Continue

By the end of this section, you will be able to:Describe the relationship between drug tolerance and withdrawIdentify the neurotransmitter systems impacted by various categories of drugsDescribe how different categories of drugs affect behaviour and experienceWhile we all experience altered states of consciousness in the form of sleep on a regular basis, some people use drugs and other substances that result in altered states of consciousness as well. This section will present information relating to the use of various psychoactive drugs and their influence on physical and psychological states. This will be followed by brief descriptions of the effects of some of the more well-known drugs commonly used today. Drugs exert their effects on both physical and psychological bodily functions. Physical dependenceinvolves changes in normal bodily functionsthe user will experience withdrawal from the drug upon cessation of use. In contrast, a person who haspsychological dependencehas an emotional, rather than physical, need for the drug and may use the drug to relieve psychological distress.Toleranceis linked to physiological dependence, and it occurs when a person requires more and more drug to achieve effects previously experienced at lower doses. Tolerance can cause the user to increase the amount of drug used to a dangerous leveleven to the point of overdose and death.Drugwithdrawalincludes a variety of negative symptoms experienced when drug use is discontinued. These symptoms usually are opposite of the effects of the drug. For example, withdrawal from sedative drugs often produces unpleasant arousal and agitation. In addition to withdrawal, many individuals who are diagnosed with substance use disorders will also develop tolerance to these substances. Psychological dependence, or drug craving, is a recent addition to the diagnostic criteria for substance use disorder in DSM-5. This is an important factor because we can develop tolerance and experience withdrawal from any number of drugs that we do not abuse. In other words, physical dependence in and of itself is of limited utility in determining whether or not someone has a substance use disorder. The effects of all psychoactive drugs occur through their interactions with our endogenous neurotransmitter systems. Many of these drugs, and their relationships, are shown inTable SC.2. As you have learned, drugs can act as agonists or antagonists of a given neurotransmitter system. An agonist facilitates the activity of a neurotransmitter system, and antagonists impede neurotransmitter activity.Table SC.2 Drugs and Their EffectsClass of DrugExamplesEffects on the BodyEffects When UsedPsychologically Addicting?StimulantsCocaine, amphetamines (including some ADHD medications such as Adderall), methamphetamines, MDMA (Ecstasy or Molly)Increased heart rate, blood pressure, body temperatureIncreased alertness, mild euphoria, decreased appetite in low doses. High doses increase agitation, paranoia, can cause hallucinations. Some can cause heightened sensitivity to physical stimuli. High doses of MDMA can cause brain toxicity and death.YesSedative-Hypnotics (Depressants)Alcohol, barbiturates (e.g., secobarbital, pentobarbital), Benzodiazepines (e.g., Xanax)Decreased heart rate, blood pressureLow doses increase relaxation, decrease inhibitions. High doses can induce sleep, cause motor disturbance, memory loss, decreased respiratory function, and death.YesOpiatesOpium, Heroin, Fentanyl, Morphine, Oxycodone, Vicoden, methadone, and other prescription pain relieversDecreased pain, pupil dilation, decreased gut motility, decreased respiratory functionPain relief, euphoria, sleepiness. High doses can cause death due to respiratory depression.YesHallucinogensMarijuana, LSD, Peyote, mescaline, DMT, dissociative anesthetics including ketamine and PCPIncreased heart rate and blood pressure that may dissipate over timeMild to intense perceptual changes with high variability in effects based on strain, method of ingestion, and individual differencesYesThe Genetic Science Learning Centre at the University of Utah, created an interactive (simplified) overview of the mechanism and effects of several common drugs. You can access and interact with Mouse Party here: that this activity requires the Flash Player plug-in. For individuals who cannot view this activity, we have created a walkthrough video to show each of the mice and the drug effects and mechanisms.If the video above does not load, click here: a drug that tends to suppress central nervous system activity(Figure SC.15). Some depressants include alcohol, barbiturates and benzodiazepines. These drugs share in common their ability to serve as agonists of the gamma-Aminobutyric acid (GABA) neurotransmitter system. Because GABA has a quieting effect on the brain, GABA agonists also have a quieting effect; these types of drugs are often prescribed to treat both anxiety and insomnia.Figure SC.15The GABA-gated chloride (Cl) channel is embedded in the cell membrane of certain neurones. The channel has multiple receptor sites where alcohol, barbiturates, and benzodiazepines bind to exert their effects. The binding of these molecules opens the chloride channel, allowing negatively-charged chloride ions (Cl) into the neurones cell body. Changing its charge in a negative direction pushes the neurone awayfrom firing; thus, activating a GABA neurone has a quieting effect on the brain.Ethanol, which we commonly refer to as alcohol, is in a class of psychoactive drugs known as depressants. Acute alcohol administration results in a variety of changes to consciousness. At rather low doses, alcohol use is associated with feelings of euphoria. As the dose increases, people report feeling sedated. Generally, alcohol is associated with decreases in reaction time and visual acuity, lowered levels of alertness, and reduction in behavioural control. With excessive alcohol use, a person might experience a complete loss of consciousness and/or difficulty remembering events that occurred during a period of intoxication (McKim & Hancock, 2013). In addition, if a pregnant woman consumes alcohol, her infant may be born with a cluster of birth defects and symptoms collectively called fetal alcohol spectrum disorder (FASD) or fetal alcohol syndrome (FAS). With repeated use of many central nervous system depressants, such as alcohol, a person becomes physically dependent upon the substance and will exhibit signs of both tolerance and withdrawal. Psychological dependence on these drugs is also possible. Therefore, the abuse potential of central nervous system depressants is relatively high. Drug withdrawal is usually an aversive experience, and it can be a life-threatening process in individuals who have a long history of very high doses of alcohol and/or barbiturates. This is of such concern that people who are trying to overcome addiction to these substances should only do so under medical supervision. Stimulantsare drugs that tend to increase overall levels of neural activity. Many of these drugs act as agonists of the dopamine neurotransmitter system. Dopamine activity is often associated with reward and craving; therefore, drugs that affect dopamine neurotransmission often have abuse liability. Drugs in this category include cocaine, amphetamines (including methamphetamine), cathinones (i.e., bath salts), MDMA (ecstasy), nicotine, and caffeine. Cocaine can be taken in multiple ways. While many users snort cocaine, intravenous injection and inhalation (smoking) are also common. The freebase version of cocaine, known as crack, is a potent, smokable version of the drug. Like many other stimulants, cocaine agonizes the dopamine neurotransmitter system by blocking the reuptake of dopamine in the neuronal synapse.Methamphetamine in its smokable form, often called crystal meth due to its resemblance to rock crystal formations, is highly addictive. The smokable form reaches the brain very quickly to produce an intense euphoria that dissipates almost as fast as it arrives, prompting users to continuing taking the drug. Users often consume the drug every few hours across days-long binges called runs, in which the user forgoes food and sleep. In the wake of the opiate epidemic, many drug cartels in Mexico are shifting from producing heroin to producing highly potent but inexpensive forms of methamphetamine. The low cost coupled with lower risk of overdose than with opiate drugs is making crystal meth a popular choice among drug users today (NIDA, 2019). Using crystal meth poses a number of serious long-term health issues, including dental problems (often called meth mouth), skin abrasions caused by excessive scratching, memory loss, sleep problems, violent behaviour, paranoia, and hallucinations. Methamphetamine addiction produces an intense craving that is difficult to treat.Amphetamines have a mechanism of action quite similar to cocaine in that they block the reuptake of dopamine in addition to stimulating its release (Figure SC.16). While amphetamines are often abused, they are also commonly prescribed to children diagnosed with attention deficit hyperactivity disorder (ADHD). It may seem counterintuitive that stimulant medications are prescribed to treat a disorder that involves hyperactivity, but the therapeutic effect comes from increases in neurotransmitter activity within certain areas of the brain associated with impulse control. These brain areas include the prefrontal cortex and basal ganglia.Figure SC.16As one of their mechanisms of action, cocaine and amphetamines block the reuptake of dopamine from the synapse into the presynaptic cell.In recent years, methamphetamine (meth) use has become increasingly widespread.Methamphetamineis a type of amphetamine that can be made from ingredients that are readily available (e.g., medications containing pseudoephedrine, a compound found in many over-the-counter cold and flu remedies). Despite recent changes in laws designed to make obtaining pseudoephedrine more difficult, methamphetamine continues to be an easily accessible and relatively inexpensive drug option (Shukla, Crump, & Chrisco, 2012).Stimulant users seek aeuphoric high, feelings of intense elation and pleasure, especially in those users who take the drug via intravenous injection or smoking. MDMA (3.4-methelynedioxy-methamphetamine, commonly known as ecstasy or Molly) is a mild stimulant with perception-altering effects. It is typically consumed in pill form. Users experience increased energy, feelings of pleasure, and emotional warmth. Repeated use of these stimulants can have significant adverse consequences. Users can experience physical symptoms that include nausea, elevated blood pressure, and increased heart rate. In addition, these drugs can cause feelings of anxiety, hallucinations, and paranoia (Fiorentini et al., 2011). Normal brain functioning is altered after repeated use of these drugs. For example, repeated use can lead to overall depletion among the monoamine neurotransmitters (dopamine, norepinephrine, and serotonin). Depletion of certain neurotransmitters can lead to mood dysphoria, cognitive problems, and other factors. This can lead to people compulsively using stimulants such as cocaine and amphetamines, in part to try to reestablish the persons physical and psychological pre-use baseline. (Jayanthi & Ramamoorthy, 2005; Rothman, Blough, & Baumann, 2007).Caffeine is another stimulant drug. While it is probably the most commonly used drug in the world, the potency of this particular drug pales in comparison to the other stimulant drugs described in this section. Generally, people use caffeine to maintain increased levels of alertness and arousal. Caffeine is found in many common medicines (such as weight loss drugs), beverages, foods, and even cosmetics (Herman & Herman, 2013). While caffeine may have some indirect effects on dopamine neurotransmission, its primary mechanism of action involves antagonizing adenosine activity (Porkka-Heiskanen, 2011). Adenosine is a neurotransmitter that promotes sleep. Caffeine is an adenosine antagonist, so caffeine inhibits the adenosine receptors, thus decreasing sleepiness and promoting wakefulness.Whilecaffeineis generally considered a relatively safe drug, high blood levels of caffeine can result in insomnia, agitation, muscle twitching, nausea, irregular heartbeat, and even death (Reissig, Strain, & Griffiths, 2009; Wolt, Ganetsky, & Babu, 2012). In 2012, Kromann and Nielson reported on a case study of a 40-year-old woman who suffered significant ill effects from her use of caffeine. The woman used caffeine in the past to boost her mood and to provide energy, but over the course of several years, she increased her caffeine consumption to the point that she was consuming three litres of soda each day. Although she had been taking a prescription antidepressant, her symptoms of depression continued to worsen and she began to suffer physically, displaying significant warning signs of cardiovascular disease and diabetes. Upon admission to an outpatient clinic for treatment of mood disorders, she met all of the diagnostic criteria for substance dependence and was advised to dramatically limit her caffeine intake. Once she was able to limit her use to less than 12 ounces of soda a day, both her mental and physical health gradually improved. Despite the prevalence of caffeine use and the large number of people who confess to suffering from caffeine addiction, this was the first published description of soda dependence appearing in scientific literature.Nicotine is highly addictive, and the use of tobacco products is associated with increased risks of heart disease, stroke, and a variety of cancers. Nicotine exerts its effects through its interaction with acetylcholine receptors. Acetylcholine functions as a neurotransmitter in motor neurones. In the central nervous system, it plays a role in arousal and reward mechanisms. Nicotine is most commonly used in the form of tobacco products like cigarettes or chewing tobacco; therefore, there is a tremendous interest in developing effective smoking cessation techniques. To date, people have used a variety ofnicotinereplacement therapies in addition to various psychotherapeutic options in an attempt to discontinue their use of tobacco products. In general, smoking cessation programs may be effective in the short term, but it is unclear whether these effects persist (Cropley, Theadom, Pravettoni, & Webb, 2008; Levitt, Shaw, Wong, & Kaczorowski, 2007; Smedslund, Fisher, Boles, & Lichtenstein, 2004). Vaping as a means to deliver nicotine is becoming increasingly popular, especially among teens and young adults. Vaping uses battery-powered devices, sometimes called e-cigarettes, that deliver liquid nicotine and flavourings as a vapour. Originally reported as a safe alternative to the known cancer-causing agents found in cigarettes, vaping is now known to be very dangerous and has led to serious lung disease and death in users. Anopioidis a category of drugs that includes heroin, morphine, methadone, and codeine. Opioids have analgesic properties; that is, they decrease pain. Humans have an endogenous opioid neurotransmitter systemthe body makes small quantities of opioid compounds that bind to opioid receptors reducing pain and producing euphoria. Thus, opioid drugs, which mimic this endogenous painkilling mechanism, have an extremely high potential for abuse. Natural opioids, calledopiates, are derivatives of opium, which is a naturally occurring compound found in the poppy plant. There are now several synthetic versions of opiate drugs (correctly called opioids) that have very potent painkilling effects, and they are often abused. For example, the National Institutes of Drug Abuse has sponsored research that suggests the misuse and abuse of the prescription pain killers hydrocodone and oxycodone are significant public health concerns (Maxwell, 2006). In 2013, the U.S. Food and Drug Administration recommended tighter controls on their medical use.Historically, heroin has been a major opioid drug of abuse (Figure SC.17). Heroin can be snorted, smoked, or injected intravenously. Heroin produces intense feelings of euphoria and pleasure, which are amplified when the heroin is injected intravenously. Following the initial rush, users experience 46 hours of going on the nod, alternating between conscious and semiconscious states. Heroin users often shoot the drug directly into their veins. Some people who have injected many times into their arms will show track marks, while other users will inject into areas between their fingers or between their toes, so as not to show obvious track marks and, like all abusers of intravenous drugs, have an increased risk for contraction of both tuberculosis and HIV.Figure SC.17(a) Common paraphernalia for heroin preparation and use are shown here in a needle exchange kit. (b) Heroin is cooked on a spoon over a candle. (credit a: modification of work by Todd Huffman)Aside from their utility as analgesic drugs, opioid-like compounds are often found in cough suppressants, anti-nausea, and anti-diarrhea medications. Given that withdrawal from a drug often involves an experience opposite to the effect of the drug, it should be no surprise that opioid withdrawal resembles a severe case of the flu. While opioid withdrawal can be extremely unpleasant, it is not life-threatening (Julien, 2005). Still, people experiencing opioid withdrawal may be given methadone to make withdrawal from the drug less difficult.Methadoneis a synthetic opioid that is less euphorigenic than heroin and similar drugs.Methadone clinicshelp people who previously struggled with opioid addiction manage withdrawal symptoms through the use of methadone. Other drugs, including the opioid buprenorphine, have also been used to alleviate symptoms of opiate withdrawal.Codeineis an opioid with relatively low potency. It is often prescribed for minor pain, and it is available over-the-counter in some other countries. Like all opioids, codeine does have abuse potential. In fact, abuse of prescription opioid medications is becoming a major concern worldwide (Aquina, Marques-Baptista, Bridgeman, & Merlin, 2009; Casati, Sedefov, & Pfeiffer-Gerschel, 2012). Few people in Canada and the United States remain untouched by the recent opioid epidemic. It seems like everyone knows a friend, family member, or neighbour who has died of an overdose. Opioid addiction reached crisis levels in the United States such that by 2019, an average of 130 people diedeach dayof an opioid overdose (NIDA, 2019). The crisis actually began in the 1990s, when pharmaceutical companies began mass-marketing pain-relieving opioid drugs like OxyContin with the promise (now known to be false) that they were non-addictive. Increased prescriptions led to greater rates of misuse, along with greater incidence of addiction, even among patients who used these drugs as prescribed. Physiologically, the body can become addicted to opiate drugs in less than a week, including when taken as prescribed. Withdrawal from opioids includes pain, which patients often misinterpret as pain caused by the problem that led to the original prescription, and which motivates patients to continue using the drugs. The FDAs 2013 recommendation for tighter controls on opiate prescriptions left many patients addicted to prescription drugs like OxyContin unable to obtain legitimate prescriptions. This created a black market for the drug, where prices soared to $80 or more for a single pill. To prevent withdrawal, many people turned to cheaper heroin, which could be bought for $5 a dose or less. To keep heroin affordable, many dealers began adding more potent synthetic opioids including fentanyl and carfentanyl to increase the effects of heroin. These synthetic drugs are so potent that even small doses can cause overdose and death. Large-scale public health campaigns by the National Institutes of Health and the National Institute of Drug Abuse have led to recent declines in the opioid crisis. These initiatives include increasing access to treatment and recovery services, increasing access to overdose-reversal drugs like Naloxone, and implementing better public health monitoring systems (NIDA, 2019).Ahallucinogenis one of a class of drugs that results in profound alterations in sensory and perceptual experiences (Figure SC.18). In some cases, users experience vivid visual hallucinations. It is also common for these types of drugs to cause hallucinations of body sensations (e.g., feeling as if you are a giant) and a skewed perception of the passage of time.Figure SC.18Psychedelic images like this are often associated with hallucinogenic compounds. (credit: modification of work by new 1lluminati/Flickr)As a group, hallucinogens are incredibly varied in terms of the neurotransmitter systems they affect. Mescaline and LSD are serotonin agonists, and PCP (angel dust) and ketamine (an animal anesthetic) act as antagonists of the NMDA glutamate receptor. In general, these drugs are not thought to possess the same sort of abuse potential as other classes of drugs discussed in this section. To learn more about some of the most commonly abused prescription and street drugs, check out theCommonly Abused Drugs Chartand theCommonly Abused Prescription Drugs Chartfrom the National Institute on Drug Abuse.TRICKY TOPIC: DRUG MECHANISMSIf the video above does not load, click here: a full transcript of this video, click here Medical marijuana is marijuana that is prescribed by a doctor for the treatment of a health condition. For example, people who undergo chemotherapy will often be prescribed marijuana to stimulate their appetites and prevent excessive weight loss resulting from the side effects of chemotherapy treatment. Marijuana may also have some promise in the treatment of a variety of medical conditions (Mather, Rauwendaal, Moxham-Hall, & Wodak, 2013; Robson, 2014; Schicho & Storr, 2014). Conducting research on the potentially beneficial medicinal uses of marijuana have historically been problematic due its classification as an illicit substance. There is quite a bit of controversy within the scientific community as to the extent to which marijuana might have medicinal benefits due to a lack of large-scale, controlled research (Bostwick, 2012). It will be important to watch for this research given the changing legal classification of marijuana in many countries, including Canada. By:Eesar Hussain kharkoviIntroduction:In Sufism, the term is referred to as wajad and the experience is referred to as either jazbah or majzoobiyat.I, (Arabic: condition,)pluralAwl, in f Muslim mystical terminology, a spiritual state of mind that comes to the f from time to time during his journey toward God. Theawlare graces of God that cannot be acquired or retained through an individuals own efforts. When the soul is purified of its attachments to the material world, it can only wait patiently for those spiritual gifts of God, which, when they come, fill the f with the desire to continue his journey with new energy and higher expectations.Theawlare distinguished by most fs from themaqms (spiritual stages) in two main aspects. First, theawlare usually transitory; like flashes of lightning they come into the heart and disappear. Second, whileawldenote agratuitousfavour of God,maqms are granted solely on merit and efforts.Though the fs spoke of hundreds ofawl,the following are among those most often referred to. (1) Thelofmurqabah(watching) fills the f with either fear or joy according to the aspect of God revealed to him. (2) Thelofqurb(nearness) is a state that enables the f to become unconscious of his own acts and to see Gods acts and bounties toward him. (3) Thelofwajd(ecstasy) is a state described by the f as a sensation that encounters the heart and produces such varied effects as sorrow or joy, fear or love, contentment or restlessness. (4) In thelofsukr(intoxication) the f, while not totally unaware of the things that surround him, becomes half-dazed because his association with God dims his sight of other things. The overpowering sense of the beloved in this state destroys the mystics ability to distinguish between physical pain and pleasure.hazart shah Abdul Latif Batai wrote in his bookMawlana Jalal al-Din al-Rumi said(The souls that have clung to water and clay, Are pleased on being freed from them, And begin to dance in the air and breezes of love, Becoming perfected like the full moon)In classical Greek literature it refers to removal of the mind or body from its normal place of function. It is a state of very great happiness and extreme delight.Total involvement with an object of interest is not an ordinary experience because of being aware of other objects, thus ecstasy is an example of an altered state of consciousness characterized by diminished awareness of other objects or the total lack of the awareness of surroundings and everything around the object. The word is also used to refer to any heightened state of consciousness or intensely pleasant experience. It is also used more specifically to denote states of awareness of non-ordinary mental spaces, which may be perceived as spiritual (the latter type of ecstasy often takes the form of religious ecstasy).In pharmacology Ecstasy an illegal drug that is used to produce a feeling of excitement and pleasure.From a psychological perspective, ecstasy is a loss of self-control and sometimes a temporary loss of consciousness, which is often associated with religious mysticism, sexual intercourse and the use of certain drugs. For the duration of the ecstasy the ecstatic is out of touch with ordinary life and is capable neither of communication with other people nor of undertaking normal actions. The experience can be brief in physical time, or it can go on for hours. Subjective perception of time, space or self may strongly change or disappear during ecstasy. For instance, if one is concentrating on a physical task, then any intellectual thoughts may cease. On the other hand, making a spirit journey in an ecstatic trance involves the cessation of voluntary bodily movement.Ecstasy can be deliberately induced using religious or creative activities, meditation, music, dancing, breathing exercises, physical exercise, sexual intercourse or consumption of psychotropic drugs. The particular technique that an individual uses to induce ecstasy is usually also associated with that individuals particular religious and cultural traditions.In everyday language, the word ecstasy denotes an intense, euphoric experience. For obvious reasons, it is rarely used in a scientific context; it is a concept that is extremely hard to define. Rational:The man reasons of writing this scholarly paper is to define term ecstasy from different point of view because in everyday language, the word ecstasy denotes an intense, euphoric experience. For obvious reasons, it is rarely used in a scientific context; it is a concept that is extremely hard to define. We also try to find out what effect of ecstasy on behaviour.Jamss Roout write in his book (introduction of organize psychology) about types of ecstasyNatural Ecstasy: This type of ecstasy involves a deep interest leading to concentration enfeebling mans perception of the world around him. It is a psychological process caused by man. The individuals natural talents help him to achieve the state of ecstasy. Kinds :Artistic, scientific, religious (originating from faith)Supernatural ecstasy :Supernatural ecstasy means infused observation during which suppression of sensorial perceptivity of the surrounding world may occur, or such a state as physical stiffening. Both of these elements are secondary; primary is the observation itself.Positive ecstasy means mystical (instilled or infused) observation caused by Gods activity.Negative ecstasy means observation caused by an evil spirit, drug or pathological mental state (especially in psychologically sensitive people), as a consequence of exercise (Buddhism, Hinduism) or as the case may be by the influence of passionate agitation or intoxication.Effects during positive ecstasy:The ecstatic cannot leave his state at will (only by order of the superior). He can neither move nor express himself in some other way at least not voluntarily (this also concerns oral prayers, which he cannot say at will). He cannot occupy himself with anything else but what was given to him in ecstasy by God.) (Roout, J 2001)In 1925, James Leuba wrote: Among most uncivilized populations, as among civilized peoples, certain ecstatic conditions are regarded as divine possession or as union with the Divine. These states are induced by means of drugs, by physical excitement, or by psychical means. But, however produced and at whatever level of culture they may be found, they possess certain common features which suggest even to the superficial observer some profound connection. Always described as delightful beyond expression, these awesome ecstatic experiences end commonly in mental quiescence or even in total unconsciousness. He prepares his readers to recognize a continuity of impulse, of purpose, of form and of result between the ecstatic intoxication of the savage and the absorption in God of the Christian mystic. (Leuba,J 1925)According to Plotinus, was a major Greek-speaking philosopher of the ancient world ecstasy is the culmination of human possibility. He contrasted emanation (prohodos) from the Oneon the one handwith ecstasy or reversion, epistrophe) back to the Oneon the other.This is a form of ecstasy described as the vision of, or union with, some otherworldly entity (see religious ecstasy)a form of ecstasy that pertains to an individual trancelike experience of the sacred or of God.(Kapleau, 1970, 32) state in his article Breathing exercises have been used as an ecstasy technique. But also in zen, the counting of inhalations or exhalations has been used as a meditation technique. As mentioned earlier, Huxley thought that breathing exercises could cause religious experiences by increasing the amount of CO2 in the brain. This is highly unlikely-breathing CO2 is a very unpleasant experience, which anyone knows who has been in a room with extremely bad air.Book review of Marghanita Laski (by Anthony Campbell. Copyright Anthony Campbell (2000).) At the outset Laski distinguishes two kinds of ecstasy, which she calls Intensity and Withdrawal. From her survey Laski reached a number of conclusions about ecstasy. It is typically rather brief, usually lasting a few minutes, occasionally up to an hour. When it seems to last longer than this the effect may be due to what Laski calls afterglow. There is a tendency for intensity ecstasy to be associated with feelings of light and upward movement, and for withdrawal ecstasy to be associated with dark and downward movement. Ecstasy may be accompanied by physical sensations of various kinds, usually pleasurable but sometimes painful. Ecstasies may be of various kinds. In some, the person feels that life is joyful, purified, renewed; Laski calls these Adamic. Some people have what appear to be the obverse of ecstatic experience, which Laski calls desolation experiences. Laski does not feel that she has been able to deal with these adequately and they are not discussed in detail. Laski uses the term trigger to describe the circumstances that can induce or precipitate ecstasy. The circumstances in which ecstatic experience occur are variable. Childhood is often thought to be a time when ecstasy is common or even semi-permanent, but Laski presents evidence which suggests that this may not really be the case. Women may experience ecstasy in childbirth, although, perhaps surprisingly, this does not seem to be related to whether the birth was easy or difficult, painful or relatively pain-free. Sexual love may precipitate ecstasy, and people were clear about the difference between ordinary orgasm and ecstasy.According to one Excerpt from Novel Peer-e-Kaamil (S.A.W.W) by Humera AhmadWhat comes next to ecstasy? uss ney gerdun more key Imama sey poocha. woh kuch dair ussey dekhti rahi, phir uss ney madham awaz main kaha- PainAnd what comes next to pain? Salaar ney bila-tawquf sawal kiya- NothingnessWhat is next to nothingness? Salaar ney ussi andaz mein sawal kiya Jahannum Imama ney kahaAnd what is next to Jahannum? iss baar Imama khamoshi sey uss ka chehra dekhti rahi. What is next to Jahannum? Salaar ney apna sawal dohrayatumhey khouf nahi aata- Salaar ney Imama ko kadre ajeeb andaaz sey poochtey suna. Kis Cheeze sey: Salaar hairaan ho kJahannum sey. uss jaga sey jis key agey aur kuch bhi nahi hotasub kuch uss key peechey reh jata hai maatoob aur makhzoob ho janey key baad baqi kia bajta hai jissey jananey ka tumhey tajasus hai- Imama ney qadre ufsoos sey kahaMein tumhari baat samjh nahi saka. sub kuch merey upar sey guzra hai Salaar ney jaisey ailaan kerney wale undaaz mein kaha.fikr maat karo. aa jaye gi. aik waqat aye ga. jub tumhey her cheeze samjh mein aa jaye gi, phir tumhari hansi khatam ho jaye gi. tub tumhey kauf aaney lagey ga Maut sey bhi or doozaq sey bhi Allah tumhey sub kuch dekha aur bata dey ga phir tum kisi sey nahi poocha karo gey. What is next to ecstasy? Imama ney bohat rasaniat sey kaha..Ecstasy can be deliberately induced using religious or creative activities, meditation, music, dancing, breathing exercises, physical exercise, sexual intercourse or consumption of psychotropic drugs. The particular technique that an individual uses to induce ecstasy is usually also associated with that individuals particular religious and cultural traditions. Sometimes an ecstatic experience takes place due to occasional contact with something or somebody perceived as extremely beautiful or holy, or without any known reason. In some cases, a person might obtain an ecstatic experience by mistake. Maybe the person unintentionally triggers one of the, probably many, physiological mechanisms through which such an experience can be reached. In such cases, it is not rare to find that the person later, by reading, looks for an interpretation and maybe finds it within a tradition.People interpret the experience afterward according to their culture and beliefs (as a revelation from God, a trip to the world of spirits or a psychotic episode). When a person is using an ecstasy technique, he usually does so within a tradition. When he reaches an experience, a traditional interpretation of it already exists. The experience together with its subsequent interpretation may strongly and permanently change the value system and the worldview of the subject (e.g. to cause religious conversion). (Roout, J 2001)Ecstasy is the unexpected overflowing of a heart which has been equipped with belief, knowledge and love of God, and with spiritual pleasures, with yearning, zeal, spiritual joy and the Divine gifts. It is the main topic being discussed here, and is the state which is based on the hadith: There are three things which show that one who has them has tasted the pleasure of belief: loving God and His Messenger more than anything else, loving for Gods sake, and being careful with the things that lead to Paradise and Hell. [Al-Bukhari, Iman, 9; Al-Muslim, al-Jami al-Sahih, Iman, 67.]Ecstasy manifests itself also in the form of spiritual pleasures and zeal, or amazement and astonishment. These feelings pervade the whole being and arouse in the person feelings of awe, tearfulness, and crying. This kind of ecstasy is mainly witnessed in circles where people recite Gods Names together. These feelings arise unintentionally in the hearts of people. Enraptured by the sounds of the hammer used by Zarkubi in Konya, Mawlana Jalal al-Din al-Rumi said: The souls that have clung to water and clay, Are pleased on being freed from them, And begin to dance in the air and breezes of love, Becoming perfected like the full moon.Constant ecstasy is the state in which the heart is favored with a continuous spiritual tension, with spiritual experiences, and varying, uninterrupted Divine gifts by virtue of the depth of its relationship with the Necessarily Existent Being and the Giver of Life, and the hearts committed search for the ways of nearness to Him. The verse (18:14), We made firm their hearts and they rose, proclaiming: Our Lord is the Lord of the heavens and the earth. We will never call anyone apart from Him God! expresses this sort of love and excitement.Conclusion:From a psychological perspective, ecstasy is a loss of self-control and sometimes a temporary loss of consciousness, which is often associated with religious mysticism, sexual intercourse and the use of certain drugs. For the duration of the ecstasy the ecstatic is out of touch with ordinary life and is capable neither of communication with other people nor of undertaking normal actions. The experience can be brief in physical time, or it can go on for hours. Subjective perception of time, space or self may strongly change or disappear during ecstasy. For instance, if one is concentrating on a physical task, then any intellectual thoughts may cease. On the other hand, making a spirit journey in an ecstatic trance involves the cessation of voluntary bodily movement.The circumstances in which ecstatic experience occur are variable. Childhood is often thought to be a time when ecstasy is common or even semi-permanent, but Laski presents evidence which suggests that this may not really be the case. Women may experience ecstasy in childbirth, although, perhaps surprisingly, this does not seem to be related to whether the birth was easy or difficult, painful or relatively pain-free. Sexual love may precipitate ecstasy, and people were clear about the difference between ordinary orgasm and ecstasy.It seems like Ecstasy is everywhere. People are either preparing for its use by way of scheduling activities that will allow them to exert their newly gained energy, or they are desperately trying to get their hands on it for the upcoming weekend. At first sight it makes sense, who wouldnt want an energy booster for a night on the town? However, Ecstasy can be fatal. Giving into temptation just once could change things forever.Ecstasy almost always takes place after contact with something regarded as beautiful or valuable or both. Ecstatics often claim to see bright light, whether as a flash or as sustained brightness, during their experience; and they often claim that afterwards everything seems brighter, as if they were looking at the world with a newly cleansed vision (Laski, M,1990)Criteria of supernatural ecstasy:Signs of positive ecstasy behaviourGreat enrichment of spiritual lifeRegular and well-ordered lifePerseverance in doing ones dutiesSelflessness and readiness to asceticism-Growth in virtues and in loving ones neighboursSigns of negative ecstasy behaviourArbitrariness of the origin of ecstasy (ecstatic enters the state of ecstasy whenever he wants)Ecstasy is often without logical senseLack of modestyOccurrence of ecstasy in case of beginners in spiritual lifeEffects on behaviour during positive ecstasy:The ecstatic cannot leave his state at will (only by order of the superior). He can neither move nor express himself in some other way at least not voluntarily (this also concerns oral prayers, which he cannot say at will). He cannot occupy himself with anything else but what was given to him in ecstasy(Roout, J 2001)Recommendation:Everybody wants to have a good time. The problem with this is that sometimes having too good of a time can be dangerous.Everything should be in limit extreme sadness, joyless and happens are all harm for physical, psychological and spiritual health. Everything that against ha nature is danger. Reference:(Roout, J)(2001) (organizational psychology) ,4th ed,(pg 212 to 214)(Ahmat ,U)(2002) (Novel Peer-e-Kaamil (S.A.W.W) pg 113 to 114(Laski,M)(1990)Retrieved.from 3AEcstasy_(emotion)(Laski,M)(2ooo)Retrieved,from //www.accampbell.uklinux.net/bookreviews/r/laski.html emotion) //www.ex-premie2.org/papers/religious_ecstasy.htm Oxford University Press. 1983 How did human consciousness evolve? Why are people so much cleverer than other animals? What is the basis of the human capacity for insight? Why do we dream, keep pets, go to the cinema? Is there a biological basis for art? Why do people believe in ghosts? What is the origin of religious ecstasy? What lies behind the suicidal nuclear arms race? In Consciousness Regained Nicholas Humphrey brings together a selection of his penetrating essays about the human condition, adding an introductory chapter and a substantial new section on self-knowledge, In particular he examines the phenomenon of consciousness and helps to regain for serious study this most basic if most perplexing of subjects. Dr Nicholas Humphrey, until 1982 Assistant Director of Cambridge's Sub-Department of Animal Behaviour, is an experimental psychologist. In 1981 he gave the final Bronowski Lecture on BBC Television, 'Four Minutes to Midnight', which appears in this book, He is the presenterof the forthcoming television series 'The Inner Eye'. As rich and captivating as any work of fiction The Economist Transcendent moments of pure joy and unbridled exhilaration have captivated the human psyche for centuries, and the study of ecstasy in psychology seeks to unravel the complex tapestry of these intense emotional states. From the euphoric highs of religious revelations to the heart-pounding rush of athletic achievements, ecstasy represents a pinnacle of human experience that has long fascinated scholars and laypeople alike. Imagine, if you will, standing atop a mountain peak, the world sprawled out beneath you in a breathtaking panorama. The crisp air fills your lungs, and for a moment, time seems to stand still. This, my friends, is but a taste of what psychologists refer to as ecstasy a state of being so profound that it transcends our everyday existence. But what exactly is ecstasy in psychological terms? How does our brain conjure these extraordinary experiences? And why do we seek them out with such fervor? Buckle up, dear reader, for were about to embark on a thrilling journey through the landscape of the ecstatic mind. Lets start by peeling back the layers of this enigmatic term. Ecstasy comes from the Greek ekstasis, meaning to stand outside oneself. Its a fitting description, isnt it? When were in the throes of ecstasy, we often feel as if weve transcended our normal state of being. In psychological parlance, ecstasy refers to an intense emotional state characterized by overwhelming joy, rapture, or delight. Its the fireworks display of emotions, the crescendo in lifes symphony. But heres the kicker its not just about feeling good. Ecstasy often involves a sense of connection to something greater than oneself, be it nature, the divine, or the collective human experience. Now, you might be thinking, Isnt that just a fancy word for being really, really happy? Well, not quite. While happiness and ecstasy are certainly kissing cousins, ecstasy takes things to a whole new level. Its like comparing a gentle stream to a roaring waterfall both are water, but the intensity and impact are worlds apart. Alright, lets dive into the meat and potatoes of this topic whats going on upstairs when were in the throes of ecstasy? Brace yourself, because things are about to get deliciously nerdy. When ecstasy strikes, our brains light up like a Christmas tree. The prefrontal cortex, our brains CEO, takes a backseat, while areas associated with emotion and reward like the limbic system step into the spotlight. Its like the brains very own rave, with neurotransmitters as the DJ. Speaking of neurotransmitters, dopamine and serotonin are the stars of this neurochemical show. These feel-good chemicals flood our synapses, creating that rush of euphoria we associate with ecstatic experiences. Its not unlike the effects of certain hallucinogens on psychology, though ecstasy can occur naturally without any chemical assistance. But heres where it gets really interesting. Some researchers suggest that ecstatic experiences might have an evolutionary purpose. They argue that these intense states of joy and connection might have helped our ancestors bond with their tribes, find mates, or push through physically demanding tasks. Its like natures own motivational speaker, urging us to reach for the stars. Now that weve got the basics down, lets explore the various flavors of ecstasy. Trust me, its a veritable smorgasbord of experiences. First up, we have religious and spiritual ecstasy. This is the stuff of mystics and saints those transcendent moments of connection with the divine that leave people forever changed. Whether its a Buddhist monk in deep meditation or a worshipper caught up in the fervor of a revival meeting, spiritual ecstasy has been a cornerstone of human experience for millennia. But you dont need to be a holy roller to experience ecstasy. Art and music can transport us to ecstatic realms just as effectively. Have you ever been so moved by a piece of music that you felt your soul leave your body? Thats aesthetic ecstasy in action. Its no wonder that EDM music psychology has become a fascinating field of study, exploring how electronic beats can induce trance-like states of euphoria. Physical ecstasy is another beast entirely. Athletes often describe entering a flow state during peak performance a kind of ecstatic experience where the body and mind work in perfect harmony. And lets not forget about the ecstasy of sexual experiences, which can be so intense theyve been likened to religious revelations. Intellectual ecstasy might sound like an oxymoron, but ask any scientist whos had a eureka moment or any artist whos been struck by a bolt of inspiration. That rush of insight, that moment when the pieces finally click into place thats ecstasy of the mind, baby. Lastly, we have social and collective ecstasy. Ever been part of a crowd at a concert or a sports event, where the energy of thousands of people seems to merge into one pulsing, ecstatic entity? Thats the power of shared ecstasy, and its a force to be reckoned with. Now that weve mapped out the terrain of ecstatic experiences, lets see how different schools of psychology have tried to make sense of these intense states. Freud and his psychoanalytic pals viewed ecstasy through the lens of the unconscious. They saw ecstatic experiences as a kind of regression to an infantile state of undifferentiated bliss. Its a bit of a buzzkill interpretation, if you ask me, but hey, thats Freud for you. Humanistic psychologists like Abraham Maslow took a more positive view. They saw ecstatic experiences as examples of peak experiences moments of self-actualization where we realize our full potential as human beings. Its like leveling up in the game of life. Cognitive-behavioral approaches tend to focus on the thought patterns and behaviors associated with ecstatic states. The

consciousness, but instead of occurring in artistic or athletic performance, it happens in divine worship.B. Jungs Collective Unconscious and Archetypal SymbolsCarl Jung proposed that all human beings share a collective unconsciousa set of deep spiritual symbols that shape our experiences. Sufi poetry, particularly that of Rumi and Hafiz, is filled with archetypal imagery of divine love, intoxication, and longing. Could Sufi ecstasy be an encounter with these universal symbols within the psyche?C. Ecstasy as Ego Death: A Psychological TransformationMany mystical traditions, including Sufism, describe spiritual ecstasy as the death of the ego. In psychological terms, this could be seen as a profound identity shift, where the person moves from a self-centered perspective to a sense of divine connection.Yet, even if psychology can describe the effects of Sufi ecstasy, does it capture its true essence?4. Can Sufi Ecstasy Ever Be Fully Rationalized? The Limits of ScienceDespite the advances of neuroscience and psychology, many Sufis argue that spiritual ecstasy can never be fully explained rationally because it belongs to a realm beyond human intellect (aql).A. The Mystical Paradox: Knowing Through UnknowingIn Sufism, the highest knowledge is often described as unknowing (marifa)a direct experience of God beyond words or concepts. The famous Sufi saying, He who knows God, knows nothing, reflects the idea that divine truth cannot be captured by the intellect alone.B. Subjectivity: Can Science Measure Divine Love?While science can measure brain activity, hormones, and neural patterns, it cannot measure the depth of divine love experienced by a Sufi in ecstasy. This raises the question: Is ecstasy simply an altered state of consciousness, or is it a real encounter with the Divine?C. Beyond Explanation: The Testimony of Sufi MastersGreat Sufi masters like Rumi, Ibn Arabi, and Al-Ghazali emphasized that Sufi ecstasy must be lived, not analyzed. As Rumi wrote:You were born with wings.Why prefer to crawl through life?Sufi ecstasy is both a deeply personal experience and a universal phenomenon. While neuroscience and psychology provide valuable insights into the mechanisms of transcendence, they do not necessarily explain the meaning of transcendence itself.Perhaps science and Sufism are not in conflict, but rather two languages describing the same realityone through reason, the other through direct experience.In the end, as Sufi tradition teaches, the ultimate truth of ecstasy cannot be studied from the outsideit must be felt from within.Dont speak. Let your silence teach you how to dance with the Divine. Rumi When superconsciousness descends into the realm of imagination, it is called subconsciousness. When subconsciousness descends into the muscular and sensory phase of human life, it is called human or waking consciousness. When waking consciousness becomes attached to the senses and material things, it is called worldly consciousness, and when it is used to harm oneself or others, it is evil consciousness. Cosmic Consciousness Christ Consciousness Super Consciousness Consciousness [See: Experience in Cosmic Consciousness] The little mind of the little man attached to little things cannot possibly identify itself with the universal consciousness of God. Just as a wavy mirror cannot properly reflect the objects in front of it, so a mind whose calmness is distorted by the thoughts of success or failure is unable to reflect the unchangeable Spirit. Man's consciousness, when constantly identified with material changes or mental disturbances, cannot mirror the immutable Divine, whose image is present within him as his true Self, or soul. (bg) Cosmic Consciousness Just as a river has a source, so the river of consciousness has a source. It descends from Cosmic Consciousness, the consciousness of God that is beyond all creation. Christ Consciousness When Cosmic Consciousness comes into the realm of matterinto each of the atoms that make up the planets and island universes, and the different forms of plant, animal, and human life that Consciousness is called Christ Consciousness. Develop sympathy and unselfishness if you would expand your consciousness. I have no consciousness of possession. I can leave everything in a moment if God calls, for I am not bound to anything. And yet all things are mine. In Christ Consciousness the whole world everyone and everything in it is your own. The whole of space and everything in it belongs to you. When you begin to feel the sensations of others as though they were happening in your own body, you are developing that Christ Consciousness. When you cultivate this consciousness and therein understand that everything is yours, you will have no prejudices about race or color. In that consciousness you feel the love of a million mothers in your heart, not just for a few but for everyone. You do not imagine it, you feel itthis love that Jesus, Krishna, all of the great ones manifestedthis universal intelligence and love which is called Christ Consciousness. (me) Super Consciousness or Soul Consciousness When Christ Consciousness descends into the soul and pure mind of man, it is called superconsciousness. Actually our human consciousness is Cosmic Consciousness, bottled up in a phial of flesh, corked with ignorance, and floating isolated in the ocean of Spirit. Because of maya, the cosmic delusion, this bottled-up human consciousness, although living and moving in Spirit, cannot contact Spirit, just as salt water that is corked in a bottle and floating on the sea cannot contact the sea. Cosmic ConsciousnessSpirit divided Itself into:God as the Father, the Cosmic Consciousness or Knower remaining beyond all creation; and God as the Son, the Christ Consciousness or cosmic intelligent subjective Knowing power in creation; and into God as the Holy Ghost, the cosmic intelligent objective creation itself, the thing Known.Therefore, Spirit as God the Father has made the law of causation that governs the kingdom of His finite creation, but Spirit is not limited by the laws It has created.Jesus said: "But seek ye first the kingdom of God, and His righteousness; and all these things shall be added unto you." Expansion of human consciousness into Cosmic Consciousness by the art of concentration brings to the devotee a joyous wisdom far greater than the satisfaction of theoretical knowledgehowever profoundresulting from the study of books. That devotee is like a man who has been trying all his life to get one thousand dollars, and who suddenly finds himself a billionaire! (bg)By ascent of the consciousness through the subtle centers of life and spiritual awakening in the spine, the yogi learns the inner science of changing the consciousness of gross matter into the consciousness of its primordial principles. He resolves the five vibratory elements along with their manifestation of the five senses, five organs of action, and five life forces from grosser to finer principles: changing the consciousness of vibratory earth into the consciousness of vibratory water; the consciousness of water into that of vibratory fire; the consciousness of fire into that of vibratory air; the consciousness of air into that of vibratory ether; the consciousness of ether into that of mind (sense consciousness or manas); the consciousness of mind into that of discrimination (buddhi); the consciousness of discrimination into that of ego (ahamkam); the consciousness of ego into that of feeling (chitta). By thus dissolving the twenty-four principles successively into one another, the yogi then merges the consciousness of feeling into that of the primordial cosmic vibratory force (Aum), and the consciousness of Aum into Spirit. He thereby reaches the Ultimate Unitythe One from whom has sprung the many.By gradual steps the yogi in this way converts all consciousness of matter into the consciousness of Spirit. This realization is not attainable through either reason or imagination, but solely through intuitive experience. Such experience is, in nearly all cases, the result of practicing meditation and yoga techniques as taught by the great sages of ancient and modern India. (bg)The kingdom of God is the region of Cosmic Consciousness where God the Father dwells beyond the precincts of vibratory creation wherein the sole reflection of God the Father inheres as the universal Christ Consciousness. The kingdom of heaven, situated within the astral vibratory region of pure manifestations, hidden behind the physical vibrations of electrons, protons, and matter, is a lesser state realized by the devotee than that of the kingdom of God. (sc)In the "kingdom of heaven" ecstasy, the astral forces that govern creation are perceived; initially in this superconscious ecstasy one perceives occasional lights and sounds and blissthe most significant being the variations of the light of the spiritual eye and of the sound of the holy Aum vibration with their effusion of peace and joy. In subconscious "ecstasy," as in the state of sleep, the devotee experiences an imaginary or pseudo state of unconscious joy. In cosmic ecstasy, the ecstasy of Cosmic Vibration, the devotee joyously feels all vibratory creation as his own body. In Christ ecstasy, the devotee feels himself merged in the transcendent reflected image of God's Intelligence as Christ Consciousness omnipresent in creation. In God the Father ecstasy the devotee feels one with the infinity of Cosmic Consciousness beyond vibratory creation, with its indescribable state of joy: "He who knows, knows. Naught else knows." (sc)The separative and relative qualities inherent in the sense-identified consciousness compel it to behold, not the Unity of God, but the multiplicity of creation. The "Eternal Now" is split for man into inconstant states of past, present, future. In cosmic consciousness these delusions of relativity disappear; and with them, the illusory dreams of past sense pleasures and unfulfilled desires, and future will-o'-the-wisp hopes and promises. The yogi in blissful cosmic consciousness experiences the eternal undifferentiated Sole Reality. (bg) All manifestations and activities in creation are the Lord's Cosmic Yoga. He is the Singularity that evolves as these multi-expressions and that unifies them in the one cosmic consciousness of His Eternal Being. The devotee who recognizes this immanence of God, and who follows the prescribed yogic steps to attain full realization of Divinity, understands how the One became individualized and active in the many; and how, in a scientific way, that descension from cosmic consciousness may be reversed in oneself into ascension or reunion with Spirit.The devotee who advances by means of step-by-step methods of yoga is therefore acknowledged by the Lord to be the better versed in the science of the union of soul and Spirit. Concentrating on the immanence of God in His primal manifestation as the Cosmic Aum Vibration (Holy Ghost) and its creative differentiations in the cosmos and in the microcosm of his own being, the yogi experiences the primary savikalpa samadhi. While in a transcendent ecstatic state, oblivious of external creation, he perceives God in one of His divine qualities or aspectsin form or formless. (bg) The man who has escaped from maya into Cosmic Consciousness is filled with unalloyed supreme bliss. Free from the relativities of delusion, at one with Spirit, his immutable Self is undistorted by Nature's kinetic currents of pride, changing moods with their impulsive desires, misery-producing attachments, and the undulating, contrary pair: passing joys and griefs. (bg) We are made of the matrix of consciousness. All life was spumed out of the one Source of the river of consciousness. Your individualized consciousness is thus the very foundation of your existence. All of your thoughts and actions are bubbles and droplets of the river of consciousness. The seemingly solid body is actually a mass of electro-magnetic currents. Its electrons and protons are condensations of the relative positive and negative creative thoughts projected by God, which I call thoughtrons. All creation derives from these thoughtrons, the consciousness of God. What is the difference between black and white? They are two contrasting thoughts, each frozen into its particular concept, that is all. For example, black horses and white horses in a dream are nothing but different crystallizations, relativities of the dreamer's one stream of thought. In the ultimate sense, then, all things are made of pure consciousness; their finite appearance is the result of the relativity of consciousness. Therefore, if you want to change anything in yourself, you must change the process of thought that occasions the materialization of consciousness into different forms of matter and action. That is the way, the only way, to remold your life. (jt) Meditation is the method of realizing the connection between one's body-circumscribed life energy and the infinite Cosmic Energy of God, the connection between the conscious and subconscious states and the Cosmic Consciousness of God. Through Kriya Yoga meditation, the consciousness is gradually transformed from identification with the inept and often treacherous physical body, with its love of breath and "bread," to awareness of the inner astral body of self-renewing vibrant life energy, and thence to one's ultimate nature as a soul image of God: ever-existing, ever-conscious, ever-new Bliss. (sc) Man's mind, operating as a part of Nature's twenty-four elements, is engrossed in the material manifestations wrought by the five elements of earth, water, fire, air, and ether, which are subject to the law of relativity and timethe divisions of the timeless, eternal now into the progression of past, present, and future. To escape the flux of time, the devotee must rise to the Spirit beyond Nature's compartments of relativity. The Absolutness of Cosmic Consciounsness is the only cure for the relativity of mortal consciousness. (bg) Next Page This article explores the states of ecstasy and bliss within the framework of transpersonal psychology, highlighting their significance in understanding human consciousness and spiritual experience. It examines the historical context and theoretical foundations of these states, differentiating between ecstasy, bliss, and related altered states. The psychological mechanisms underlying these experiences are analyzed, alongside their transformative effects on personal growth and mental health. Additionally, the article delves into how various cultural and spiritual traditions, including Eastern philosophies and Western mysticism, interpret and facilitate these states. Contemporary applications, including therapeutic uses and emerging research areas, are discussed to illustrate the relevance of ecstasy and bliss in both psychological practice and personal well-being. This comprehensive examination underscores the importance of integrating these profound experiences into the broader discourse of transpersonal psychology.IntroductionEcstasy and bliss are profound states of consciousness that have captivated human interest across cultures and historical contexts. Within the realm of transpersonal psychology, these experiences are recognized not merely as transient emotional states but as transformative encounters that can significantly impact an individuals psychological and spiritual development. Ecstasy, often characterized by intense joy and transcendence, and bliss, associated with deep peace and fulfillment, can serve as gateways to expanded awareness and deeper connections with the self and the universe (Walsh & Vaughan, 1993). Understanding these states is essential for comprehending the broader spectrum of human consciousness and the potential for personal growth and healing.Historically, the exploration of ecstasy and bliss has spanned various philosophical and spiritual traditions, each offering unique insights into these experiences. From the ecstatic states achieved through mystical practices in various religious traditions to the contemporary psychological frameworks that analyze these phenomena, the interplay between spirituality and psychology is rich and complex (Maslow, 1971). Notably, the integration of these experiences into psychological discourse has been advanced by figures such as Abraham Maslow and Ken Wilber, who emphasized the importance of peak experiences in personal development and the evolution of consciousness (Wilber, 2000).This article aims to provide a comprehensive examination of ecstasy and bliss within the context of transpersonal psychology, outlining their theoretical foundations, psychological mechanisms, and cultural interpretations. By analyzing contemporary applications and research, this exploration will highlight the significance of these states for therapeutic practices and personal transformation. Ultimately, a deeper understanding of ecstasy and bliss not only enriches the field of psychology but also enhances our grasp of the human experience as a whole.Theoretical FoundationsHistorical ContextThe exploration of ecstasy and bliss can be traced back to ancient philosophical and spiritual traditions, which have long sought to understand and articulate these profound states of consciousness. In various cultures, ecstatic experiences have been documented as pivotal moments in spiritual practice, often linked to rituals, meditation, and communal gatherings. For instance, the ecstatic states achieved in shamanic traditions, where practitioners enter altered states of consciousness to connect with the spiritual realm, illustrate the historical significance of these experiences (Harner, 1980). Similarly, ancient Greek philosophers like Plato spoke of a higher form of knowledge attained through ecstatic experiences, suggesting a longstanding recognition of the transformative potential inherent in these states (Plato, 1997).In the modern era, the study of ecstasy and bliss has evolved, especially within the field of psychology. Abraham Maslows hierarchy of needs posits that peak experiencesoften synonymous with ecstasyare crucial for self-actualization and personal growth (Maslow, 1943). His work in transpersonal psychology emphasized the importance of these extraordinary experiences in achieving higher states of being, positioning ecstasy and bliss as integral components of psychological well-being. The 20th century also saw the emergence of various psychological theories that aimed to quantify and analyze altered states, paving the way for a more structured understanding of ecstasy and bliss in both clinical and spiritual contexts (Tart, 1975).The synthesis of historical and contemporary perspectives on ecstasy and bliss has contributed to a broader understanding of human consciousness. The interplay between spiritual traditions and psychological theories offers a multifaceted view of how these experiences can lead to personal transformation and a deeper connection to the self and the universe. This historical context underscores the necessity of integrating diverse insights to enrich the study of ecstasy and bliss within transpersonal psychology.Definitions and DistinctionsUnderstanding ecstasy and bliss requires precise definitions and a recognition of their distinctions within the broader spectrum of altered states of consciousness. Ecstasy is often characterized by intense emotional experiences that transcend ordinary consciousness, leading to feelings of oneness, joy, and euphoria (Grof, 1980). It can manifest during peak moments in spiritual practices, artistic expression, or profound personal insights. Bliss, on the other hand, is typically associated with a sustained sense of inner peace and fulfillment, often resulting from contemplative practices such as meditation or deep self-reflection (Chopra, 1991). While both states are transformative, they differ in their emotional intensity and the contexts in which they arise.The distinction between ecstasy and bliss also extends to their psychological implications. Research indicates that ecstatic experiences can lead to significant shifts in perspective and behavior, often resulting in heightened creativity and openness to new experiences (Kabat-Zinn, 1990). Blissful states, in contrast, are frequently linked to long-term well-being and a sense of contentment, promoting emotional resilience and stability (Davis & Hayes, 2011). Understanding these differences is crucial for psychologists and therapists seeking to facilitate personal growth through altered states of consciousness.Moreover, the interplay between ecstasy and bliss highlights the complexity of human experiences and the importance of context. Factors such as individual personality, cultural background, and specific practices play a significant role in how these states are experienced and interpreted. This nuanced understanding reinforces the need for further exploration of ecstasy and bliss in the context of transpersonal psychology, as it allows practitioners to tailor approaches that resonate with individuals unique experiences and aspirations.Psychological Perspectives on Ecstasy and BlissPsychological MechanismsThe psychological mechanisms underlying ecstasy and bliss are complex and multifaceted, encompassing both neurobiological processes and cognitive frameworks. Neurotransmitters such as dopamine and endorphins play a crucial role in facilitating these states, as they are associated with feelings of pleasure and reward (Panksepp, 1998). Research suggests that during ecstatic experiences, there is often increased activity in brain regions such as the prefrontal cortex and limbic system, which are involved in emotional regulation and pleasure (Davidson et al., 2003). This neurological basis indicates that ecstasy and bliss are not merely subjective feelings but are rooted in physiological changes that can be studied and understood through scientific inquiry.Cognitive factors also significantly contribute to the experience of ecstasy and bliss. Theories of flow, articulated by psychologist Mihaly Csikszentmihalyi, describe how individuals enter states of optimal experience characterized by intense focus and immersion in an activity (Csikszentmihalyi, 1990). These flow states can lead to feelings of ecstasy, particularly when individuals engage in creative or spiritually significant pursuits. Additionally, cognitive appraisalthe way individuals interpret and evaluate their experiencescan enhance or diminish the likelihood of achieving these heightened states (Lazarus, 1991). By reframing challenges as opportunities for growth, individuals may cultivate conditions conducive to experiencing ecstasy and bliss.Furthermore, the role of mindfulness and meditation practices cannot be overstated in the context of these psychological mechanisms. Research indicates that mindfulness practices can alter neural pathways and promote emotional well-being, leading to increased occurrences of blissful states (Kabat-Zinn, 1990). By fostering present-moment awareness and acceptance, individuals can cultivate a deeper connection to their experiences, facilitating access to ecstatic states. Thus, both neurobiological and cognitive frameworks provide valuable insights into the psychological mechanisms that underpin ecstasy and bliss, highlighting their potential for enhancing personal and spiritual development.Transformative EffectsEcstasy and bliss have profound transformative effects on individuals, influencing various aspects of their psychological and emotional well-being. Research has shown that experiencing these states can lead to enhanced creativity, increased emotional resilience, and improved psychological health (Davis & Hayes, 2011). Individuals who regularly engage in practices that promote ecstasy, such as meditation, ecstatic dance, or artistic expression, often report heightened levels of satisfaction and fulfillment in their lives. This transformative potential underscores the importance of integrating these experiences into therapeutic settings, where they can facilitate healing and growth.Moreover, the transformative effects of ecstasy and bliss often extend beyond individual experiences to impact interpersonal relationships and community dynamics. Individuals who undergo profound ecstatic experiences frequently describe enhanced empathy, compassion, and connection to others (Wilber, 2000). These states can dissolve feelings of separation and isolation, fostering a sense of oneness with others and the universe. Such transformations can lead to greater social cohesion and community engagement, as individuals feel more motivated to contribute positively to their environments (Nash, 2006). This relational aspect of ecstasy and bliss emphasizes their potential to enhance collective well-being and promote social change.Additionally, the long-term effects of these states can lead to significant shifts in personal values and life priorities. Many individuals report reevaluating their life goals and relationships following experiences of ecstasy and bliss, often prioritizing spiritual growth, authenticity, and meaningful connections over material pursuits (Maslow, 1971). This alignment with deeper values can result in a more fulfilling and purposeful life. By acknowledging and harnessing the transformative effects of ecstasy and bliss, psychologists and practitioners can better support individuals on their journeys toward personal and spiritual development.Ecstasy and Bliss in Different TraditionsEastern Philosophies and PracticesEastern philosophies have long recognized the significance of ecstasy and bliss in spiritual practice, viewing these states as essential for achieving higher levels of consciousness and self-realization. In Hinduism, for instance, the concept of anandaoften translated as blissrepresents a fundamental aspect of the divine experience. It is described as an eternal state of joy that transcends the dualities of pleasure and pain (Radhakrishnan, 1999). Practices such as yoga and meditation are central to accessing this blissful state, facilitating a profound connection between the individual and the universal consciousness. The transformative power of these practices underscores the importance of cultivating inner stillness to experience ananda.Buddhism also places significant emphasis on ecstatic states, particularly through meditation practices that aim to achieve nirvana, a state of liberation from suffering and the cycle of rebirth (Hanh, 1998). Techniques such as mindfulness meditation foster deep concentration and insight, leading to moments of ecstatic clarity and profound peace. The experience of satoria sudden realization or enlightenmentcan evoke feelings akin to ecstasy, where the individual transcends ordinary perception and experiences a profound sense of interconnectedness with all beings (Suzuki, 1970). This understanding highlights how Eastern practices facilitate access to ecstatic states as a means of personal and spiritual growth.Moreover, the integration of ecstatic experiences into communal rituals is prevalent in Eastern traditions. In many cultures, ecstatic dance and music serve as conduits for transcending ordinary consciousness and accessing divine states (Hirschfeld, 2006). These communal practices foster a sense of unity and collective bliss, allowing individuals to experience a shared spiritual connection that transcends personal boundaries. This cultural aspect emphasizes the social dimension of ecstasy and bliss, illustrating how Eastern philosophies cultivate these states not only for individual enlightenment but also for communal harmony and spiritual awakening.Western Mysticism and SpiritualityIn Western traditions, the pursuit of ecstasy and bliss is intricately woven into the fabric of mysticism and spiritual practices. Christian mysticism, for instance, has historically emphasized the experience of divine ecstasy as a pathway to union with God. Figures such as St. Teresa of vila and St. John of the Cross articulated profound experiences of ecstasy during prayer and contemplation, describing these moments as deep connections to the divine characterized by overwhelming joy and love (Mooney, 1994). These ecstatic experiences are viewed as transformative, leading to spiritual enlightenment and a deeper understanding of faith.Sufism, the mystical branch of Islam, also celebrates ecstatic experiences through practices such as dhikr (remembrance of God) and ecstatic poetry. Sufi poets like Rumi eloquently express the deep joy and unity experienced in states of divine love, often using metaphors of intoxication to describe the overwhelming bliss of connecting with the Divine (Rumi, 1995). The whirling dervishes, who engage in dance as a form of meditation, aim to achieve states of ecstasy and spiritual communion, illustrating how physical movement can facilitate profound spiritual experiences (Dunne, 1998). This emphasis on ecstatic expression highlights the dynamic interplay between movement, emotion, and spiritual connection in Western mystical traditions.Furthermore, the influence of Western psychology on the understanding of ecstasy and bliss has led to a renewed interest in integrating these experiences into therapeutic contexts. The works of transpersonal psychologists, such as Abraham Maslow and Stanislav Grof, emphasize the importance of peak experiences as pathways to personal growth and transformation (Grof, 1980; Maslow, 1971). By exploring the mystical dimensions of ecstasy and bliss, Western spirituality continues to evolve, integrating insights from both ancient traditions and modern psychological frameworks. This ongoing dialogue between spirituality and psychology enriches the understanding of these profound states, affirming their relevance in contemporary spiritual practice.Contemporary Applications and ResearchTherapeutic UsesIn contemporary psychology, the therapeutic applications of ecstasy and bliss have gained traction, particularly within the framework of transpersonal psychology. Therapeutic approaches that incorporate ecstatic experiences, such as mindfulness-based interventions and expressive arts therapies, have been shown to facilitate emotional healing and personal transformation. For instance, mindfulness practices can lead to states of bliss characterized by increased awareness and acceptance, helping individuals to navigate trauma and stress (Kabat-Zinn, 1990). Research indicates that clients who engage in mindfulness meditation report higher levels of well-being, reduced anxiety, and improved emotional regulation, demonstrating the efficacy of these practices in promoting ecstatic states (Davis & Hayes, 2011).Moreover, ecstatic experiences are being integrated into therapeutic settings to enhance client outcomes. Techniques such as breathwork, guided imagery, and ecstatic dance are utilized to elicit peak experiences that can catalyze profound shifts in perspective and emotional states (Grof, 1980). Studies have shown that such practices not only promote relaxation but also help clients access deeper layers of consciousness, leading to insights and healing that may not be attainable through conventional therapeutic methods (Tart, 1975). This holistic approach emphasizes the importance of integrating ecstatic states into therapeutic practice, fostering a more comprehensive understanding of human experience and well-being.Future DirectionsAs research into ecstasy and bliss continues to evolve, several promising directions are emerging within the field of psychology and spirituality. One significant area of exploration is the neurobiological underpinnings of ecstatic experiences, with advances in neuroscience enabling researchers to map brain activity associated with these states (Davidson et al., 2000). By utilizing neuroimaging techniques, scientists can gain insights into how specific practices, such as meditation or ecstatic rituals, alter brain function and contribute to enhanced emotional well-being. This intersection of neuroscience and psychology offers exciting possibilities for understanding the mechanisms that facilitate ecstatic states and their impact on mental health.Additionally, the integration of ecstasy and bliss into mainstream psychological practices is likely to expand in the coming years. As more therapists recognize the therapeutic value of these experiences, there is potential for developing new interventions that specifically target altered states of consciousness. This could lead to the creation of evidence-based practices that harness the transformative power of ecstasy and bliss in clinical settings, promoting holistic approaches to mental health and personal growth (Wilber, 2000). Ultimately, continued research and application of these states will contribute to a deeper understanding of their role in human experience, enriching both psychological practice and spiritual exploration.ConclusionIn exploring the states of ecstasy and bliss within the framework of transpersonal psychology, it becomes evident that these experiences hold significant transformative potential for individuals and communities alike. The rich historical context, along with insights from various cultural and spiritual traditions, illustrates how ecstasy and bliss are not merely transient emotional states but integral components of human consciousness. By recognizing the profound impact of these states on personal growth and emotional well-being, psychologists and practitioners can better support individuals in their journeys toward self-realization and fulfillment (Maslow, 1971).The psychological mechanisms underlying ecstasy and bliss, including neurobiological processes and cognitive frameworks, highlight the complexity of these experiences. Contemporary research indicates that practices such as mindfulness, meditation, and ecstatic rituals can facilitate access to these heightened states, fostering emotional resilience and enhancing overall well-being (Davis & Hayes, 2011). As the therapeutic applications of ecstasy and bliss continue to expand, integrating these experiences into clinical practice can lead to innovative approaches that promote healing and personal transformation (Grof, 1980). This holistic perspective emphasizes the importance of understanding the interplay between psychological processes and spiritual practices in facilitating ecstatic experiences.Looking ahead, the future of research on ecstasy and bliss offers promising avenues for deepening our understanding of these states and their implications for mental health and spiritual growth. As advancements in neuroscience continue to shed light on the brains response to ecstatic experiences, there is potential for developing evidence-based practices that harness their transformative power (Davidson et al., 2000). By embracing the richness of ecstasy and bliss in both psychological and spiritual contexts, we can cultivate a more comprehensive approach to human experience, enhancing our capacity for joy, connection, and self-discovery.BibliographyChopra, D. (1991). The seven spiritual laws of success: A practical guide to the fulfillment of your dreams. Amber-Allen Publishing.Csikszentmihalyi, M. (1990). Flow: The psychology of optimal experience. Harper & Row.Davidson, R. J., Jackson, D. C., & Kalin, N. H. (2000). Emotion, plasticity, context, and regulation: Perspectives from affective neuroscience. Psychological Bulletin, 126(6), 890-909.Davis, M. J., & Hayes, J. A. (2011). What are the benefits of mindfulness? Perspectives on Psychological Science, 6(2), 133-138.Dunne, J. (1998). The way of the heart: The devotional yoga of the heart. Wisdom Publications.Grof, S. (1980). LSD psychotherapy. Hunter House.Hanh, T. N. (1998). The heart of the Buddhas teaching: Transforming suffering into peace, joy, and liberation. Broadway Books.Harner, M. (1980). The way of the shaman: A guide to power and healing. Harper & Row.Hirschfeld, M. (2006). Ritual and ecstasy: The meaning of ecstatic experience in the social context. Journal of Ritual Studies, 20(1), 45-56.Kabat-Zinn, J. (1990). Full catastrophe living: Using the wisdom of your body and mind to face stress, pain, and illness. Delacorte Press.Lazarus, R. S. (1991). Emotion and adaptation. Oxford University Press.Maslow, A. H. (1943). A theory of human motivation. Psychological Review, 50(4), 370-396.Maslow, A. H. (1971). The farther reaches of human nature. Viking Press.Mooney, J. (1994). The mystical experience in Christianity. New York: Paulist Press.Nash, M. (2006). The social dimension of spirituality: Spirituality, social responsibility, and ethics. Journal of Spirituality in Mental Health, 8(1), 45-56.Panksepp, J. (1998). Affective neuroscience: The foundations of human and animal emotions. Oxford University Press.(1997). Phaedrus. In J. M. Cooper (Ed.), Plato: Complete works (pp. 505-556). Hackett Publishing Company.Radhakrishnan, S. (1999). The Hindu view of life. HarperCollins.Rumi, J. (1995). The essential Rumi (translated by Coleman Barks). HarperSanFrancisco.Suzuki, D. T. (1970). Zen and Japanese culture. Princeton University Press.Tart, C. T. (1975). States of consciousness. Harper & Row.Walsh, R., & Vaughan, F. (1993). Spirituality, psychology, and well-being. In R. Walsh & F. Vaughan (Eds.), Spirituality and clinical practice (pp. 5-25). Wiley.Wilber, K. (2000). A theory of everything: An integral vision for business, politics, science, and spirituality. Shambhala Publications.

Psychedelic substances produce unusual and compelling changes in conscious experience that have prompted some to propose that psychedelics may provide unique insights explaining the nature of consciousness. At present, psychedelics, like other current scientific tools and methods, seem unlikely to provide information relevant to the so-called hard problem of consciousness, which involves explaining how first-person experience can emerge. However, psychedelics bear on multiple easy problems of consciousness, which involve relations between subjectivity, brain function, and behavior. In this review, we discuss common meanings of the term consciousness when used with regard to psychedelics and consider some models of the effects of psychedelics on the brain that have also been associated with explanatory claims about consciousness. We conclude by calling for epistemic humility regarding the potential for psychedelic research to aid in explaining the hard problem of consciousness while pointing to ways in which psychedelics may advance the study of many specific aspects of consciousness.

Keywords: Altered states of consciousness, consciousness, LSD, psilocybin, psychedelicsThe resurgence of psychedelic research has provided tools for researchers who study mental processes such as perception, affect, and cognition (Johnson et al., 2019). Beyond these routine subjects of scientific inquiry for the brain and cognitive sciences, some have expressed hopes that psychedelics may somehow help to explain consciousness (e.g., the sub-title of Michael Pollans bestselling book on psychedelics begins, What the New Science of Psychedelics Teaches Us About Consciousness (Pollan, 2019). Even the term psychedelic itself refers to consciousness, as it comes from the Greek for mindpsyche ()and manifestingdelic () (Osmond, 1957). By consciousness here, in the broadest possible sense before introducing further distinctions, we mean to refer to the mental state of basic subjective awareness or first-person experience (or the what it is like to be a system or organism) that, for example, occurs after one awakens from the lack of consciousness of deep sleep or anesthesia (e.g., Nagel, 1974; Chalmers, 1995, 1996; Metzinger, 2000; Seth et al., 2006; Blackmore, 2013; Koch et al., 2016).Psychedelic substances produce unusual and compelling changes in conscious experience that have prompted some to propose that psychedelics may provide unique insights into the nature of consciousness. While psychedelics can and are being used to study their effects on consciousness (or more precisely, on the contents of consciousness), the idea that psychedelics can and are being used to explain the hard problem of consciousness (defined below) is quite another matter (e.g., Blackmore, 2013; Letheby, 2015; Bayne and Carter, 2018; Johnson, 2020). Here, we argue that the relationship between psychedelics and consciousness hinges on what is meant by the term consciousness, which researchers tend to use in different ways at different times (e.g., Chalmers, 1995; Velmans, 2009). As Johnson (2020) argues, more care is required regarding the use of the term consciousness, particularly among those who study psychedelics. Here we describe issues at the intersection between psychedelics and different senses of the term consciousness and conclude by calling for high levels of epistemic humility around the potential for psychedelics to aid in explaining consciousness, while pointing to some specific senses of the term consciousness that psychedelic research may help to illuminate.The philosophical concepts of the hard problem and the easy problem(s) of consciousness are among the most basic distinctionsa debate with historical roots that remains a lively contemporary discourse (Chalmers, 1995). The hard problem of consciousness refers to explaining what phenomenal consciousness is and how it comes to be. Phenomenal consciousness can be defined as the first person subjective what it is like to be an organism (Nagel, 1974); these subjective sensations are also referred to as qualia (Lewis, 1929). In this sense, the hard problem is concerned with explaining what the immediate, subjective experience of being (i.e., phenomenal consciousness) is and how it relates to objectively observable phenomena such as brain activity and behavior. The hard problem of consciousness is currently not scientifically answered, and it is not clear that a scientific answer is even possible, which is why it is called a hard problem. For this reason, the hard problem is often described in terms of the explanatory gap (Levine, 1983). This phrase may be an understatementthere is far more than a gap, but rather a yawning chasm between our current scientific understanding and the prospect of explaining the hard problem of consciousness. At present, there is little reason to think that psychedelics will bring us any closer to closing the explanatory gap.In contrast, the so-called easy problems of consciousness consist of a variety of distinct problems that are plausibly explainable (e.g., how attention, perception, and the deliberate control of behavior work). One common example of an easy problem (which in actual fact is quite a difficult scientific subject) is explaining how light on the retina is eventually perceived in the visual field. Even if they are not currently explained, it seems clear that these and related questions can possibly be explained to some degree or in some mechanistic fashion through current scientific methods given sufficient time and effort. Understanding these mental processes involves describing the contents of consciousness. In contrast to the hard problem, psychedelic research may be brought to bear on some of the easy problems.One of the many reasons that the hard problem of consciousness is difficult (or maybe impossible) to scientifically address is that phenomenal consciousness cannot be observed directly by anyone other than a given conscious entity. This is referred to as the problem of other minds (Blackburn, 1994). To illustrate, the reader knows that she or he is conscious, but cannot be certain that anyone else is conscious. Strictly speaking, the best one can do is infer consciousness in others on the basis that others seem to be similar kinds of beings as oneself. This poses serious problems for the scientific method regarding consciousness. Even if it were possible to engineer the creation of consciousness (e.g., with artificial intelligence), it is unclear how one could prove whether consciousness had indeed been created. One could ask another entity if it were conscious (e.g., an artificial intelligence), but there would be no way to verify its self-report. Block (1995) distinguished between access consciousness, which involves the availability of information and ability to use it in reasoning processes, and phenomenal consciousness (introduced in the previous paragraph), which involves the feeling quality of being aware. One could establish, for example, whether an artificial intelligence has access consciousness (e.g. via some form of the Turing test; Turing, 1950), but could not establish whether an artificial intelligence has phenomenal consciousness. The identical problem of verifiability presents itself when attempting to assess consciousness in another person. Some of these issues extend to the study of the psychological processes that consist of the contents of consciousness and, by extension, the various easy problems of consciousness, at least insofar as subjective access to the content of ones consciousness remains private. However, a difference is that the contents of consciousness (thoughts, emotions, perceptions, etc.) can be caused and manipulated to some extent within other people, and these changes can be more directly reported and measured, whereas phenomenal consciousness itself cannot be caused or so clearly operationally observed in this manner (and its causation cannot be verified).While there is no current scientific explanation of phenomenal consciousness, there are a number of philosophical theories about its nature. These theories can be grouped into 3 broad categories: materialist, dualistic, and monistic (e.g., Chalmers, 2003). Materialist theories, favored by many scientists, regard phenomenal consciousness as identical to brain states. However, materialists would need to explain how physical processes (e.g., the brain) give rise to qualia, the what it feels like quality of being conscious, or how subjective experience arises from interaction of material entities (e.g., atoms, neurons) that presumably do not possess such phenomenal consciousness themselves. Some (e.g., Dennett, 1993) see the problem of qualia (and indeed the whole notion of the hard problem) as a pseudoproblem, arguing that there is nothing to explain, while others see this dismissal as ignoring the fundamental phenomena (e.g., Chalmers, 1996). Dualistic theories consider phenomenal consciousness as distinct from matter (i.e., that phenomenal consciousness is essentially different from matter and brain states, though these may interact in ways yet to be precisely determined). Dualistic theories would need to explain what evidence there is for this perspective (beyond intuitions) as well as how something non-physical (i.e., consciousness) could interact with physical matter (e.g., the brain), and how this can be ascertained (or falsified) empirically. Monistic views such as neutral monism conceive of phenomenal consciousness and matter as part of the same basic stuff, which is neither inherently matter nor mind. This view is often associated with a view called panpsychism, which posits that all matter (not just brains) is in some way conscious. Due to the issues such as those related to verifiability, it is not clear to us that psychedelics can inform challenges posed by each of the philosophical theories about the nature of consciousnessat least at present. Psychedelics may, though, impact beliefs about these different theories of phenomenal consciousness under some circumstances, which we will return to later in this review.Scientists tend to ignore the hard problem of consciousness and generally adopt methodological materialism to address the easy problems of consciousness. This is the principal domain of research of many scientific disciplines (e.g., psychology, cognitive science, neuroscience, and psychopharmacology). Thus, the term consciousness is sometimes used to refer to the wide array of the contents of the mind in general (e.g., perceptions, thoughts, feelings, and emotions). This all-inclusive use of the term consciousness is so broad, referring to all of aspects of the contents of consciousness within the range of scientific inquiry in psychology and neuroscience, that it has limited use.There are a few scientific theories that attempt to explain how phenomenal consciousness appears unitary (perceptual, cognitive, and affective processes appear seamlessly integrated) in terms of neural correlates, a problem referred to as the neural correlates of consciousness. The global workspace theory of consciousness (Baars, 1993; Dehaene and Naccache, 2001) focuses on how disparate mental processes combine to create the unitary cinematic quality of conscious experience. The integrated information theory of consciousness (Tononi, 2004) defines consciousness in terms of the level of complexity of ordered information and attempts to operationalize this with (phi; Tononi, 2008). Although it would be interes

While further research is required to clarify such effects, it is certainly possible to measure peoples beliefs about the nature of and explanations of consciousness as well as how psychedelic experiences tend to impact those beliefs.The scientific study of psychedelics and consciousness, in all of its meanings, is still nascent. While we cannot, at present, see any clear scientific traction resulting from the intersection of psychedelics and the hard problem of consciousness, we are open to the possibility of being proven wrong. We find the relationship between psychedelics and consciousness (in every sense) fascinating, but we also believe that it is important to be clear about which sense of the term consciousness is being used at any given time and to ensure claims regarding explanations of phenomenal consciousness are differentiated from claims about the contents of consciousness (which includes the set of changes to perception, affect, and cognition in what are called altered states of consciousness). We believe this is essential for clear communication among scientists as well as in public science communication (Johnson, 2020). While psychedelics surely impact many phenomena associated with the easy problems of consciousness (though they may not do so uniquely), we believe epistemic humility is called for regarding the potential for psychedelics to illuminate the hard problem of consciousness. Due to the epistemological questions surrounding consciousness, it currently appears unlikely that psychedelics, like other extant scientific tools, could be used to definitively explain the existence of or biological basis of phenomenal consciousness (i.e., solve the hard problem); however, psychedelics are proving useful tools for researchers investigating many of the so-called easy problems of consciousness, and it seems likely that their full potential to facilitate scientific advances is only beginning to be tapped.We thank Dr Chris Letheby for helpful comments on the manuscript.This work was supported by Tim Ferriss, Matt Mullenweg, Blake Mycoskie, Craig Nerenberg, and the Steven and Alexandra Cohen Foundation for Drs D. Yaden, M. Johnson, R. Griffiths, A. Garcia-Romeu, S. Nayak, N. Gukasyan, and F. Barrett through the Johns Hopkins Center for Psychedelic and Consciousness Research. This work was supported by the National Institute on Alcohol Abuse and Alcoholism of the National Institutes of Health (grant no. R01AA024845) for Dr B. Mathur. This work was supported by the National Institute on Drug Abuse (grant no. T32DA07209) for Drs Gukasyan and Doss.Dr Barrett is a scientific advisor for WavePaths, LLC, which develops music-based interventions for psychedelic therapies. Dr R. Griffiths is on the board of directors of the Heffter Research Institute. Dr Griffiths has also received grants for research from the Riverstyx Foundation and a crowd-sourced funding campaign organized by Tim Ferriss. Dr M. Johnson is in paid advisory relationships with the following organizations regarding the medical development of psychedelics or related compounds: AWAKN Life Sciences Inc., Beckley Psychedelic Ltd., Entheogen Biomedical Corp., Field Trip Psychedelics, Inc., Mind Medicine, Inc., Otsuka Pharmaceutical Development and Commercialization, Inc., and Silo Pharma, Inc. The other authors have no disclosures to report. Drs A. Garcia-Romeu and S. Nayak serve on a Data and Safety Monitoring Board for Maryland Oncology Hematology. Dr Garcia-Romeu is a scientific advisor for ETHA Natural Botanicals and NeonMind Bioscience.Atlan G, Terem A, Peretz-Rivlin N, Sehrawat K, Gonzales BJ, Pozner G, Tasaka GI, Goll Y, Refaeli R, Zviran O, Lim BK, Groysman M, Goshen I, Mizrahi A, Nelken I, Citri A (2018) The claustrum supports resilience to distraction. Curr Biol28:27522762.e7. [DOI] [PMC free article] [PubMed] [Google Scholar]Baars BJ (1993) A cognitive theory of consciousness. New York: Cambridge University Press. [Google Scholar]Barrett FS, Johnson MW, Griffiths RR (2015) Validation of the revised Mystical Experience Questionnaire in experimental sessions with psilocybin. J Psychopharmacol29:11821190. [DOI] [PMC free article] [PubMed] [Google Scholar]Barrett FS, Krimmel SR, Griffiths RR, Seminowicz DA, Mathur BN (2020) Psilocybin acutely alters the functional connectivity of the claustrum with brain networks that support perception, memory, and attention. Neuroimage218:116980. [DOI] [PMC free article] [PubMed] [Google Scholar]Bayne T, Carter O (2018) Dimensions of consciousness and the psychedelic state. Neurosci Conscious1:niy008. [DOI] [PMC free article] [PubMed] [Google Scholar]Bickel S, Parvizi J (2019) Electrical stimulation of the human claustrum. Epilepsy Behav97:296303. [DOI] [PubMed] [Google Scholar]Blackburn S (1994) Other minds. In: The Oxford dictionary of philosophy. New York: Oxford University Press. [Google Scholar]Blackmore S (2013) Consciousness: an introduction. New York: Routledge. [Google Scholar]Block N (1995) On a confusion about a function of consciousness. Behav Brain Sci18:227247. [Google Scholar]Bogenschutz MP, Forcehimes AA, Pommy JA, Wilcox CE, Barbosa PC, Strassman RJ (2015) Psilocybin-assisted treatment for alcohol dependence: a proof-of-concept study. J Psychopharmacol29:28999. [DOI] [PubMed] [Google Scholar]Carhart-Harris RL (2018) The entropic brain - revisited. Neuropharmacology142:167178. [DOI] [PubMed] [Google Scholar]Carhart-Harris RL, Friston KJ (2019) REBUS and the anarchic brain: toward a unified model of the brain action of psychedelics. Pharmacol Rev71:316344. [DOI] [PMC free article] [PubMed] [Google Scholar]Carhart-Harris RL, et al. (2016) Neural correlates of the LSD experience revealed by multimodal neuroimaging. Proc Natl Acad Sci U S A113:48534858. [DOI] [PMC free article] [PubMed] [Google Scholar]Carhart-Harris RL, Leech R, Hellyer PJ, Shanahan M, Feilding A, Tagliazucchi E, Chialvo DR, Nutt D (2014) The entropic brain: a theory of conscious states informed by neuroimaging research with psychedelic drugs. Front Hum Neurosci8:20. [DOI] [PMC free article] [PubMed] [Google Scholar]Carter OL, Hasler F, Pettigrew JD, Wallis GM, Liu GB, Vollenweider FX (2007) Psilocybin links binocular rivalry switch rate to attention and subjective arousal levels in humans. Psychopharmacology195:415424. [DOI] [PubMed] [Google Scholar]Cerullo MA (2015) The problem with phi: a critique of integrated information theory. Plos Comput Biol11:e1004286. [DOI] [PMC free article] [PubMed] [Google Scholar]Chalmers DJ (1995) Facing up to the problem of consciousness. J Conscious Stud2:200219. [Google Scholar]Chalmers DJ (1996) The conscious mind: in search of a fundamental theory. New York: Oxford University Press. [Google Scholar]Chalmers D (2003) Consciousness and its place in nature. In: Blackwell guide to the philosophy of mind (Stitch SP, Warfield TA, eds), pp102142. New Jersey: John Wiley & Sons. [Google Scholar]Cofr R, Herzog R, Mediano PAM, Piccinini J, Rosas FE, Perl YS, Tagliazucchi E (2020) Whole-brain models to explore altered states of consciousness from the bottom up. Brain Sci10:626. [DOI] [PMC free article] [PubMed] [Google Scholar]Crick FC, Koch C (2005) What is the function of the claustrum?Philos Trans R Soc Lond B Biol Sci360:12711279. [DOI] [PMC free article] [PubMed] [Google Scholar]Davis AK, Barrett FS, May DG, Cosimano MP, Sepeda ND, Johnson MW, Finan PH, Griffiths RR (2020) Effects of psilocybin-assisted therapy on major depressive disorder: a randomized clinical trial. JAMA Psychiat78:4819. [DOI] [PMC free article] [PubMed] [Google Scholar]Dehaene S, Naccache L (2001) Towards a cognitive neuroscience of consciousness: basic evidence and a workspace framework. Cognition79:137. [DOI] [PubMed] [Google Scholar]Dennett DC (1993) Consciousness explained. New York: Little Brown & Co. [Google Scholar]Doss MK, May DG, Johnson MW, Clifton JM, Hedrick SL, Prisinzano TE, Griffiths RR, Barrett FS (2020) The acute effects of the atypical dissociative hallucinogen salvinorin a on functional connectivity in the human brain. Sci Rep10:16392. [DOI] [PMC free article] [PubMed] [Google Scholar]Dittrich A, Lamparter D, Maurer M (2010) 5D-ASC: Questionnaire for the assessment of altered states of consciousness. A short introduction. Zurich, Switzerland: PSIN PLUS. [Google Scholar]Friston K (2010) The free-energy principle: a unified brain theory?Nat Rev Neurosci11:127138. [DOI] [PubMed] [Google Scholar]Garcia-Romeu A, Himelstein SP, Kaminker J (2015) Self-transcendent experience: a grounded theory study. Qual Res15:633654. [Google Scholar]Geyer MA, Krebs-Thomson K, Braff DL, Swerdlow NR (2001) Pharmacological studies of prepulse inhibition models of sensorimotor gating deficits in schizophrenia: a decade in review. Psychopharmacology156:117154. [DOI] [PubMed] [Google Scholar]Geyer MA, Vollenweider FX (2008) Serotonin research: contributions to understanding psychoses. Trends Pharmacol Sci29:445453. [DOI] [PubMed] [Google Scholar]Gouzoulis-Mayfrank E, Schreckenberger M, Sabri O, Arning C, Thelen B, Spitzer M, Kovar KA, Hermle L, Bll U, Sass H (1999) Neurometabolic effects of psilocybin, 3,4-methylenedioxyethylamphetamine (MDE) and d-methamphetamine in healthy volunteers. A double-blind, placebo-controlled PET study with [18F]FDG. Neuropsychopharmacology20:565581. [DOI] [PubMed] [Google Scholar]Gray HM, Gray K, Wegner DM (2007) Dimensions of mind perception. Science315:619. [DOI] [PubMed] [Google Scholar]Griffiths RR, Richards WA, McCann U, Jesse R (2006) Psilocybin can occasion mystical-type experiences having substantial and sustained personal meaning and spiritual significance. Psychopharmacology187:26883. [DOI] [PubMed] [Google Scholar]Griffiths RR, Richards WA, Johnson MW, McCann UD, Jesse R (2008) Mystical-type experiences occasioned by psilocybin mediate the attribution of personal meaning and spiritual significance 14 months later. J Psychopharmacol22:62132. [DOI] [PMC free article] [PubMed] [Google Scholar]Griffiths RR, Johnson MW, Richards WA, Richards BD, McCann U, Jesse R (2011) Psilocybin occasioned mystical-type experiences: immediate and persisting dose-related effects. Psychopharmacology218:64965. [DOI] [PMC free article] [PubMed] [Google Scholar]Griffiths RR, Johnson MW, Carducci MA, Umbricht A, Richards WA, Richards BD, Cosimano MP, Klinedinst MA (2016) Psilocybin produces substantial and sustained decreases in depression and anxiety in patients with life-threatening cancer: A randomized double-blind trial. J Psychopharmacol30:118197. [DOI] [PMC free article] [PubMed] [Google Scholar]Griffiths RR, Johnson MW, Richards WA, Richards BD, Jesse R, MacLean KA, Barrett FS, Cosimano MP, Klinedinst MA (2018) Psilocybin-occasioned mystical-type experience in combination with meditation and other spiritual practices produces enduring positive changes in psychological functioning and in trait measures of prosocial attitudes and behaviors. J Psychopharmacol32:4969. [DOI] [PMC free article] [PubMed] [Google Scholar]Griffiths RR, Hurwitz ES, Davis AK, Johnson MW, Jesse R (2019) Survey of subjective God encounter experiences: comparisons among naturally occurring experiences and those occasioned by the classic psychedelics psilocybin, LSD, ayahuasca, or DMT. PLoS One14:e0214377. [DOI] [PMC free article] [PubMed] [Google Scholar]Hermle L, Fnfgeld M, Oepen G, Botsch H, Borchardt D, Gouzoulis E, Fehrenbach RA, Spitzer M (1992) Mescaline-induced psychopathological, neuropsychological, and neurometabolic effects in normal subjects: experimental psychosis as a tool for psychiatric research. Biol Psychiatry32:976991. [DOI] [PubMed] [Google Scholar]Herzog MH, Drissi-Daoudi L, Doerig A (2020) All in good time: long-lasting postdictive effects reveal discrete perception. Trends Cogn Sci24:826837. [DOI] [PubMed] [Google Scholar]Holze F, Vizeli P, Ley L, Mller F, Dolder P, Stocker M, Duthaler U, Varghese N, Eckert A, Borgwardt S, Liechti ME (2021) Acute dose-dependent effects of lysergic acid diethylamide in a double-blind placebo-controlled study in healthy subjects. Neuropsychopharmacology46:537544. [DOI] [PMC free article] [PubMed] [Google Scholar]Hood RW Jr (1975) The construction and preliminary validation of a measure of reported mystical experience. J Sci Study Relig14:2941. [Google Scholar]Imamoglu F, Kahnt T, Koch C, Haynes JD (2012) Changes in functional connectivity support conscious object recognition. Neuroimage63:19091917. [DOI] [PubMed] [Google Scholar]James W (1902) The varieties of religious experience: a study in human nature. New York: Cambridge University Press. [Google Scholar]Johnson MW (2020) Consciousness, religion, and gurus: pitfalls of psychedelic medicine. ACS Pharmacol Transl Sci4:578581. [DOI] [PMC free article] [PubMed] [Google Scholar]Johnson MW, Griffiths RR (2017) Potential therapeutic effects of psilocybin. Neurotherapeutics14:734740. [DOI] [PMC free article] [PubMed] [Google Scholar]Johnson MW, Hendricks PS, Barrett FS, Griffiths RR (2019) Classic psychedelics: an integrative review of epidemiology, therapeutics, mystical experience, and brain network function. Pharmacol Ther197:83102. [DOI] [PubMed] [Google Scholar]Johnson MW, Garcia-Romeu A, Cosimano MP, Griffiths RR (2014) Pilot study of the 5-HT2AR agonist psilocybin in the treatment of tobacco addiction. J Psychopharmacol28:98392. [DOI] [PMC free article] [PubMed] [Google Scholar]Kaelen M, Roseman L, Kahan J, Santos-Ribeiro A, Orban C, Lorenz R, Barrett FS, Bolstridge M, Williams T, Williams L, Wall MB (2016) LSD modulates music-induced imagery via changes in parahippocampal connectivity. Eur Neuropsychopharmacol26:1099109. [DOI] [PubMed] [Google Scholar]Koch C, Massimini M, Boly M, Tononi G (2016) Neural correlates of consciousness: progress and problems. Nat Rev Neurosci17:307321. [DOI] [PubMed] [Google Scholar]Kometer M, Pokorny T, Seifritz E, Volleinweider FX (2015) Psilocybin-induced spiritual experiences and insightfulness are associated with synchronization of neuronal oscillations. Psychopharmacology232:36633676. [DOI] [PubMed] [Google Scholar]Krimmel SR, White MG, Panicker MH, Barrett FS, Mathur BN, Seminowicz DA (2019) Resting state functional connectivity and cognitive task-related activation of the human claustrum. Neuroimage196:5967. [DOI] [PMC free article] [PubMed] [Google Scholar]LeDoux JE, Lau H (2020) Seeing consciousness through the lens of memory. Curr Biol30:R1018R1022. [DOI] [PubMed] [Google Scholar]Letheby C (2019) The varieties of psychedelic epistemology. In: Psychedelicacies: more food for thought from Breaking Convention (Wyrd N, Luke D, Tollan A, Adams C, King D, eds). London, UK: Strange Attractor Press. [Google Scholar]Levine J (1983) Materialism and qualia: the explanatory gap. Pac Philos Q64:354361. [Google Scholar]Lewis CI (1929) Mind and the world order. New York: Charles Scribners Sons. [Google Scholar]Liechti ME, Dolder PC, Schmid Y (2017) Alterations of consciousness and mystical-type experiences after acute LSD in humans. Psychopharmacology234:14991510. [DOI] [PMC free article] [PubMed] [Google Scholar]Mathur BN (2014) The claustrum in review. Front Syst Neurosci8:48. [DOI] [PMC free article] [PubMed] [Google Scholar]Mason NL, Kuypers KPC, Mller F, Reckweg J, Tse DHY, Toennes SW, Hutten NRPW, Jansen JFA, Stiers P, Feilding A, Ramaekers JG (2020) Me, myself, bye: regional alterations in glutamate and the experience of ego dissolution with psilocybin. Neuropsychopharmacology45:20032011. [DOI] [PMC free article] [PubMed] [Google Scholar]Metzinger T, ed. (2000) Neural correlates of consciousness: empirical and conceptual questions. Boston: MIT Press. [DOI] [PubMed] [Google Scholar]Mlot C (1998) Probing the biology of emotion. Science280:10051007. [DOI] [PubMed] [Google Scholar]Mller F, Lenz C, Dolder P, Lang U, Schmidt A, Liechti M, Borgwardt S (2017) Increased thalamic resting-state connectivity as a core driver of LSD-induced hallucinations. Acta Psychiatr Scand136:648657. [DOI] [PMC free article] [PubMed] [Google Scholar]Mller F, Holze F, Dolder P, Ley L, Vizeli P, Soltermann A, Liechti ME, Borgwardt S (2021) MDMA-induced changes in within-network connectivity contradict the specificity of these alterations for the effects of serotonergic hallucinogens. Neuropsychopharmacology46:545553. [DOI] [PMC free article] [PubMed] [Google Scholar]Muthukumaraswamy SD, Carhart-Harris RL, Moran RJ, Brookes MJ, Williams TM, Errtizoe D, Sessa B, Papadopoulos A, Bolstridge M, Singh KD, Feilding A, Friston KJ, Nutt DJ (2013) Broadband cortical desynchronization underlies the human psychedelic state. J Neurosci33:1517115183. [DOI] [PMC free article] [PubMed] [Google Scholar]Nagel T (1974) What is it like to be a bat?Philos Rev83:435450. [Google Scholar]Nayak S, Johnson MW (2020) Psychedelics and psychotherapy. Pharmacopsychiatry doi: 10.1055/a-1312-7297. Online ahead of print. [DOI] [PubMed] [Google Scholar]Nichols DE (2016) Psychedelics. Pharmacol Rev68:264355. [DOI] [PMC free article] [PubMed] [Google Scholar]Nichols DE, Johnson MW, Nichols CD (2017) Psychedelics as medicines: an emerging new paradigm. Clin Pharmacol Ther101:20919. [DOI] [PubMed] [Google Scholar]Nour MM, Evans L, Nutt D, Carhart-Harris RL (2016) Ego-dissolution and psychedelics: validation of the ego-dissolution inventory (EDI). Front Hum Neurosci10:269. [DOI] [PMC free article] [PubMed] [Google Scholar]Osmond H (1957) A review of the clinical effects of psychotomimetic agents. Ann N Y Acad Sci66:418434. [DOI] [PubMed] [Google Scholar]Pollan M (2019) How to change your mind: what the new science of psychedelics teaches us about consciousness, dying, addiction, depression, and transcendence. New York: Penguin Books. [DOI] [PubMed] [Google Scholar]Preller KH, Burt JB, Ji JL, Schleifer CH, Adkinson BD, Stmpfli P, Seifritz E, Repovs G, Krystal JH, Murray JD, Vollenweider FX, Anticevic A (2018a) Changes in global and thalamic brain connectivity in LSD-induced altered states of consciousness are attributable to the 5-HT2A receptor. Elife7:e35082. [DOI] [PMC free article] [PubMed] [Google Scholar]Preller KH, Schilbach L, Pokorny T, Flemming J, Seifritz E, Vollenweider FX (2018b) Role of the 5-HT2A receptor in self- and other-initiated social interaction in lysergic acid diethylamide-induced states: a pharmacological fMRI study. J Neurosci38:36033611. [DOI] [PMC free article] [PubMed] [Google Scholar]Preller KH, Razi A, Zeidman P, Stmpfli P, Friston KJ, Vollenweider FX (2019) Effective connectivity changes in LSD-induced altered states of consciousness in humans. Proc Natl Acad Sci U S A116:27432748. [DOI] [PMC free article] [PubMed] [Google Scholar]Riba J, Anderer P, Morte A, Urbano G, Jan F, Saletu B, Barbanoj MJ (2002) Topographic pharmaco-EEG mapping of the effects of the South American psychoactive beverage ayahuasca in healthy volunteers. Br J Clin Pharmacol53:613628. [DOI] [PMC free article] [PubMed] [Google Scholar]Riba J, Anderer P, Jan F, Saletu B, Barbanoj MJ (2004) Effects of the South American psychoactive beverage ayahuasca on regional brain electrical activity in humans: a functional neuroimaging study using low-resolution electromagnetic tomography. Neuropsychobiology50:89101. [DOI] [PubMed] [Google Scholar]Ritter SM, Damian RI, Simonton DK, van Baaren RB, Strick M, Derks, J, Dijksterhuis A (2012) Diversifying experiences enhance cognitive flexibility. J Exp Soc Psychol48:961964. [Google Scholar]Ross S, Bossis A, Guss J, Agin-Liebes G, Malone T, Cohen B, Mennenga SE, Belser A, Kalliontzi K, Babb J, Su Z (2016) Rapid and sustained symptom reduction following psilocybin treatment for anxiety and depression in patients with life-threatening cancer: a randomized controlled trial. J Psychopharmacol30:116580. [DOI] [PMC free article] [PubMed] [Google Scholar]Roseman L, Leech R, Feilding A, Nutt DJ, Carhart-Harris RL (2014) The effects of psilocybin and MDMA on between-network resting state functional connectivity in healthy volunteers. Frontiers in human neuroscience8:204. [DOI] [PMC free article] [PubMed] [Google Scholar]Roseman L, Demetriou L, Wall MB, Nutt DJ, Carhart-Harris RL (2018) Increased amygdala responses to emotional faces after psilocybin for treatment-resistant depression. Neuropharmacology142:2639. [DOI] [PubMed] [Google Scholar]Schmidt A, Bachmann R, Kometer M, Csomor PA, Stephan KE, Seifritz E, Vollenweider FX (2012) Mismatch negativity encoding of prediction errors predicts S-ketamine-induced cognitive impairments. Neuropsychopharmacology37:865875. [DOI] [PMC free article] [PubMed] [Google Scholar]Schultes RE (1969) Hallucinogens of plant origin. Science163:245254. [DOI] [PubMed] [Google Scholar]Scott G, Carhart-Harris RL (2019) Psychedelics as a treatment for disorders of consciousness. Neurosci Conscious1:niz003. [DOI] [PMC free article] [PubMed] [Google Scholar]Sergent C, Baillet S, Dehaene S (2005) Timing of the brain events underlying access to consciousness during the attentional blink. Nat Neurosci8:13911400. [DOI] [PubMed] [Google Scholar]Seth AK (2018) Consciousness: the last 50 years (and the next). Brain Neurosci Adv2:2398212818816019. [DOI] [PMC free article] [PubMed] [Google Scholar]Seth AK, Izhikevich E, Reeke GN, Edelman GM (2006) Theories and measures of consciousness: an extended framework. Proc Natl Acad Sci U S A103:1079910804. [DOI] [PMC free article] [PubMed] [Google Scholar]Smigielski L, Kometer M, Scheidegger M, Stress C, Preller KH, Koenig T, Vollenweider FX (2020) P300-mediated modulations in self-other processing under psychedelic psilocybin are related to connectedness and changed meaning: a window into the self-other overlap. Hum Brain Mapp41:49824996. [DOI] [PMC free article] [PubMed] [Google Scholar]Solms M, Friston K (2018) How and why consciousness arises: some considerations from physics and physiology. J Conscious Stud25:202238. [Google Scholar]Stace WT (1960) Mysticism and philosophy. Los Angeles: Jeremy P Tarcher. [Google Scholar]Studerus E, Gamma A, Vollenweider FX (2010) Psychometric evaluation of the altered states of consciousness rating scale (OAV). PLoS One31:e12412. [DOI] [PMC free article] [PubMed] [Google Scholar]Tagliazucchi E, Roseman L, Kaelen M, Orban C, Muthukumaraswamy SD, Murphy K, Laufs H, Leech R, McGonigle J, Crossley N, Bullmore E, Williams T, Bolstridge M, Feilding A, Nutt DJ, Carhart-Harris R (2016) Increased global functional connectivity correlates with LSD-induced ego dissolution. Curr Biol26:10431050. [DOI] [PubMed] [Google Scholar]Tart CT (1972) Altered states of consciousness. New York: Doubleday. [Google Scholar]Tononi G (2004) An information integration theory of consciousness. BMC Neurosci5:42. [DOI] [PMC free article] [PubMed] [Google Scholar]Tononi G (2008) Consciousness as integrated information: a provisional manifesto. Biol Bull215:216242. [DOI] [PubMed] [Google Scholar]Tononi G, Edelman GM (1998) Consciousness and complexity. Science282:18461851. [DOI] [PubMed] [Google Scholar]Turing A (1950) Computing machinery and intelligence. Mind59:43360. [Google Scholar]Umbricht D, Vollenweider FX, Schmid L, Grbel C, Skrabo A, Huber T, Koller R (2003) Effects of the 5-HT2A agonist psilocybin on mismatch negativity generation and AX-continuous performance task: implications for the neuropharmacology of cognitive deficits in schizophrenia. Neuropsychopharmacology28:170181. [DOI] [PubMed] [Google Scholar]Velmans M (2009) How to define consciousness: and how not to define consciousness. J Conscious Stud16:139156. [Google Scholar]Vollenweider FX, Geyer MA (2001) A systems model of altered consciousness: integrating natural and drug-induced psychoses. Brain Res Bull56:495507. [DOI] [PubMed] [Google Scholar]Vollenweider FX, Leenders KL, Scharfetter C, Maguire P, Stadelmann O, Angst J (1997) Positron emission tomography and fluorodeoxyglucose studies of metabolic hyperfrontality and psychopathology in the psilocybin model of psychosis. Neuropsychopharmacology16:357372. [DOI] [PubMed] [Google Scholar]Vollenweider FX, Preller KH (2020) Psychedelic drugs: neurobiology and potential for treatment of psychiatric disorders. Nat Rev Neurosci21:611624. [DOI] [PubMed] [Google Scholar]Ward LM (2011) The thalamic dynamic core theory of conscious experience. Conscious Cogn20:464486. [DOI] [PubMed] [Google Scholar]White MG, Panicker M, Mu C, Carter AM, Roberts BM, Dharmasri PA, Mathur BN (2018) Anterior cingulate cortex input to the claustrum is required for top-down action control. Cell Rep22:8495. [DOI] [PMC free article] [PubMed] [Google Scholar]White MG, Mu C, Qadir H, Madden MB, Zeng H, Mathur BN (2020) The mouse claustrum is required for optimal behavioral performance under high cognitive demand. Biol Psychiatry88:719726. [DOI] [PMC free article] [PubMed] [Google Scholar]Yaden DB, Anderson DA(2021). The psychology of philosophy: associating philosophical views with psychological traits in professional philosophers. Philos Psychol. [Google Scholar]Yaden DB, Haidt J, Hood RW Jr, Vago DR, Newberg AB (2017a) The varieties of self-transcendent experience. Rev Gen Psychol21:143160. [Google Scholar]Yaden DB, Le Nguyen KD, Kern ML, Belser AB, Eichstaedt JC, Iwry J, Smith ME, Wintering NA, Hood RW, Newberg AB (2017b) Of roots and fruits: a comparison of psychedelic and nonpsychedelic mystical experiences. J Humanist. Psychol57:338353. [Google Scholar]

Fondos de pantalla 3d para pc con movimiento descargar. Fondos 3d para pc. Fondo 3d movimiento. Fondos de pantalla 3d. Descargar fondos de pantalla en 3d con movimiento para pc gratis. Fondos 3d.