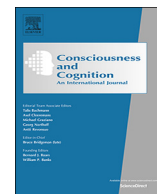




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Exploring the effects of galantamine paired with meditation and dream reliving on recalled dreams: Toward an integrated protocol for lucid dream induction and nightmare resolution

Gregory Sparrow^{a,*}, Ryan Hurd^b, Ralph Carlson^c, Ana Molina^c

^a Dept. of Counseling, University of Texas Rio Grande Valley, 1201 W. University Dr., Edinburg, TX 78539, United States

^b Dept. of Psychology, John F. Kennedy University, Orinda, CA, United States

^c Dept. of Educational Psychology, 1201 W. University Dr., University of Texas Rio Grande Valley, Edinburg, TX 78539, United States

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ABSTRACT

An experimental home study examined the impact of a pre-sleep protocol for enhancing self-awareness, lucidity, and responsiveness in dreams. It included ingesting the cholinesterase inhibitor galantamine—which is widely reported to increase the frequency of lucid dreaming—prior to engaging in middle-of-the-night meditation and the imaginary reliving of a distressing dream while exercising new responses. Thirty-five participants completed an eight-night study, which included pre- and post-baseline nights and six conditions: waking for 40 min before returning to bed, called Wake-Back-to-Bed (WBTB); Wake-Back-to-Bed plus placebo (WBTB + P); Wake-Back-to-Bed plus galantamine (WBTB + G); meditation and dream reliving (MDR); meditation and dream reliving plus placebo (MDR + P); and meditation and dream reliving plus galantamine (MDR + G). The outcome measures included lucidity, reflectiveness, interactive behavior, role change, constructive action, and fear and threat, as measured by the participants' self-ratings. The results support the use of this protocol in further studies of lucid dream induction and nightmare/trauma resolution.

1. Introduction

Lucid dreaming has been defined as the awareness that one is dreaming during a dream (Van Eeden, 1913). In a study of his own dreams, Van Eeden initially described a lucid dream as:

...the reintegration of the psychic functions...[such] that the sleeper remembers day-life and his own condition, reaches a state of perfect awareness, and is able to direct his attention, and to attempt different acts of free volition. (1913)

In spite of Van Eeden's introduction of the term "lucid dreaming," it went largely unused prior to the 1960s, even though awareness of the phenomenon is evident in the writings of Aquinas (1947) and Aristotle (1952). Fox (1939) referred to a lucid dream as a "dream of knowledge," and considered it an inferior form of astral projection, while Brown (1936) described his own lucid dreams as simply "dreams in which the dreamer knows he is asleep." Castaneda (1972) referred to the lucid dream experience as merely "dreaming," a presumed translation for the term used by Yaqui Indians of Mexico, and Tholey (1980) preferred the German word *Klarträume* or "dream of clarity" to describe the phenomenon. However, publications in the late 60s (Green, 1968; Tart, 1969) helped awaken widespread interest in the now-accepted term, principally by drawing attention to the largely forgotten work of Van

* Corresponding author.

E-mail address: gregory.sparrow@utrgv.edu (G. Sparrow).

Eden (1913). Ultimately, none of the terms that have been used effectively define, nor describe the phenomenon.

In the 70s and 80s, lucid dream research acquired legitimacy from a variety of perspectives. Laboratory experiments by Hearne (1978) and LaBerge (1980) established that lucid dreaming can occur within unambiguous REM sleep, thus challenging the notion that *lucidity* is a mere artifact of the awakening process. The concern that lucidity might signify psychological instability was allayed when Gackenbach (1978) demonstrated that lucid dreaming correlates with an array of healthy psychological attributes. Further, various anecdotal treatises provided testimony that lucid dreaming could support free-ranging experimentation in dreams (LaBerge, 1985; LaBerge and Rheingold, 1990), and could facilitate spiritually meaningful experiences (Kelzer, 1987; Sparrow, 1974, 1976) that had been recognized for centuries in Tibetan Buddhism (Evans-Wentz, 1935).

1.1. *Lucidity vs. non-lucid reflectiveness*

The initial focus on lucidity *per se* tended to overlook the non-lucid dimensions of dream ego reflectiveness and volition. Indeed, the preoccupation with lucidity stands in contrast to a seminal premise articulated by Rossi (1972, p. 163) that there is “a continuum of all possible balances of control between the autonomous process and the dreamer’s self-awareness and consciously directed effort” in all dreams. Measuring success through the achievement of lucidity thus overlooks the possibility that non-lucid reflectiveness, volition, and other dream ego attributes can independently facilitate such processes as trauma integration (Hartmann, 1998), the and formation of new identity (Rossi, 1972). Only recently have researchers followed Rossi’s approach to assessing dream ego awareness by adopting a continuous, rather than categorical approach to dream ego awareness, even though the efforts have thus far focused on the continuum of lucidity, rather than the continuum of dream ego awareness in general. For instance, Moss (1986) describes a continuum that begins with the non-lucid state:

“At the bottom of this range is non-lucidity. Even generally considered non-lucid dreams may have some minor awareness and this is the beginning of partial lucidity.” While acknowledging that non-lucid dreams can reveal “minor awareness,” Moss does not evidence any recognition of Rossi’s observed continuum of non-lucid dream ego reflectiveness and development. Similarly, Barrett (1992) divides lucidity into four “corollary” awarenesses, but does not extend the same continuous approach into non-lucid dreams. Thus, while Moss and Barrett divide lucidity into component awarenesses, neither addresses Rossi’s “self-awareness and consciously directed effort” (1972, p. 163) in non-lucid dreams. However, recent research supports Rossi’s contention that the dreaming self exhibits reflectiveness and higher-order cognitive capacities comparable to the waking state (Kahan, 2001; Kahan and LaBerge, 1996, 2011). Similar to Sparrow (1983) and Purcell (1987), Kahan and her associates have also developed an instrument to measure heretofore overlooked aspects of “analytical processes” in dreams (Kozmová and Wolman, 2006; Wolman & Kozmová, 2007), called the Metacognitive, Affective, Cognitive Experiences scale (MACE) (Kahan, 2012; Kahan & LaBerge, 1996; Kahan et al., 1997).

Clinical anecdotes attest to the likelihood that subjective factors independent of lucidity—such as values and intention—may be more important than lucidity *per se* in resolving conflict, fostering dialogue, and achieving integration. For example, a 23-year-old female counseling client achieved the ability to become lucid almost every night (Sparrow, Thurston, & Carlson, 2013), but whenever she did, she avoided whatever was transpiring in the dream, regardless of whether it threatened her or not. Her pattern of using lucidity to avoid dreamer-dream engagement corresponded with waking avoidant behaviors, which became a central issue in her psychotherapeutic work. In contrast, another client reported a dream in which he was running from an armed assailant. Upon becoming lucid, the dreamer turned around and searched for the man. When the dreamer found him, the man shot him several times. Undeterred, he walked up to the man, reached up and touched his face. The would-be murderer looked shocked, and then reached up and touched the dreamer’s face. These contrasting dream outcomes indicate that lucidity is a cognitive state which can produce disparate outcomes depending on one’s intention.

There have been successful efforts influenced by Rossi’s work that have assessed the impact of lucid dream induction by measuring the presence of continuous non-lucid dream ego attributes alongside the traditional categorical designation of lucidity/non-lucidity. Sparrow (1983) tested a lucid dream induction strategy called “dream reliving” against an active control condition (i.e. a pre-sleep motivational essay) and a delayed-treatment control group. Using Rossi (1972) for his theoretical rationale, Sparrow developed the Dreamer Development Scale (DDS) to assess four aspects of personality development derived from Rossi’s work—reflectiveness, interactive behavior, role change, and constructive action. He found that dream reliving was not only effective in increasing lucidity, but that the DDS subscales of reflectiveness and constructive engagement were significantly enhanced over the active placebo and no treatment conditions. Similarly, Purcell and her colleagues (Purcell, Mullington, Moffitt, Hoffmann & Pigeau, 1986; Purcell, 1987; Purcell, Moffitt & Hoffman, 1993) conducted studies of inducing self-reflectiveness (including lucidity) in dreams. To assess the outcome measures, she developed the Dream Awareness Scale based on Rossi (1972). The researchers found that self-reflectiveness could be enhanced through a process of daily lucidity training. Sparrow’s and Purcell’s studies indicate that efforts to induce lucidity exert a more generalized impact on dream ego awareness regardless of whether lucidity itself is achieved.

Dream reliving was tested again (Sparrow et al., 2013) in conjunction with middle-of-the-night meditation in a study that again assessed the same four DDS subscales of “dreamer development” (Rossi, 1972), alongside lucidity measures. The combined treatment exhibited a similar effect of increasing levels of reflectiveness and constructive behavior, as well as lucidity.

2. The state of the art of lucid dream induction

Researchers have developed and tested a variety of induction strategies. Some methods involve daytime or pre-sleep cognitive rehearsal strategies intended to carry over into the dream state. These methods include the development of the “critical faculty” in the dream state (Fox, 1939), conducting “reality checks” during the day (Tholey, 1980, 1983) in hopes that the same critical awareness

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