocin	**LSD (Lysergic acid diethylamide)**	**DMT (N, N-Dimethyltryptamine)**	**Microdosing – Psilocybin**
Absorption	Oral bioavailability ≈ 50%; no major sex difference [28]	Oral ≈ 70%; slower gastric emptying in women may delay Tax [29]	Very low orally; IV or inhalation bypasses metabolism [30]	Lower doses → proportionally lower Cmax; greater variability, especially in women [31]
Tax (time to peak)	1–2 h (psilocin); delayed in luteal phase [32]	1.5–2 h; onset slightly slower in women [33]	2–5 min (IV/inhaled); no clear sex difference [34]	Oral microdose ≈ 30–60 min [31]
Half-life (t½)	2.5–3 h; oestradiol may slow clearance [35]	8–12 h; longer in women due to reduced hepatic clearance [33]	< 10 min [36]	Sub-perceptual effects last ~4–8 h [37]
Sex-specific findings	High oestradiol linked to slower clearance and stronger subjective response [20]	Women report longer LSD effects; may reflect slower metabolism [20]	No consistent kinetic sex differences observed [34]	Women may report stronger mood modulation during high-oestrogen phases [38]
Hormonal phase effects	Late follicular phase (high oestrogen): ↑ 5-HT2A receptor density → amplified response [20]	Luteal phase (high progesterone): possible GABAergic dampening [20]	Menstrual cycle could influence MAO-A activity, affecting intensity [39]	Timing doses with menstrual cycle may stabilize effects; more research needed [40]

These data underline the necessity for sex-specific analyses in psychedelic research. Accounting for hormonal cycles, metabolic differences, and neurobiological variations can enhance our understanding of individual variability in treatment response and support the development of personalized psychedelic therapies.

5. Gender as a Social Construct in the Psychedelic Experience

While biological sex plays a critical role in shaping the psychedelic experience, gender as a social construct also significantly influences outcomes. Cultural norms, societal expectations, and gender roles shape how individuals interpret and process their psychedelic experiences. Women are often socialized to be more emotionally expressive and relationally oriented [41]. This may enhance their ability to engage with the introspective and emotional aspects of psychedelics, leading to experiences that are rich in personal insight and emotional catharsis [42]. However, societal pressures related to appearance, caregiving, and emotional labor may also surface during psychedelic sessions, potentially complicating the therapeutic process. Research suggests that women may be more likely to experience both emotional breakthroughs and emotional distress during psychedelic sessions [43]. Set and setting, the psychological and environmental context of the trip, may differentially impact women due to heightened sensitivity to social cues and interpersonal dynamics [44].

Moreover, historical gender dynamics in psychedelic research and therapy, including power imbalances and underrepresentation [45], have further shaped women's experiences. Feminist critiques highlight the importance of creating inclusive, safe, and gender-informed therapeutic spaces to maximize benefit and minimize harm [46]. Understanding the interplay between biological sex and socially constructed gender roles is crucial for developing holistic and equitable psychedelic therapies [47]. By acknowledging both dimensions, practitioners can tailor interventions that respect and respond to the unique experiences of women.

6. Psychedelics and Menopause: A Promising Therapeutic Avenue

Menopause marks a significant neuroendocrine transition, characterized by a decline in ovarian hormones, primarily estrogen and progesterone, which can lead to a constellation of physical, psychological, and cognitive symptoms [48]. These include mood disturbances, anxiety, sleep disruption, cognitive decline, and vasomotor symptoms, all of which can substantially impair quality of life [49]. While hormone replacement therapy (HRT) remains a primary intervention, its use is limited by contraindications (e.g., hormone-sensitive cancers) and variable efficacy across individuals [50]. This therapeutic limitation has driven interest in novel, non-hormonal interventions, including psychedelic compounds. Commonly experienced symptoms of menopause are presented in Table 2.

Table 2 Commonly experienced symptoms during menopause [51]

Symptom Category	Specific Symptoms
Vasomotor	Hot flashes, night sweats, flushing
Psychological	Mood swings, depression, anxiety, irritability
Cognitive	Memory lapses, difficulty concentrating, "brain fog"
Sleep-related	Insomnia, frequent waking, disrupted sleep cycles
Urogenital	Vaginal dryness, pain during intercourse, urinary urgency/frequency
Musculoskeletal	Joint pain, muscle aches, reduced bone density
Metabolic	Weight gain, changes in fat distribution, increased cholesterol
Cardiovascular	Palpitations, increased risk of hypertension
Dermatological	Dry skin, thinning hair, brittle nails

Classic serotonergic psychedelics such as psilocybin and lysergic acid diethylamide (LSD) are receiving renewed attention in psychiatric and neurological research due to their effects on mood, cognition, and neuroplasticity [52]. These substances primarily act through agonism at the 5-HT2A receptor, a serotonin receptor subtype densely expressed in brain regions involved in emotional regulation, executive function, and the stress response [53]. These same domains are frequently disrupted during the menopausal transition, suggesting a potential mechanistic overlap [54].

In recent years, microdosing, defined as the repeated administration of sub-perceptual doses of psychedelic substances (typically 10–20 μg of LSD or 0.1–0.7 g of dried psilocybin-containing mushrooms) [56], has gained popularity. Unlike full psychedelic doses, microdosing does not induce hallucinations or ego dissolution but is instead intended to

modulate mood, enhance cognitive function, and improve emotional resilience over time [31]. Structured microdosing protocols, such as the Fadiman (dosing every third day) and Stamets (4–5 days on, 2–3 days off) regimens, are commonly cited in both anecdotal reports and emerging observational studies [56]. Preliminary evidence, albeit mostly from self-reported data and open-label designs, suggests that microdosing may reduce symptoms such as anxiety, depression, and cognitive fatigue, common complaints in perimenopausal and postmenopausal populations, Blest-Hopley writes. Some studies also suggest enhanced productivity, focus, and emotional regulation [57]. These subjective reports are increasingly supported by early neurobiological data demonstrating enhanced neurogenesis, increased synaptogenesis, and elevated brain-derived neurotrophic factors (BDNF) following psychedelic exposure, mechanisms that mirror, to a degree, those associated with estradiol [58].

Importantly, the neuroprotective and anti-inflammatory effects of estrogen diminish significantly during menopause [59]. This decline contributes to increased risks of cardiovascular disease, osteoporosis, autoimmune conditions, and cognitive dysfunction [60]. Psychedelics may offer a degree of functional compensation. Activation of the 5-HT2A receptor has been shown to reduce neuroinflammation and modulate immune response [61].

Some researchers have speculated on whether psychedelics might also indirectly influence reproductive function, particularly in premenopausal women. While direct effects on fertility remain largely unexplored, it is known that chronic stress and inflammation negatively affect hypothalamic-pituitary-gonadal (HPG) axis function, which regulates ovulation and hormone secretion [62]. By mitigating stress-related neuroendocrine disruption and modulating inflammatory pathways, psychedelics could hypothetically create a more favorable environment for reproductive health [63]. However, robust clinical data to support such claims are currently lacking.

7. Conclusion

In conclusion, the intricate interplay between female hormones and the serotonergic mechanisms of psychedelics underscores a critical but often overlooked dimension in psychedelic research and therapy. Estrogen and progesterone not only shape brain function and mood regulation but also modulate the neurochemical pathways targeted by psychedelics, leading to distinct biological and experiential differences in women. Recognizing these sex-specific factors, alongside the social constructs of gender that influence the interpretation and integration of psychedelic experiences, is essential for developing more personalized, effective, and equitable mental health interventions. This is particularly salient in lifespan periods like menopause, where declining hormone levels coincide with increased psychological and cognitive vulnerabilities that psychedelics may uniquely address. As the field moves forward, integrating hormonal status, life stage, and gender-sensitive frameworks will be paramount to optimizing psychedelic therapies, ensuring that the transformative potential of these substances is harnessed safely and inclusively for women across diverse physiological and sociocultural backgrounds.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest.

Statement of ethical approval

The present research work does not contain any studies performed on animals/humans' subjects by any of the authors.

References

[1] Dos Santos RG, Bouso JC, Hallak JE. Hallucinogens/psychedelics resurrected as new tools in psychiatric therapy. Brazilian Journal of Psychiatry. 2020 Jun 1;43(2):119-20.

[2] Mathad JS, Reif LK, Seo G, Walsh KF, McNairy ML, Lee MH, Hokororo A, Kinikar A, Riche CT, Deschamps MM, Nerette S. Female global health leadership: data-driven approaches to close the gender gap. Lancet (London, England). 2019 Feb 9;393(10171):521. and

[3] Shadani S, Conn K, Andrews ZB, Foldi CJ. Potential differences in psychedelic actions based on biological sex. Endocrinology. 2024 Aug;165(8).

[4] Mihm M, Gangooly S, Muttukrishna S. The normal menstrual cycle in women. Animal reproduction science. 2011 Apr 1;124(3-4):229-36.

[5] Dubol M, Epperson CN, Sacher J, Pletzer B, Derntl B, Lanzenberger R, Sundström-Poromaa I, Comasco E. Neuroimaging the menstrual cycle: A multimodal systematic review. Frontiers in neuroendocrinology. 2021 Jan 1;60:100878.

[6] Behl C. Oestrogen as a neuroprotective hormone. Nature Reviews Neuroscience. 2002 Jun;3(6):433-42.

[7] Rapkin AJ. Progesterone, GABA and mood disorders in women. Archives of Women's Mental Health. 1999 Nov;2:97-105.

[8] Brinton RD, Thompson RF, Foy MR, Baudry M, Wang J, Finch CE, Morgan TE, Pike CJ, Mack WJ, Stanczyk FZ, Nilsen J. Progesterone receptors: form and function in brain. Frontiers in neuroendocrinology. 2008 May 1;29(2):313-39.

[9] Möhler H. GABA A receptor diversity and pharmacology. Cell and tissue research. 2006 Nov;326:505-16.

[10] Romans S, Clarkson R, Einstein G, Petrovic M, Stewart D. Mood and the menstrual cycle: a review of prospective data studies. Gender medicine. 2012 Oct 1;9(5):361-84.

[11] Dickerson LM, Mazyck PJ, Hunter MH. Premenstrual syndrome. American family physician. 2003 Apr 15;67(8):1743-52.

[12] Rohr J, Netherton E, Combs H. Pregnancy, Menopause, and Other Hormonal Factors. InNeuropsychology of Women 2025 (pp. 321-349). Springer, Cham.

[13] Tylš F, Páleníček T, Kadeřábek L, Lipski M, Kubešová A, Horáček J. Sex differences and serotonergic mechanisms in the behavioural effects of psilocin. Behavioural Pharmacology. 2016 Jun 1;27(4):309-20.

[14] Geyer MA, Nichols DE, Vollenweider FX. Serotonin-related psychedelic drugs. Encyclopedia of neuroscience. 2009 Jan 1;8:741-8.

[15] Ling S, Ceban F, Lui LM, Lee Y, Teopiz KM, Rodrigues NB, Lipsitz O, Gill H, Subramaniapillai M, Mansur RB, Lin K. Molecular mechanisms of psilocybin and implications for the treatment of depression. CNS drugs. 2022 Jan;36(1):17-30.

[16] Bennett JL, Aghajanian GK. D-LSD binding to brain homogenates: possible relationship to serotonin receptors. Life sciences. 1974 Dec 1;15(11):1935-44.

[17] Singleton SP, Timmermann C, Luppi AI, Eckernäs E, Roseman L, Carhart-Harris RL, Kuceyeski A. Network control energy reductions under DMT relate to serotonin receptors, signal diversity, and subjective experience. Communications Biology. 2025 Apr 18;8(1):631.

[18] Gattuso JJ, Perkins D, Ruffell S, Lawrence AJ, Hoyer D, Jacobson LH, Timmermann C, Castle D, Rossell SL, Downey LA, Pagni BA. Default mode network modulation by psychedelics: a systematic review. International Journal of Neuropsychopharmacology. 2023 Mar 1;26(3):155-88.

[19] Chavez C, Hollaus M, Scarr E, Pavey G, Gogos A, van den Buuse M. The effect of estrogen on dopamine and serotonin receptor and transporter levels in the brain: an autoradiography study. Brain research. 2010 Mar 19;1321:51-9.

[20] Shadani S, Conn K, Andrews ZB, Foldi CJ. Potential differences in psychedelic actions based on biological sex. Endocrinology. 2024 Aug;165(8):bqae083.

[21] Zacur HA. Hormonal changes throughout life in women. Headache: The Journal of Head and Face Pain. 2006 Oct;46:S50-5.

[22] Nichols DE, Nichols CD. Psychedelic Drugs. In Encyclopedia of Molecular Pharmacology 2022 Jan 7 (pp. 1313-1320). Cham: Springer International Publishing.

[23] Deblois G, Giguère V. Oestrogen-related receptors in breast cancer: control of cellular metabolism and beyond. Nature Reviews Cancer. 2013 Jan;13(1):27-36.

[24] Kennett GA, Chaouloff F, Marcou M, Curzon G. Female rats are more vulnerable than males in an animal model of depression: the possible role of serotonin. Brain research. 1986 Sep 24;382(2):416-21.

[25] Kruger DJ, Argyri EK, Mogilski JK, Herberholz M, Barron J, Aday JS, Boehnke KF. Perceived Impact of Psychedelics on Sexual, Gender, and Intimate Relationship Dynamics: A Mixed-Methods Investigation. The Journal of Sex Research. 2025 Mar 29:1-2.

[26] Effinger DP, Quadir SG, Ramage MC, Cone MG, Herman MA. Sex-specific effects of psychedelic drug exposure on central amygdala reactivity and behavioral responding. Translational Psychiatry. 2023 Apr 8;13(1):119.

[27] Helmbold K, Zvyagintsev M, Dahmen B, Biskup CS, Bubenzer-Busch S, Gaber TJ, Klasen M, Eisert A, Konrad K, Habel U, Herpertz-Dahlmann B. Serotonergic modulation of resting state default mode network connectivity in healthy women. Amino Acids. 2016 Apr;48(4):1109-20.

[28] Hasler F, Grimberg U, Benz MA, Huber T, Vollenweider FX. Acute psychological and physiological effects of psilocybin in healthy humans: a double-blind, placebo-controlled dose–effect study. Psychopharmacology. 2004 Mar;172:145-56.

[29] Holze F, Vizeli P, Ley L, Müller F, Dolder P, Stocker M, Duthaler U, Varghese N, Eckert A, Borgwardt S, Liechti ME. Acute dose-dependent effects of lysergic acid diethylamide in a double-blind placebo-controlled study in healthy subjects. Neuropsychopharmacology. 2021 Feb;46(3):537-44.

[30] Ott J. Pharmahuasca: human pharmacology of oral DMT plus harmine. Journal of psychoactive drugs. 1999 Apr 1;31(2):171-7.

[31] Polito V, Stevenson RJ. A systematic study of microdosing psychedelics. PloS one. 2019 Feb 6;14(2):e0211023.

[32] Madsen MK, Fisher PM, Burmester D, Dyssegaard A, Stenbæk DS, Kristiansen S, Johansen SS, Lehel S, Linnet K, Svarer C, Erritzoe D. Psychedelic effects of psilocybin correlate with serotonin 2A receptor occupancy and plasma psilocin levels. Neuropsychopharmacology. 2019 Jun;44(7):1328-34.

[33] Dolder PC, Schmid Y, Steuer AE, Kraemer T, Rentsch KM, Hammann F, Liechti ME. Pharmacokinetics and pharmacodynamics of lysergic acid diethylamide in healthy subjects. Clinical pharmacokinetics. 2017 Oct;56:1219-30.

[34] Luan LX, Eckernäs E, Ashton M, Rosas FE, Uthaug MV, Bartha A, Jagger S, Gascon-Perai K, Gomes L, Nutt DJ, Erritzøe D. Psychological and physiological effects of extended DMT. Journal of Psychopharmacology. 2024 Jan;38(1):56-67.

[35] Meyer MR, Maurer HH. Absorption, distribution, metabolism and excretion pharmacogenomics of drugs of abuse. Pharmacogenomics. 2011 Feb 1;12(2):215-33.

[36] Vogt SB, Ley L, Erne L, Straumann I, Becker AM, Klaiber A, Holze F, Vandersmissen A, Mueller L, Duthaler U, Rudin D. Acute effects of intravenous DMT in a randomized placebo-controlled study in healthy participants. Translational psychiatry. 2023 May 23;13(1):172.

[37] Cavanna F, Muller S, de la Fuente LA, Zamberlan F, Palmucci M, Janeckova L, Kuchar M, Pallavicini C, Tagliazucchi E. Microdosing with psilocybin mushrooms: a double-blind placebo-controlled study. Translational Psychiatry. 2022 Aug 2;12(1):307.

[38] Chesak J. The Psilocybin Handbook for Women: How Magic Mushrooms, Psychedelic Therapy, and Microdosing Can Benefit Your Mental, Physical, and Spiritual Health. Simon and Schuster; 2023 Jun 6.

[39] Baron M, Levitt M, Perlman R. Human platelet monoamine oxidase and the menstrual cycle. Psychiatry Research. 1980 Dec 1;3(3):323-7.

[40] Ni Y. Managing PMDD with Psychedelic Microdosing: A Qualitative Inquiry into Women's Lived Experiences.

[41] Lorber J. The social construction of gender. InInequality in the 21st Century 2018 May 15 (pp. 347-352). Routledge.

[42] Kruger DJ, Argyri EK, Mogilski JK, Herberholz M, Barron J, Aday JS, Boehnke KF. Perceived Impact of Psychedelics on Sexual, Gender, and Intimate Relationship Dynamics: A Mixed-Methods Investigation. The Journal of Sex Research. 2025 Mar 29:1-2.

[43] Aday JS, Davis AK, Mitzkovitz CM, Bloesch EK, Davoli CC. Predicting reactions to psychedelic drugs: A systematic review of states and traits related to acute drug effects. ACS Pharmacology and Translational Science. 2021 Mar 5;4(2):424-35.

[44] Cook L. Empathetic Reform and the Psychedelic Aesthetic: Women's Accounts of LSD Therapy. Configurations. 2014;22(1):79-111.

[45] Psychedelic Chronicles. Rebalancing the journey: Gender inequality in psychedelics [Internet]. 2021 Mar [cited 2025 Jun 7]. Available from: https://psychedelicchronicles.earth/blog/rebalancing-the-journey-gender-inequality-in-psychedelics

[46] Barlek MH, Rouan JR, Wyatt TG, Helenowski I, Kibbe MR. The persistence of sex bias in high-impact clinical research. Journal of Surgical Research. 2022 Oct 1;278:364-74.

[47] Chan K. Sex differences in psychedelic responses: Impact on efficacy [Internet]. Psychedelic Support; 2024 Oct 28 [cited 2025 Jun 7]. Available from: https://psychedelic.support/resources/sex-differences-in-psychedelic-responses/

[48] Kistner RW. The menopause. Clinical Obstetrics and Gynecology. 1973 Dec 1;16(4):106-29.

[49] Bruce D, Rymer J. Symptoms of the menopause. Best practice and research Clinical obstetrics and gynaecology. 2009 Feb 1;23(1):25-32.

[50] Langer RD, Hodis HN, Lobo RA, Allison MA. Hormone replacement therapy–where are we now?. Climacteric. 2021 Jan 2;24(1):3-10.

[51] Monteleone P, Mascagni G, Giannini A, Genazzani AR, Simoncini T. Symptoms of menopause—global prevalence, physiology and implications. Nature Reviews Endocrinology. 2018 Apr;14(4):199-215.

[52] Calder AE, Hasler G. Towards an understanding of psychedelic-induced neuroplasticity. Neuropsychopharmacology. 2023 Jan;48(1):104-12.

[53] Wallach J, Cao AB, Calkins MM, Heim AJ, Lanham JK, Bonniwell EM, Hennessey JJ, Bock HA, Anderson EI, Sherwood AM, Morris H. Identification of 5-HT2A receptor signaling pathways associated with psychedelic potential. Nature Communications. 2023 Dec 15;14(1):8221.

[54] Bauer BE. Female Hormones, 5-HT2A Receptors, and Psychedelics. Psychedelic Science Review. 2019 Dec;10.

[55] Grinspoon P. The popularity of microdosing of psychedelics: What does the science say? [Internet]. Harvard Health Publishing; 2022 Sep 19 [cited 2025 Jun 7]. Available from: https://www.health.harvard.edu/blog/the-popularity-of-microdosing-of-psychedelics-what-does-the-science-say-202209192819

[56] Blest-Hopley G. Microdosing psychedelic substances and the menopause [Internet]. Hystelica; 2023 May 17 [cited 2025 Jun 7]. Available from: https://hystelica.com/hmicrodosing-psychedelic-substances-and-the-menopause/

[57] Anderson T, Petranker R, Christopher A, Rosenbaum D, Weissman C, Dinh-Williams LA, Hui K, Hapke E. Psychedelic microdosing benefits and challenges: an empirical codebook. Harm reduction journal. 2019 Dec;16:1-0.

[58] Ly C, Greb AC, Cameron LP, Wong JM, Barragan EV, Wilson PC, Burbach KF, Zarandi SS, Sood A, Paddy MR, Duim WC. Psychedelics promote structural and functional neural plasticity. Cell reports. 2018 Jun 12;23(11):3170-82.

[59] Behl C. Oestrogen as a neuroprotective hormone. Nature Reviews Neuroscience. 2002 Jun;3(6):433-42.

[60] Al-Azzawi F, Palacios S. Hormonal changes during menopause. Maturitas. 2009 Jun 20;63(2):135-7.

[61] Right to Heal. Psychedelics and midlife mood support for women [Internet]. [cited 2025 Jun 7]. Available from: https://righttoheal.com/psychedelics-and-midlife-mood-support-for-women/

[62] Shoar S, Bazinet A, Jairaj C. Exploring Psychedelics for Unmet Needs in Women's Reproductive Health. Psychedelic Medicine. 2025 Feb 3.

[63] Majewski T. Psychedelics are having a moment, and women could be the ones to benefit.