

Dream reliving and meditation as a way to enhance reflectiveness and constructive engagement in dreams

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Summary. Lucid dreaming has been defined as the experience of becoming aware that one is dreaming during a dream, as evidenced by the statement, “I am dreaming,” or “This is a dream” in the context of the dream report. This categorical treatment stands in contrast to observations and empirical findings that reflectiveness, volition, and other aspects of waking mentation are present in lucid and non-lucid dreams alike, and may have distinct functions in accelerating psychological integration, dream ego responsiveness, and personality development within the dream state. This study tested the impact of middle-of-the-night meditation and dream reliving on lucidity, as well as non-lucid levels of dreamer development—Reflectiveness and Constructive Engagement—as described originally by Rossi (1972). Using one instrument designed to measure levels of Reflectiveness and Constructive engagement, and another instrument designed to measure levels pre-lucidity and lucidity, we investigated whether this middle-of-the night tandem treatment would result in significant increases in post-treatment measures. Despite several validity problems, some significant results were found. We discuss the implications for using this tandem intervention for promoting positive outcomes in dreaming, as well as for the specific attenuation of distressing dreams.

Keywords: Lucid dreaming, Dream reflectiveness, Induction methods, Meditation, Dream reliving

1. Introduction

Prior to 1968, there was virtually no mention of lucid dreaming in the literature (Brown, 1936; Van Eeden, 1913). The mention of Van Eeden’s work in Green (1968) and Tart (1969) helped to awaken interest in the phenomenon. Laboratory dissertation studies (Hearne, 1978; LaBerge, 1980) helped to legitimize lucid dreaming as a true REM-sleep phenomenon, and anecdotal accounts (Kelzer, 1987; LaBerge, 1985; LaBerge and Rheingold, 1990; Sparrow, 1976) galvanized popular interest in inducing lucidity. Subsequent efforts to induce lucid dreaming have included a variety of cognitive strategies including developing the “critical faculty” (Fox, 1976); a form of presleep suggestion termed the mnemonic induction of lucid dreams (MILD) (LaBerge, 1985; LaBerge & Rheingold, 1990); hypnosis (Dane and Van de Castle, 1980); conducting “reality checks” during the day in hopes that this critical faculty will carry over into the dream (Tholey, 1983); dream reliving (Sparrow, 1983); middle-of-the-night meditation (Sparrow, 1974; 1976) and immersing oneself in a variety of proven methods (Hurd, 2012).

Lucid dreaming was described by Van Eeden in his study of his personal dreams (1913) as a dream in which there is “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.” Since then, it has since been consistently described as becoming aware that one is dreaming during a dream, as evidenced by the statement, “I am dreaming,” or “This is a dream,” in the context of the dream narrative (Green, 1968). This all-or-nothing designation treats lucidity as a unitary and categorical achievement rather than a multidimensional and fluctuating state. Departing somewhat from the either-or distinction, Green employed the term “pre-lucid” to describe a range of dream phenomena (i.e. flying in dreams) and thought processes that often precede full lucidity (i.e. asking the question, “Am I dreaming?”). Some researchers have broadened the singular concept of lucidity to include awarenesses that fall on a continuum. 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,” he does not go further in delineating the dimensions of non-lucid self-reflective awareness. Similarly, Barrett (1992) breaks lucidity into four “corollary” awarenesses of in order to ascertain how lucid a dreamer had been, but does not delineate a range of awareness in non-lucid dreams. While Moss and Barrett contribute to breaking down lucidity into component awarenesses, neither address the continuum of self-reflectiveness in the non-lucid dream.

So thus far, the focus on lucidity per se has overlooked the non-lucid dimensions of dream ego subjectivity that could exert impact on facilitating integration or trauma resolution (Hartman, 1998), facilitate personality development and the synthesis of new identity (Rossi, 1972), or enhancing dreamer responsiveness (Sparrow, 2013b; Sparrow &

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Thurston, 2010) and relational competency (Jordan, 1999). Lucidity is certainly important, but other dreamer factors are clearly as important, as well. For example, a counseling client achieved the ability to become lucid almost every night (Sparrow, 2013a), but whenever she did, she flew away from whatever was transpiring in the dream, regardless of whether it threatened her or not. Her avoidance of interpersonal stress became a therapeutic issue in her work, and lucidity ironically supported that flight. In contrast, a young woman who had suffered from distressing rape nightmares for two years finally became lucid. Instead of using lucidity to avoid the unpleasant encounter, she turned around and engaged the assailant by asking, "How can I help you?" The assailant collapsed into a pathetic, needy character, who asked for her help. Such diverse responses suggest that positive dream outcomes may depend more on the dream ego's willingness to engage the dream characters, than on the achievement of lucidity itself.

The focus on lucidity per se also stands in contrast to Rossi's observation 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" (1972, p. 163), and that reflectiveness and a willingness to engage the dream characters, and other aspects of dream ego "development" accelerate psychological development within the dream state. There have been successful efforts influenced by Rossi's work that endeavored (Purcell, 1987; Purcell, Moffitt, & Hoffmann, 1993; Sparrow, 1983) to induce and to measure reflectiveness and volition alongside the traditional designation of lucid dreams.

Specifically, Sparrow (1983) tested a novel lucid dream induction strategy called "Dream Reliving" (see description below) against a motivational essay method and a delayed-treatment control group. For the purposes of the study, he developed the Dreamer Development Scale (DDS) to assess four dimensions of dream ego development described by Rossi (1972)—reflectiveness, interaction, role change, and constructive engagement. He also developed the Dream Lucidity Scale (DLS) for measuring four dimensions of dream ego lucidity—non-lucidity, implicit pre-lucidity, pre-lucidity, and full lucidity (see below for description). 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, as well. Between the Dream Reliving method, and the less effective motivational essay intervention, 25 percent of the 144 participants in the study achieved a full lucid dream, while 42 percent achieved some "deviation from non-lucidity." Meanwhile, Purcell (1987)—who was apparently unaware of Sparrow's earlier work—conducted a study of inducing self-reflectiveness (including lucidity) and intentional behavior, and developed an original instrument—the Dream Control Scale—that was also based on Rossi. She found that all measures were enhanced through a process of daily lucidity training.

More recently, research (Kahan, 1994; Kahan & LaBerge, 1996, 2000, 2011; Kahan, LaBerge, Levitan, & Zimbardo, 1997; Kozmová & Wolman, 2006; Wolman & Kozmová, 2007) has confirmed that the dreaming self exhibits reflectiveness and higher-order cognitive capacities comparable to the waking state, albeit at lower levels (Kahan & LaBerge, 2011). Similar to Sparrow (1983) and Purcell (1987), Kahan and her associates have developed an instrument to measure heretofore overlooked aspects of "analytical pro-

cesses" (Wolman & Kozmová, 2007, p. 845) in dreams—the Metacognitive, Affective, Cognitive Experiences scale (MACE) (Kahan & LaBerge, 1996; Kahan et al., 1997).

Reflecting on why previous research has failed to acknowledge the presence of active thought processes in dreams, Kahan and LaBerge (2011) suggest that waking and dreaming experiences are "more similar with respect to their process features than with respect to their structural features," which traditionally have been emphasized by prevailing dream content analysis methods (Hall and Van de Castle, 1966). If the criterion for success in lucid dream induction studies is an all-or-nothing achievement of lucidity, then failure is a likely consequence for inexperienced dreamers, at least in the short term. However, if lucid dream induction promotes a measurable heightening of (non-lucid) dream ego reflectiveness and constructive engagement, and these qualities can be observed impacting dream narratives in positive ways, then research can reasonably shift to optimizing dream ego functioning, or dream "mastery" (Kahan, 2012) rather than merely promoting the achievement of lucidity per se. Further, if the objective is to enhance independent features of dream ego awareness and agency, then the use of multiple targeted induction strategies could prove more effective than global induction methods for which lucidity is the singular aim.

1.1. A Tandem Induction Approach

The two induction strategies that we selected for this study are "indirect" lucid dream induction methods. That is, they provide immediate constructive psychological benefits, regardless of whether the practitioner wishes to become lucid.

Dream Reliving. This method (Sparrow, 1983; 2007; 2009) was developed as a lucid dream induction strategy that builds upon distressing dreams. Since any repetitive dream scenario can serve as a cue for the dreamer to stop and question the experience (Sparrow, 1976), a repetitive nightmare arguably serves as an ideal "wake up call," given its shock value. Further, any increased awareness during a nightmare can be useful in helping the dream ego to immediately respond to it in new ways, and perhaps to experience some relief. Dream Reliving consists of 1) recalling a distressing dream, or at least a dream that could have been better if the dreamer had been aware that he or she was dreaming, and 2) reliving the dream in fantasy and practicing "lucid" responses to the distressing situation. Throughout the process, the dreamer is urged to focus on changing his or her responses to the distressing experience, and then to observe how the dream content changes as a consequence of these responses. This focus on dreamer responsiveness stands in contrast to Imagery Rehearsal Technique (Germain & Nielsen, 2003; Krakow, Hollifield, Schrader, Koss, Tandberg, & Lauriello, 2000), which focuses on directly altering dream content, or controlling the dream's outcome. This may seem like a subtle distinction, but from a therapeutic standpoint, altering the dream ego's responses has obvious beneficial parallels in the waking states, whereas direct content manipulation might encourage inflated assessments of one's capability to control the circumstances in one's life. Regardless of the differences, Dream Reliving, IRT and other trauma treatment methods are all based, to some extent, on exposure to the original traumatic incident(s).

In the initial testing of Dream Reliving (Sparrow, 1983), it showed promise in enhancing lucidity as well as dream

ego reflectiveness and constructive engagement. However, Dream Reliving is also designed to have here-and-now as well as future benefits. That is, it has the immediate goal of attenuating the waking anxiety associated with past distressing dreams by instilling a sense of agency in the face of threat; and it also serves as a rehearsal for becoming more aware and responsive—if not also lucid—in future distressing dreams. Subsequent to Sparrow's 1983 dissertation study, the application of Dream Reliving in clinical settings has produced useful results. For example, a man (Sparrow, 2013a) who dreamt of a huge leafless tree that was apparently dying was disturbed by this imagery upon awakening, believing that it reflected his pessimism about his loss of vitality as an ageing man. In response, he relived the dream in waking fantasy and looked more carefully at the tree to discern the signs of dormant life, and walked beneath its canopy giving thanks for its beauty. That night, he dreamt of a huge tree covered with large white blossoms, some of which were falling like snow to the ground. Another man, who experienced numerous plane crash dreams, relived one of the dreams and imagined himself relaxing as the plane encountered turbulence. As he felt trust in the pilot's abilities, he experienced relief as the plane landed safely. That night, he dreamt that trucks were clearing the debris off an airplane runway landing, preparing it for use. That same night, he dreamt that he was flying a plane that was diving toward the ground. He was relieved to find that he was able to pull it out of the dive and experience an exhilarating sense of freedom.

Given the research and clinical support (Sparrow, 1983; 2007; 2009) for Dream Reliving, we believed it would serve an appropriate intervention for this study, considering that one of our goals is to design a treatment for distressing dreams. As stated, Dream Reliving is similar to Imagery Rehearsal Technique (Germain & Nielsen, 2003; Krakow, et. al, 2000), except that the emphasis in Dream Reliving is on principally changing the dream ego's responses to the dream scenarios, rather than focusing on creating a new, more satisfactory ending.

Middle-of-the-Night Meditation. Sparrow (1976; 2007; 2009) reported that middle-of-the-night meditation can be an effective lucid dream induction method, even if it is not pursued for that reason. While one dated study disputes the claim that meditation affects dream content (Ross, 1972), another equally dated study of advanced meditators revealed enhanced vividness and archetypal depth in their dreams (Faber, Saayman, & Touyz, 1971). In addition, Goleman and Goleman (2002) cite the dual benefits of meditation as being 1) an activation of the pre-frontal cortex and 2) a concurrent attenuation of the amygdala's reactivity. By positioning meditation just prior to REM sleep, we hypothesized that this combined effect would carry over into the dream state as heightened reflectiveness and non-reactive witnessing.

The rationale behind selecting Dream Reliving and meditation relates to the ultimate goals of this pilot study, which were 1) to test an approach to elevating dream ego reflectiveness and constructive engagement, which might facilitate integration (Hartman, 1998), personality development (Rossi, 1971), and/or dream ego responsiveness (Sparrow, 2013b; Sparrow & Thurston, 2010) and relational competency (Jordan 1999), and 2) to formulate a treatment regimen for distressing dreams. With these goals in mind, we believed that there was sufficient empirical, clinical, anecdotal

findings to use Dream Reliving and middle-of-the-night meditation as a tandem induction strategy that might enhance dream ego awareness and constructive engagement.

1.2. The Pace of Integration

Hartman's (1998) theory of dream function holds that dreaming facilitates the integration of new experiences. He uses the nightmare as the centerpiece of his theory, arguing that the dreaming mind weaves the raw emotion of the nightmare into an associative network of successfully integrated, related experiences through the agency of contextualizing metaphors. However, he does not explain what accounts for the *pace* of integration. Clearly, some people process trauma rather quickly, while others may continue to suffer intractable PTSD symptoms. We know that measurable reflectiveness and other metacognitive capacities occur during ordinary dreaming (Kahan & LaBerge, 1996), and that such qualities can be enhanced through cognitive methods (Purcell, 1987; Purcell, Moffitt, & Hoffmann, 1993; Sparrow, 1983). Given Rossi's argument that reflectiveness and self-directed effort accelerates the processes of integration and personality development, it makes sense that these qualities could serve as "accelerants" to the integrative process of dreaming in general, and to the resolution of chronic nightmares in particular.

As for the more specific secondary objective of developing a treatment for resolving trauma-induced nightmares, we know that the conscious response to trauma is bidirectional (Punamaki, 2007). That is, the conscious self actively suppresses memories of the precipitating incident while the dream mechanism continues to produce dreams that depict the emotion, if not the iconic properties of the original traumatic experience. Given this bidirectional response, it is reasonable to assume that any comprehensive cognitive treatment for PTSD should function to 1) mitigate the subject's reflexive desire to suppress painful memories by creating a sense of nonreactive witnessing or constructive disengagement, as well as 2) enhance the subject's willingness to recall, re-engage, and re-process the original dream through constructive re-engagement.

In regard to the goal of constructive disengagement, as already stated, meditation heightens self-awareness and executive functioning while suppressing the reactivity of the amygdala (Goleman & Goleman, 2002). The constructive disengagement of meditation might serve as a way to increase distance from the emotion of the precipitating trauma without completely dissociating from the recollection.

In regard to the goal of constructive re-engagement, the literature also supports the idea that a variety of cognitive reprocessing strategies including Imagery Rehearsal Technique (Germain & Nielsen, 2003; Krakow, et. al, 2000) and eye movement desensitization reprocessing (Raboni, Tufik, & Suchecki, 2006) attenuates the frequency of PTSD-related nightmares. There is also some case study evidence suggesting that lucid dream induction can attenuate the symptoms of PTSD-related distressing dreams (Spoormaker, van den Bout, & Meijer, 2003). Thus we hypothesized that by combining the disengaging effects of meditation with the recollection and reprocessing benefits of Dream Reliving—and positioning these ostensible lucid dream exercises in the middle of the night just prior to the most active dreaming period—the combined effects would carry over into the dream state as heightened reflectiveness and constructive engagement.

In summary, the purpose of this study was to test whether a tandem middle-of-the-night lucid dream induction strategy—comprised of middle-of-the-night meditation and Dream Reliving (Sparrow, 1983; 2007; 2009)—would enhance the reflectiveness and constructive engagement in post-treatment dreams, as measured by an instrument (Sparrow, 1983) designed to assess the presence of these qualities. Evaluating this tandem intervention comprised a first step toward developing an approach to the treatment of distressing dreams.

2. Method

2.1. Participants

Sixty-nine participants for this study were recruited from an article about meditation and dreams that was published in *Venture Inward Magazine*—the membership magazine (circulation about 30,000) of the Association for Research and Enlightenment. The article was entitled “A Peace You Have Never Known: The Blessings of Middle-of-the-Night Meditation” (Sparrow, 2010). The article gave an overview of ideas about developing reflective awareness in dreaming—including lucid dreaming but expanding the sense of reflectivity to include types of non-lucid dreaming as well. The article concluded with an invitation for readers to participate in a four-week online learning experience about meditation and dreaming. It was designed as a four-module course of study for which interested people would pay \$120 for the program, and which would contain the option of having one’s experiences included in a research data pool.

The participants consisted of 59 women and 10 men. Over half of the group were meditators. Twenty-three or 39% or reported meditating daily, 4 or 7% meditated several times a week, eight or 13% meditated at least once a week, and 24 or 41% meditated rarely or never. While no attempt was made to ascertain the specific method used by each person, it was assumed that the group—as members of the Association for Research and Enlightenment—had been thoroughly exposed to a methodology espoused by ARE that can be described as a Christian-oriented, mantric type of meditation that uses short prayers or affirmations to focus the mind on ideals in order to create a mental state congruent with the meaning of the affirmation, as well as to avoid mental distractions (Puryear & Thurston, 1974).

As for dream recall, nine or 15% reported recalling a dream every night prior to the study, 28 or 48% recalled dreams several times a week, 13 or 22% recalled at least one dream per week, and nine or 15% recalled a dream rarely or never prior to the study.

2.2. Procedures

Sixty-nine people enrolled in the online learning course, and all of them indicated a willingness to have their data used for research purposes. The subject consent form gave them the option of withdrawing from the research aspect of the program at any point during the four weeks. The enrollment form asked some basic, background questions including previous experience with meditation and typical frequency of dream recall. Of the 69 enrollees, 44 submitted dreams for analysis. None of the participants declared an intention to withdraw from participation in the project after the project had begun, but they were given the option of participating without submitting dreams.

Once participants enrolled online and completed the Informed Consent Form, they were directed to a password-protected website from which study materials could be downloaded, and where they could interact with each other and with the researchers for the duration of the four-week study. As often as they wished, participants could make optional postings to a threaded discussion forum that was monitored and supervised by the researchers. Participants were encouraged to share their dreams with other participants via this restricted-access web forum. In addition to this public exchange, there was a separate and confidential track of information sharing for research purposes. This included a daily log questionnaire that asked several questions about the participants’ experiences during the previous 24 hours, plus the collection of any dream reports from the previous night.

The orientation week (hereafter referred to as “Week 1”) of the project involved an online learning module on the topic of “Re-Committing to the Fundamentals of Meditation and Dream Recall,” which gave basic instruction about meditation methods, provided a set of simple exercises that might enhance dream recall, and introduced the concept of Dream Reliving (a practice that they would be asked to implement in Week 2 through Week 4 of the data collection period). They were also asked to try to remember and record one or more dreams nightly during the orientation week, in order to prepare them for the recording procedures that would be used during the following three weeks of the study. They were explicitly asked not to get up during the night and practice meditation or dream reliving.

Weeks 2-4 of the study included additional instruction about meditation and dream reliving—intending to further encourage and inspire participants in regard to the value of these practices. For each of these weeks, the following instructions were included:

For as many nights as possible during this week, we want you to get up during the night – probably between 3:00 a.m. and 5:00 a.m. – and complete four steps.

- *Have a meditation period – short or lengthy; and then,*
- *Practice in your mind the “Dream Reliving” exercise. You can choose different dreams on different nights, or you can keep practicing with the same dream (and perhaps get somewhat different results from night to night).*
- *Go back to sleep.*
- *When you wake up in the morning, make a record of any dreams that you had, noting whether they happened before or after the middle-of-the-night meditation.*

Participants were asked to use the Daily Log online form that had been part of the orientation week to record dreams that occurred before and after the tandem treatment periods.

2.3. Instrument One: Dreamer Development Scale

At the conclusion of the study, three research associates—a graduate student from George Mason University, and two graduate students from the University of Texas-Pan American—were trained in the use of the Dream Development Scale (Sparrow, 1983) based on Rossi (1972), which assesses 1) dream ego reflectiveness, 2) interactivity, 3) role

or status change, and 3) constructive engagement. We decided to evaluate only Reflectiveness and Constructive Engagement, since Reflectiveness is what we expected theoretically of middle-of-the-night mediation, and heightened constructive engagement was what we expected theoretically from Dream Reliving. The subscales were defined as follows.

Subscale One: Reflectiveness. The judges were instructed to consider this rubric in evaluating dreams on this dimension:

This dreamer quality can be defined as the extent to which the dreamer questions, ponders, and/or thinks critically about the situations and characters he or she encounters in the dream. Words like “realize,” “aware,” “thought about”..., etc. should clue you to the presence of reflectiveness. Resistance to the flow of things can also be seen as a sign of reflectiveness; for example, the dreamer may find himself or herself in a classroom taking an exam, and start wondering whether he or she is actually enrolled in the course.

Subscale Four: Constructive Engagement. The judges were instructed to consider this rubric in evaluating dreams on this dimension:

This dreamer quality can be defined as the extent to which the dreamer engages in constructive behaviors characterized by confidence, competence, or boldness. For example, a dreamer may decide to go swimming despite his or her previous fear of water. Or, he may pray or meditate, build something, repair the car, kiss a (willing) partner, confront an assailant, or any number of basically constructive activities. Note that speaking is a behavior, and that the dreamer has to be doing something, not just thinking about doing.

One of the researcher-rated sample dreams that were used for training is as follows:

I’m with an older man. We’re fishing together for redfish. I catch a nice one, and decide to release it. I have a good feeling about this, and I realize that I rarely release my catches. However, the older man seems annoyed. He says that I could have asked him if he wanted to keep the fish before letting it go. I say to him that since I caught it, it was my decision and I really wanted this fish to go free. He is still upset.

<i>Reflectiveness score</i>	4
<i>Interaction score</i>	4
<i>Role change score</i>	2
<i>Constructive engagement score</i>	3

The judges were trained and then instructed to rate each narrative on each subscale based on the highest incidence anywhere within the account of that particular quality. For example, an otherwise non-reflective dream that had a single fleeting moment of intense self-reflectiveness would be rated highly.

There was considerable variance in length among the dream narratives, and for some nights, there might have been two or more dreams reported. However, no matter how long or short the dreams—or even how many there many have been for that night for a given condition—the narrative data for the entire condition was combined and rated as a single narrative by the judges.

2.4. Instrument Two: Dream Lucidity Scale

The Dream Lucidity Scale (DLS) was developed (Sparrow, 1983) to extend the range of dream ego awareness considered relevant to the emergence of lucidity. Green (1968) used two categories—pre-lucid and lucid—to designate the relevant dreamer subjectivity that constitutes the precursors and emergence, respectively, of lucidity. The DLS breaks down “pre-lucid” into “implicit pre-lucidity,” and “pre-lucidity” and operationalizes the requirements for these designations. The DLS includes the following four dimensions:

0–Non-lucid dream: The dream ego never questions the reality of the dream, nor makes statements that imply he or she is aware that the experience is a dream.

1–Implicit pre-lucid dream: The dream ego may be startled by some incongruity, engage in impossible feats such as flying, encounter deceased persons, refer to dreaming or previous dreams, or realize that he or she has had the dream before. But the crucial question, “Is this a dream?” is never considered.

2–Pre-lucid dream: The dream ego actually asks, “Is this a dream?” or wonders about but never concludes that it is a dream.

3–Lucid dream: The dream ego actually concludes that it is a dream by saying, “This is a dream,” “I am dreaming,” or “I am lucid.”

Two independent judges who were blind to the study’s hypotheses were trained in the use of the DLS, and rated all of the dreams submitted in the study.

3. Results

Six hundred sixty-two dreams were submitted, according to the following breakdown: 113 for WK1, 67 for WK2pre, 138 for WK2post, 55 for WK3pre, 117 for WK3post, 54 for WK4pre, and 118 for WK4post.

3.1. Dream Development Scale Reliability

The judges remained blind to the hypotheses. Further, the conditions were color coded in order to avoid communicating any assumptions that could inform them of assumptions. Inter-rater reliability coefficients were computed for all subscales (see Table 1) These measures were lower in this study than they were in an earlier study (Sparrow, 1983), in which the reliability coefficients among observers were approximately .90 for each of the subscales of the DDS. This discrepancy could be due, in part, to the fact that the dreams for a given night in this study were combined for the purposes of creating a single score for the night, resulting in a more lengthy narrative for the judges to evaluate. Consequently, a fleeting moment of high reflectiveness would have been overlooked more readily than if it had occurred in the context of a brief dream narrative. Also, the judges in the 1983 study were not only in the same geographical area, but they were retrained after an initial trial indicated that the reliability coefficients were too low. The current study’s judges, in contrast, were not trained with a set of sample dreams and evaluated prior to commencing actual data.

The Pearson coefficients among observers were, as a rule, higher for WK1 and for each of the post-treatment conditions than for the entire data set (shown in Table 1). In retrospect, the decision to position the treatment in the

Table 1. Inter-rater reliability coefficients for *Reflectiveness Subscale* and *Constructive Engagement Subscale*.

Subscale		Judge B	Judge C
Reflectiveness Subscale	Judge A	.629	.635
	Judge B		.551
Constructive Engagement Subscale	Judge A	.500	.412
	Judge B		.434

middle of the night resulted in low and fragmentary recall for the pre-treatment periods, perhaps making it more difficult to rate the dreams on the DDS and accounting for the lower inter-rater reliability coefficients for the pre-awakening conditions.

3.2. Dream Lucidity Scale Reliability

Two judges, who were blind to the study's hypotheses, were trained independently in the application of the DLS. However, assigning a full lucid rating to a dream narrative was not as simple as it initially appeared to the researchers. For example, two types of statements created problems for the observers. In the first case, statements such as "I realized I was in control of the dream" did not, upon careful evaluation, satisfy the criteria of a full lucid dream. In this instance, it was agreed that referring to one's control of the dream does not signify that the dreamer is necessarily aware that he or she is dreaming. In the second case, the statement, "I realized was out of my body" fails to satisfy the criteria of lucidity as we originally defined it. But since Green (1968) asserts that an out-of-body experiences is "philosophically indistinguishable" from the lucid dream, and Sparrow (1976) argues that the out-of-body experience and the lucid dream are designations derived from the percipient's paradigm, and are not a separate state of consciousness, we modified the DLS to include "dreams" in which the dream ego concluded that he or she was out of the body. But we decided not to include experiences in which the dream ego reported separating from the *dream body*, and was able to view the dream body from an external perspective. These refinements proved necessary to arrive at consensus among the observers. Once the scale was refined through dialogue with both judges, the judges came into complete alignment in assigning ratings of full lucidity.

There were no ratings of "2" given by either judge, so the separate designation of "pre-lucid" (i.e. the experience of questioning the reality of the dream without concluded that it was a dream) had no utility in this study. However, numerous dreams received the rating of "1" for "implicit pre-lucidity." This rating is based on aspects of dream phenomenology which often precede (Green, 1968; Sparrow, 1976) the arousal of the awareness of incongruity or the "critical faculty" (Fox, 1962), but do not in themselves evidence a questioning of the reality of the dream. In contrast to the perfect agreement between observers regarding full lucidity, the judges varied considerably in their assignment of the implicit pre-lucid ratings. In retrospect, the second judge—who assigned more "1s" than the first judge in all conditions had more opportunity during the training period to ask clarifying questions. In recognition that the dimensions of pre-lucidity need to be more fully operationalized in order to

increase the reliability between observers, we decided to report 1) the number of dreamers who achieved a rating of "3" (from both judges) in each condition, and 2) the number of dreamers who received a rating of "1" from Judge #2. (See Figure 3.) If the same participant received lucid and implicit pre-lucid ratings in a particular condition, the dreamer was included in the lucid group only.

3.3. Analyses

As stated, the participants were asked to engage in the meditation and dream reliving exercise during the awakening periods of weeks two, three, and four. Thus, by dividing weeks two through four into pre- and post-treatment periods, there were seven conditions in the model: Orientation Week (WK1); Week Two pre-awakening (WK2PRE), Week Two post-awakening (WK2POST), Week Three pre-awakening (WK3PRE), Week Three post-awakening (WK3POST), Week Four pre-awakening (WK4PRE), and Week Four post-awakening (WK4POST).

Given the low recall that one would expect during the pre-treatment (i.e. lower-REM) periods, three-fourths of the participants failed to report dreams in at least one of the seven conditions, with the preponderance of the missing data occurring during pre-treatment conditions. A repeated-measures analysis was, therefore, not feasible, given the number of cases that would have been omitted in the analysis. We opted instead to conduct dependent samples case t tests between each pair of conditions.

It should be noted that the orientation week data (WK1) was never intended to provide a true baseline, given that 1) the participants were cognizant of the overall purposes of the ostensible educational study, 2) there was no scheduled awakening during the night for WK1, and 3) the dreams were all collected upon awakening in the morning. Still, since we solicited dreams during the orientation week in order to acclimate the participants to the data collection procedures, we included WK1 dreams in the analyses.

If a participant reported *more* than one dream in a given condition, the average of the Reflectiveness and Constructive Engagement subscale scores for that condition were entered into the analyses. Single scores for each condition were arrived at by adding the three judges' average scores for each subscale. That is, if a participant submitted three dreams during the orientation week, judge #1's average Reflectiveness score for the three dreams was added with judge #2's and judge #3's averages. Dependent samples case t tests were then computed for each pair of conditions using these single totals.

Reflectiveness. The means for the seven conditions are shown in Figure 1. The orientation and post-treatment scores show an insignificant decrease from WK1 to WK-

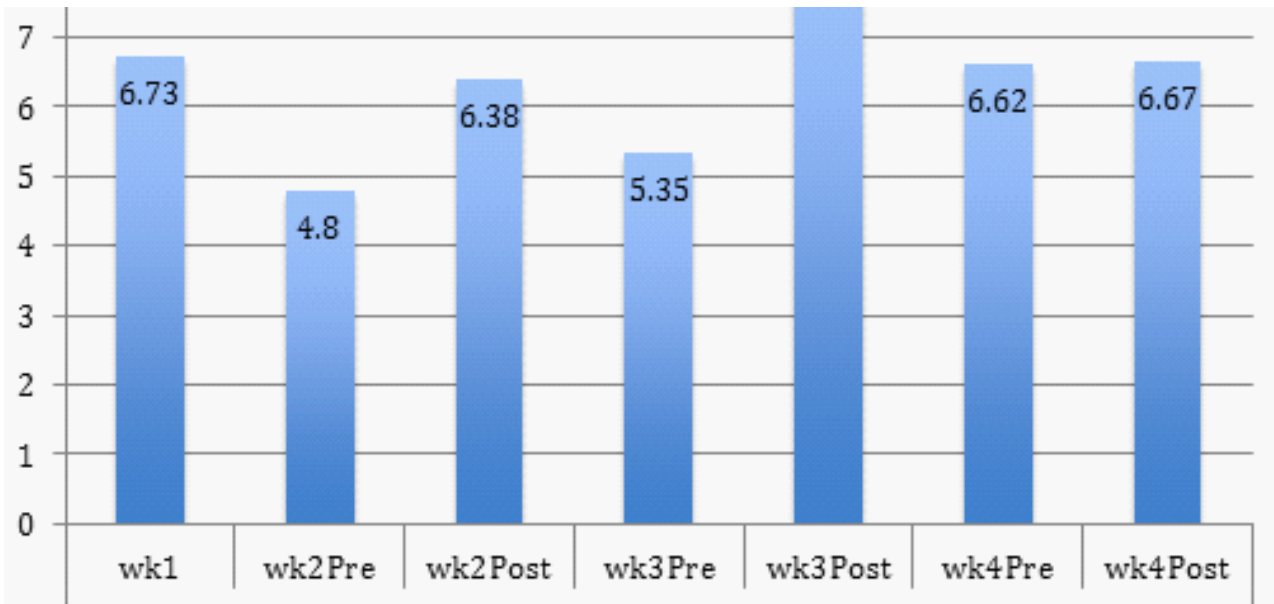


Figure 1. Mean values for Reflectiveness by condition.

2POST, and then a near-significant ($p=.094$) jump during WK3POST before falling off again during WK4POST. The absence of change between the orientation week and WK-2POST could be attributable to difficulty adjusting to the middle-of-the-night awakenings. The WK4POST fall-off from the WK3POST mean, in turn, be due to fatigue at the end of a month-long study.

All of the pre-treatment/post-treatment comparisons were significant except for the fourth week. However, these differences could be attributable to 1) an increase of REM sleep in the post-treatment sleep period, 2) the effect of “wake back to bed” or WBTB (Stumbrys, Erlacher, Schädlich, & Schredl, 2012), and finally to the treatment itself. However,

other contrasts point to the possibility of an unequivocal treatment effect.

Pre-treatment means show a steady increase through the three treatment weeks, to the point where the WK4PRE scores were no longer significantly different from WK1 or any of the post-treatment conditions. Again, this suggests that the treatment could have been having a cumulative carryover effect on dreams, regardless of whether they immediately followed a threatment period or not.

Constructive Engagement. The Constructive Engagement means for the seven conditions are shown in Figure 2, and reflect the same trends as the Reflectiveness means. Again, the WK2POST levels show almost no change from the ori-

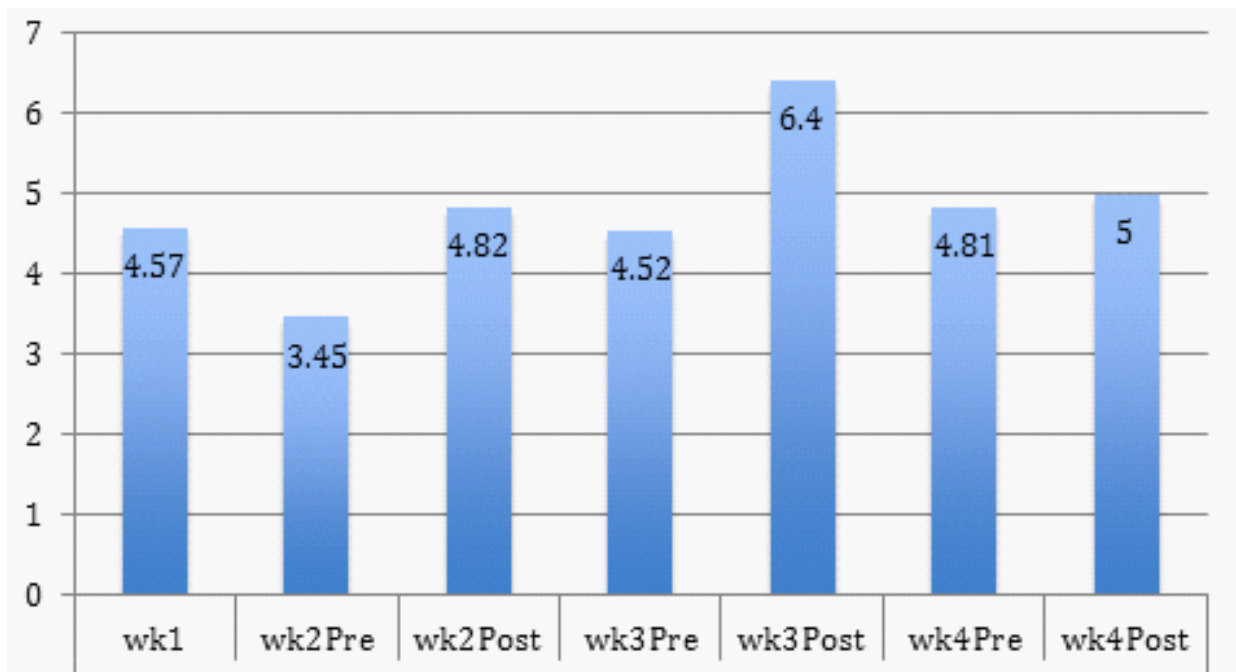


Figure 2. Mean values for Constructive Engagement by condition.

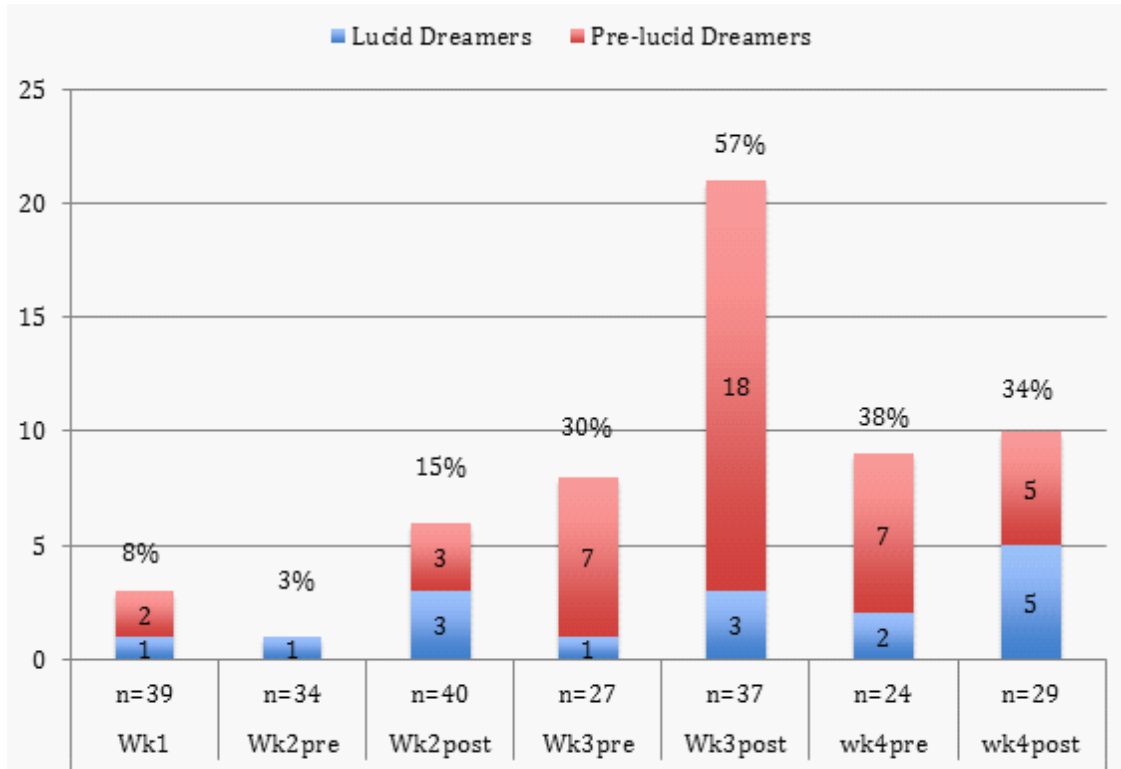


Figure 3. Dreams deviating from non-lucidity.

entation week. However, the WK3POST mean was significantly higher than WK1 ($p < .001$), WK2POST ($p < .01$), WK4POST ($p < .05$), and all of the pre-treatment means ($p < .01$).

Again, all of the pre-treatment/post-treatment comparisons were significant except for the fourth week. Further, the pre-treatment means again show a steady increase through weeks two through four. Interestingly—similar to the Reflectiveness scores—WK4PRE scores had increased sufficiently to no longer be significantly different than any of the post-treatment conditions except WK3POST, suggesting that the pre-treatment dreams were indicating a cumulative carryover effect from the MNM/DR efforts during previous nights.

One significant finding from the standpoint of supporting the efficacy of the tandem treatment was the significantly elevated Constructive Engagement post-treatment average (WK3POST) for the third week of the study. Despite the previously noted weaknesses inherent in the orientation week data, the significant difference between the WK3POST and the WK1 data can justifiably be attributed to the impact of the MNM/DR intervention. Middle-of-the-night awakening alone or WBTB has been cited as a possible lucid dream induction strategy by Stumbrys et al. (2012). While WBTB has only been tested in conjunction with the mnemonic induction of lucid dreams (cf. Levitan, 1990), a future study of MNM/DR will need to include 1) a no-treatment or delayed treatment condition with a middle-of-the night awakening, or 2) position the meditation and dream reliving exercise at bedtime to remove the confounding effects of an intentional middle-of-the-night awakening.

In order to subtract the effect of awakening alone from possible treatment effects, a future study will need to include 1) a no-treatment condition with a middle-of-the night awakening, or 2) position the meditation and dream reliving

exercise at bedtime to remove the confounding effects of an intentional middle-of-the-night awakening.

Similar to the Reflectiveness scores, the comparatively low post-awakening Constructive Engagement scores of the first experimental week (WK2POST) could have been due to the participants' difficulty in adjusting to the disruption of awakening in the middle of the night. As for the fall off in the WK4POST scores, participants could have been experiencing fatigue from an admittedly demanding regimen.

3.4. Dream Lucidity

The bars in Figure 3 shows the absolute totals of participants who submitted a lucid dream or an implicit pre-lucid dream in each condition. Thus, the totals reflect the number of participants who deviated from non-lucidity by condition. However, since the number of participants who submitted dreams in each condition varied, we have also reported in Figure 3 the percentage of subjects who deviated from non-lucidity.

Given that the participants knew of the study's general purposes, it is interesting that only one subject submitted a lucid dream during the orientation week (WK1). While on the surface this might suggest that there were no discernible performance effects during WK1, it is also possible that the subjects assumed that we did not want them to become lucid during the orientation week. After all, we did specifically request that we did not want them to engage in middle-of-the-night meditation or Dream Reliving. During the first pre-treatment condition (WK1)—before a “carryover effect” from the treatment (or performance effects) might have been discernible—no participant submitted a lucid dream. Only after the MNM/DR treatment commenced did the level of lucidity in pre-and post-treatment conditions begin to rise. It is

interesting that while levels of Reflectiveness, Constructive Engagement, and implicit pre-lucidity peaked in the WK-3POST condition, lucidity continued to rise, suggesting perhaps a less immediate response to the treatment.

Meditation Practice, Dream Recall and DDS Scores. Correlations were computed to assess any relationship between prior meditation practice, dream recall, and scores on Reflectiveness and Constructive Engagement. No significant relationships were found.

4. Discussion

This present study investigated the impact of middle-of-the-night meditation paired with a pre-sleep exercise known as Dream Reliving (Sparrow, 1983, 2007, 2009) on two measures of “dreamer development” as described originally by Rossi (1972)—Reflectiveness and Constructive engagement—as well as on dream lucidity and pre-lucidity per se. The results indicate that there was a significant increase in Constructive Engagement during the second (of three) weeks of treatment, as well a near-significant increase in Reflectiveness over baseline levels during the same period. It was also evident that the dreams preceding the middle-of-the-night treatment began to reflect steady increases in dependent measures to the point where the pre-treatment levels during the fourth week of the study (WK4PRE) was no longer significantly lower than any other condition, except the WK3POST levels.

The findings regarding lucidity and pre-lucidity per se reflected the same overall pattern, except for some delay in the rise of full lucidity. The percentage of dreamers achieving lucidity increased during the treatment weeks, and spilled over into the pre-treatment conditions once the MNM/DR intervention had commenced during the second week. The upward trend in lucid and pre-lucid dreams parallels the Reflectiveness and Constructive Engagement data, suggesting that the tandem exercise may have exerted a broad, pervasive effect on dream ego reflectiveness, constructive engagement, and lucidity per se—and to some extent, without regard to when it was positioned. When we designed the project, we assumed that the maximum impact of MNM/DR would be short-lived, and that may indeed be so; but given our results, meditation and dream reliving may enhance reflectiveness and constructive engagement over a longer period of time, which of course would argue for its usefulness as a treatment for PTSD-related distressing dreams. In view of this possible sustained effect, a future study might prove successful by positioning the meditation and dream reliving at bedtime, rather than in the middle of the night.

4.1. Limitations

The research model employed in this study contained validity threats that will need to be resolved in order to arrive at a more conclusive test of the tandem treatment that we employed. The sample was not only self-selected, but had read an article announcing the thrust of the study. Indeed, given the psycho-educational thrust of the study the participants were generally informed of the research objectives ahead of time, raising the question of demand effects. Participants were also encouraged to share via a web forum, which could have resulted in “socializing” effects on their dream reporting, even though the data collection was kept confidential unless subjects elected to share dreams or oth-

er private information. In addition, there were weaknesses in the baseline data that we collected. A true orientation week would have conveyed limited information to the participants concerning the study’s hypotheses. By limiting the participants’ prior knowledge of the study’s objectives, the baseline data would have been relatively free of possible performance effects. However, prior knowledge of the study’s general purposes arguably predisposed the participants to perform at a higher level during the orientation week, thus serving to minimize any treatment effects.

In a future study, the data collection weeks should ideally include, as well, a group who collects pre-awakening and post-awakening dreams without engaging in the tandem treatment. After all, one would expect scores to be higher in the post-treatment period, regardless of the impact of the tandem intervention (or awakening alone for that matter), simply because REM sleep increases during the latter portion of the sleep cycle. Second, as stated earlier, it is possible that middle-of-the-night awakening alone, referred to as WBTB (e.g. Stumbrys et al, 2012) may serve as an independent lucid dream stimulus without regard to any concurrent waking cognitive activity, such as meditation and/or dream reliving. Since Stumbrys, et. al point out that WBTB has only been tested in conjunction with MILD, one cannot say at this point whether WBTB exerts an independent effect. However, a between-groups comparison between WBTB control groups and MNM/DR treatment groups could help ascertain the impact of MNM/DR above and beyond the effect of awakening alone.

In spite of the present study’s limitations, some useful findings did result. Not only did the second week of data collection reveal a significant increase in Constructive Engagement scores and a near-significant increase in Reflectiveness scores, the increasing pre-treatment dream scores from week two through four suggests that the benefits of meditation and dream reliving may have been carrying over into the pre-treatment periods.

4.2. Directions for Future Research

This study represents a shift away from evaluating dreams only on the basis of “lucid” or “non-lucid.” While we considered the impact of the MNM/DR treatment on lucidity per se, we also assessed the presence of dream ego awareness and volition that may have a significant bearing on whether the dream ego facilitates some degree of healing or integration. Most treatments for trauma-related nightmares involve some form of re-engagement (i.e. exposure) and reprocessing of the original memory. Lucidity alone may assist in that regard, but it does not necessarily anoint the dream ego with a commensurate willingness to revisit painful memories that may be depicted by the dream imagery and scenarios. By pairing a constructive re-engagement strategy, such as Dream Reliving, with a constructive disengagement strategy such as middle-of-the-night meditation, such a tandem treatment approach may increase the likelihood that the dream ego will be predisposed to re-engage problematic memories depicted by the dream content with a complex cognitive state that is both detached and willing. This “paradoxical” cognitive state could form the basis for accelerating integration and healing through “remastering” prior trauma and other unintegrated psychic material. Further research that tests various induction strategies designed to enhance either dream ego awareness or constructive engagement, or both, may help to refine methods for accelerating the in-

tegrative processes in dreaming (Hartmann, 1998), and for alleviating the emotional distress associated with repetitive nightmares.

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