

Lucid dream

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(Redirected from [Lucid dreaming](#))

A **lucid dream** is any [dream](#) in which one is aware that one is dreaming. In relation to this phenomenon, Greek philosopher [Aristotle](#) observed: "often when one is asleep, there is something in consciousness which declares that what then presents itself is but a dream".^[1] One of the earliest references to personal experiences with lucid dreaming was by [Marie-Jean-Léon, Marquis d'Hervey de Saint Denys](#).^[2]

The person most widely acknowledged as having coined the term is Dutch psychiatrist and writer [Frederik \(Willem\) van Eeden](#) (1860–1932).^{[1][2][3][4][5][6][7][8][9]} In a lucid dream, the dreamer has greater chances to exert some degree of control over their participation within the dream or be able to manipulate their imaginary experiences in the dream environment.^{[10][11][12]} Lucid dreams can be realistic and vivid.^[13] It is shown that there are higher amounts of beta-1 frequency band (13–19 Hz) brain wave activity experienced by lucid dreamers, hence there is an increased amount of activity in the [parietal lobes](#) making lucid dreaming a conscious process.^[14]

Skeptics of the phenomenon suggest that it is not a state of sleep, but of brief wakefulness.^{[15][16]} Others point out that there is no way to prove the truth of lucid dreaming other than to ask the dreamer.^[17] Lucid dreaming has been researched scientifically, with participants performing pre-determined physical responses while experiencing a lucid dream.^{[18][19]}

Scientific history[\[edit\]](#)

The first book to recognize the scientific potential of lucid dreams was [Marquis d'Hervey de Saint-Denys's](#) 1867 *Les Reves et Les Moyens de Les Diriger: Observations Pratiques*.^[20] This French publication, originally published anonymously, translates as 'Dreams and the ways to direct them: practical observations'. It accounts for Saint-Denys' own experiences, but made also an extensive study of the phenomenon of lucid dreaming. Later, researcher [Celia Green's](#) 1968 study *Lucid Dreams*.^[21] analyzed the main characteristics of such dreams, reviewing previously published literature on the subject and incorporating new data from participants of her own. She concluded that lucid dreams were a category of experience quite distinct from ordinary dreams, and predicted that they would turn out to be associated with [rapid eye movement sleep](#) (REM sleep). Green was also the first to link lucid dreams to the phenomenon of [false awakenings](#).

Philosopher [Norman Malcolm's](#) 1959 text *Dreaming*^[22] had argued against the possibility of checking the accuracy of dream reports. He points out "The only criterion of the truth of a statement that someone has had a certain dream is, essentially, his saying so."^[17] The realization that eye movements performed in dreams may affect the dreamer's physical eyes provided a way to prove that actions agreed upon during waking life could be recalled and performed once lucid in a dream. The first evidence of this type was produced in the late 1970s by British [parapsychologist Keith Hearne](#). A volunteer named Alan Worsley used eye

movements to signal the onset of lucidity, which were recorded by a [polysomnograph](#) machine.

Hearne's results were not widely distributed. The first [peer-reviewed](#) article was published some years later by [Stephen LaBerge](#) at [Stanford University](#), who had independently developed a similar technique as part of his doctoral dissertation.^[23] During the 1980s, further scientific evidence of lucid dreaming was produced as lucid dreamers were able to demonstrate to researchers that they were consciously aware of being in a dream state (again, primarily using eye movement signals).^[24] Additionally, techniques were developed that have been experimentally proven to enhance the likelihood of achieving this state.^[25]

Paul Tholey, an oneirologist and Gestalt theorist laid the epistemological basis for the research of lucid dreams. His work laid the foreground for further researchers to categorize what a lucid dream is. Tholey (1980, 1981) defined seven different conditions of clarity that a dream must fulfill in order to be defined as a lucid dream:^{[26][27]}

1. Awareness of the dream state (orientation);
2. Awareness of the capacity to make decisions;
3. Awareness of memory functions;
4. Awareness of identity;
5. Awareness of the dream environment;
6. Awareness of the meaning of the dream;
7. Awareness of concentration and focus (the subjective clarity of that state).

For a dream to be lucid as defined by Tholey, it must fulfill all 7 factors together. Tholey replaces the word 'Klarheit'

(clarity) with the word ‘awareness’, which is a well known and central term in Gestalt therapy theory and describes the subjective experience of the conscious dream state quite well (Lucid dreaming – dreams of clarity).^[28]

Initiation^[edit]

A lucid dream can begin in one of many ways. A dream-initiated lucid dream (D.I.L.D.) starts as a normal dream, and the dreamer eventually concludes it is a dream. A wake-initiated lucid dream (W.I.L.D.) occurs when the dreamer goes from a normal waking state directly into a dream state, with no apparent lapse in consciousness. The wake-initiated lucid dream occurs when the sleeper enters REM sleep with unbroken self-awareness directly from the waking state.^[29]

Research and clinical applications^[edit]

Neurobiological model^[edit]

Neuroscientist J. Allan Hobson has hypothesized what might be occurring in the brain while lucid. The first step to lucid dreaming is recognizing one is dreaming. This recognition might occur in the dorsolateral prefrontal cortex, which is one of the few areas deactivated during REM sleep and where working memory occurs.^[citation needed] Once this area is activated and the recognition of dreaming occurs, the dreamer must be cautious to let the dream continue but be conscious enough to remember that it is a dream. While maintaining this balance, the amygdala and parahippocampal cortex might be less intensely activated.^[30] To continue the intensity of the dream hallucinations, it is expected the pons and the parieto-occipital junction stay active.^[31]

In a study performed by Stephen LaBerge, four subjects were compared either singing while dreaming or counting while dreaming. LaBerge found that the right hemisphere was more active during singing and the left hemisphere was more active during counting. These results resemble similar findings in subjects that were awake (LaBerge and Dement, 1982b).^[32] This study was a precursor to the question LaBerge has always tried to answer, is there a brain state for lucid dreaming? Physiological recordings like electroencephalograms (EEG) have showed that lucid dreams begin in the Rapid Eye Movement (REM) stage of sleep (Ogilvie, Hunt, Sawicki and McGowan, 1978).^[33] In fact, multiple studies led by LaBerge have only shown lucid dreams to occur in the REM stage. Nonetheless it is not impossible that lucid dreams could occur in any of the other sleep stages, which is why physiological tests are highly valuable to this topic. Polysomnography is another beneficial physiological study to conduct because it collects data from a number of sources, inevitably compounding all the information to give the researcher a well-rounded understanding of the human physiology while an individual is experiencing a lucid dream. Polysomnography records your brain waves, the oxygen level in your blood, heart rate and breathing, eye movements, leg movements, and many other variables during the study (Polysomnograph (sleep study)).^[34] Via polysomnographic technology LaBerge, Levitan and Dement (1986) compared eye movements, heart rate, blood pressure and skin potential in both lucid and non-lucid dreams and showed that lucid dreams occurred in the REM stage characterized by increased physiological activation.^[35]

Treatment for nightmares [\[edit\]](#)

It has been suggested that sufferers of [nightmares](#) could benefit from the ability to be aware they are indeed dreaming. A pilot study was performed in 2006 that showed that lucid dreaming therapy treatment was successful in reducing nightmare frequency. This treatment consisted of exposure to the idea, mastery of the technique, and lucidity exercises. It was not clear what aspects of the treatment were responsible for the success of overcoming nightmares, though the treatment as a whole was successful. ^[36]

Australian psychologist Milan Colic has explored the application of principles from [narrative therapy](#) with clients' lucid dreams, to reduce the impact not only of nightmares during sleep, but also depression, self-mutilation, and other problems in waking life. Colic found that clients preferred direction for their lives, as identified during therapeutic conversations, could lessen the distressing content of dreams, while understandings about life—and even characters—from lucid dreams could be invoked in "real" life with marked therapeutic benefits. ^[37]

Psychotherapists have applied lucid dreaming as an application for therapy. Studies have shown that by inducing a lucid dream recurrent nightmares can be alleviated. This alleviation is unclear whether it is due to lucidity or the ability to alter the dream itself. A study performed by Spoormaker and van den Bout (2006) evaluated the validity of lucid dreaming treatment (LDT) in chronic nightmare sufferers. ^[38] LDT is composed of exposure, mastery, and lucidity exercises. Results of lucid dreaming treatment revealed that the nightmare frequency of the treatment

groups had decreased. In another study, Spoormaker, van den Bout, and Meijer (2003) investigated lucid dreaming treatment for nightmares by testing 8 subjects who received a one hour individual session, which consisted of lucid dreaming exercises.^[39] The results of the study revealed that the nightmare frequency had decreased and the sleep quality had slightly increased. Holzinger, Klösch and Saletu managed a psychotherapy study under the working name of 'Cognition during dreaming – a therapeutic intervention in nightmares', which included 40 subjects, men and women, 18–50 years old, whose life quality was significantly altered by nightmares.^[40] The test subjects were administered Gestalt group therapy and 24 of them were also taught to enter the state of lucid dreaming by Holzinger. This was purposefully taught in order to change the course of their nightmares. The subjects then reported the diminishment of their nightmare prevalence from 2-3 times a week to 2-3 times per month.

Perception of time[\[edit\]](#)

In 1985, Stephen LaBerge performed a pilot study which showed that time perception while counting during a lucid dream is about the same as during waking life. Lucid dreamers counted out ten seconds while dreaming, signaling the start and the end of the count with a pre-arranged eye signal measured with electrooculogram recording.^[41] LaBerge's results were confirmed by German researchers in 2004. The German study, by D. Erlacher and M. Schredl, also studied motor activity and found deep knee bends took 44% longer to perform while lucid dreaming.^[42]

Awareness and reasoning[\[edit\]](#)

While dream control and dream awareness are correlated, neither requires the other—LaBerge has found dreams that exhibit one clearly without the capacity for the other; also, in some dreams where the dreamer is lucid and aware they could exercise control, they choose simply to observe.^[10] In 1992, a study by [Deirdre Barrett](#) examined whether lucid dreams contained four "[corollaries](#)" of lucidity:

- The dreamer is aware that they are dreaming
- Objects disappear after waking
- Physical laws need not apply in the dream
- The dreamer has a clear memory of the waking world

Barrett found less than a quarter of lucidity accounts exhibited all four. A related and reciprocal category of dreams that are lucid in terms of some of these four corollaries, but miss the realization that "I'm dreaming," were also reported. Scores on these corollaries and correctly identifying the experience as a dream increased with lucidity experience.^[43] In a later study in Barrett's book, *The Committee of Sleep*,^[44] she describes how some experienced lucid dreamers have learned to remember specific practical goals such as artists looking for inspiration seeking a show of their own work once they become lucid or computer programmers looking for a screen with their desired code. However, most of these dreamers had many experiences of failing to recall waking objectives before gaining this level of control.^[44] In addition, a case study published in 2012 suggests that during a lucid dream the bilateral frontopolar area of the brain (usually attributed to the evaluation of ones own thoughts and feelings etc.) undergoes an increase in activity.^[45]

Skepticism[[edit](#)]

According to Dr. Patrick McNamara of [Boston University](#), there is no scientific way to know for certain that someone is dreaming other than to wake them up and ask them.^[46] Professor [Norman Malcolm](#) goes on to say that the only criterion of the truth of a statement that someone has had a certain dream is the dreamer saying so. Malcolm further describes lucid dreaming as absurd and impossible, recalling as an example, "I dreamt that I realised I was dreaming, dreamt that I was affecting the course of my dream, and then dreamt that I woke myself up by telling myself to wake up."^[17]

Other researchers have described the phenomenon of lucid dreaming not as a part of sleep, but as a brief wakeful state, or "micro-awakening".^{[15][16]} Experiments by [Stephen LaBerge](#) used "perception of the outside world" as a criterion for wakefulness while studying lucid dreamers.^[19] Although their sleep state was corroborated with physiological measurements, LaBerge admits the criterion is subjective.^[47] Physiologically, brain activity during REM sleep is similar to wakefulness.^[48] Dr. [John Allan Hobson](#) illustrates the ambiguity of these experiments, as LaBerge's subjects always experienced their lucid dream while in a state of REM. Hobson concludes that lucid dreaming is a state of both waking and dreaming.^[49] Fellow dream researcher Michael Schredl found Hobson's conclusion to be oversimplifying, saying that the physiological state of lucid dreamers appears to be closer to other states of consciousness, such as [meditation](#), than to wakefulness.^[50]

Cultural history[[edit](#)]



[Hypnos](#) and [Thanatos](#), *Sleep and His Half-Brother Death*, an 1874 painting by [John William Waterhouse](#)

Even though it has only come to the attention of the general public in the last few decades, lucid dreaming is not a modern discovery. Lucid dreaming is the western term used to denote a practice similar to [Yoga nidra](#). The distinguishing difference is the degree to which one remains cognizant of the actual physical environment as opposed to a dream environment. In lucid dreaming, we are only (or mainly) cognizant of the dream environment, and have little or no awareness of our actual environment.^[51] The concept of Yoga nidra is very ancient in Indian traditions such as Hinduism and Buddhism. [Krishna](#) is often associated with Yoga nidra in epic [Mahabharata](#). Similarly, many yogis and rishis are supposed to have experienced Yoga nidra

throughout their life. In modern times, Yoga nidra was experienced by [Swami Satyananda Saraswati](#)^[citation needed] when he was living with his guru [Swami Sivananda](#) in Rishikesh. He began studying the tantric scriptures and, after practice, constructed a system of relaxation, which he began popularizing in the mid 20th century.^[52] **He explained yoga nidra as a state of mind between wakefulness and sleep that opened deep phases of the mind**, suggesting a connection with the ancient [tantric](#) practice called nyasa, whereby [Sanskrit mantras](#) are mentally placed within specific body parts, while meditating on each part (of the [bodymind](#)). The form of practice taught by Swami Satyananda includes eight stages (Internalisation, Sankalpa, Rotation of Consciousness, Breath Awareness, Manifestation of Opposites, Creative Visualization, Sankalpa and Externalisation).

Also, in early [Buddhism](#) it was a common practice among people in the monastic community. As preserved in the ancient [Sarvastivada](#) school's Sutra on [Mindfulness](#) of the Body in the Madhayama agama (equivalent of Pali Kayagatasati) it states that monks and nuns under practice should be 'Understanding (having awareness in) the four postures and states of being asleep or awake'.^[53] Documented since the 8th century, [Tibetan Buddhists](#) and [Bonpo](#) were practicing a form of [dream yoga](#) held to maintain full waking consciousness while in the dream state. One important message of the book is the distinction between the [Dzogchen](#) meditation of *awareness* and *dream yoga*. The Dzogchen *awareness* meditation has also been referred to by the terms *rigpa awareness*, *contemplation*, and *presence*. *Awareness during*

the sleep and dream states is associated with the Dzogchen *practice of natural light*. This practice only achieves lucid dreams as a secondary effect—in contrast to dream yoga, which aims primarily at lucid dreaming.

According to Buddhist teachers, the experience of lucidity helps us understand the unreality of phenomena, which would otherwise be overwhelming during dream or the death experience.

In Western culture, the phenomenon had been referred to by Greek philosopher [Aristotle](#) who had written: "often when one is asleep, there is something in consciousness which declares that what then presents itself is but a dream".^[1] The physician [Galen of Pergamon](#) used lucid dreams in his therapy.^[54] Also in a letter written by [St. Augustine of Hippo](#) in 415 AD about a story of a dreamer, Doctor Gennadius, refers to lucid dreaming.^[55] The dreamer reported that he didn't realize he was in the dream world but the man whom he met in his dream reminded him about this and pointed out that his experience was a proof of life after death.

An early recorded lucid dreamer was the philosopher and physician [Sir Thomas Browne](#) (1605–1682). Browne was fascinated by the world of dreams and described his own ability to lucid dream in his [Religio Medici](#): "...yet in one dream I can compose a whole Comedy, behold the action, apprehend the jests and laugh my self awake at the conceits thereof".^[56] Similarly, [Samuel Pepys](#) in his diary entry for [15 August 1665](#) records a dream "that I had my Lady

Castlemayne in my arms and was admitted to use all the dalliance I desired with her, and then dreamt that this could not be awake, but that it was only a dream". [Marquis d'Hervey de Saint-Denys](#) argued that it is possible for anyone to learn to dream consciously. In 1867, he published his book *Les Rêves et les moyens de les diriger; observations pratiques* ("Dreams and How to Guide them; Practical Observations"), in which he documented more than twenty years of his own research into dreams.

The term *lucid dreaming* was coined by [Dutch](#) author and [psychiatrist Frederik van Eeden](#) in his 1913 article "A Study of Dreams".^[8] This paper was highly anecdotal and not embraced by the scientific community. Some consider this a misnomer because it means much more than just "clear or vivid" dreaming.^[57] The alternative term *conscious dreaming* avoids this confusion. However, the term *lucid* was used by van Eeden in its sense of "having insight", as in the phrase *a lucid interval* applied to someone in temporary remission from a [psychosis](#), rather than as a reference to the perceptual quality of the experience, which may or may not be clear and vivid.

In the 1950s, the [Senoi](#) hunter-gatherers of [Malaysia](#) were reported to make extensive use of lucid dreaming to ensure mental health, although later studies refuted these claims.^[58]

A 2012 report by the [BBC](#) claimed that "interest in lucid dreaming has grown in recent years", and corroborated this with examples of the many [smartphone apps](#) that exist to help people experience the phenomenon. One such app was downloaded half a million times in six weeks, the report says.^[59]