Lucid Dreams in Veterans With Posttraumatic Stress Disorder Include Nightmares

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Abstract

A previous study in military veterans with posttraumatic stress disorder (PTSD) and recurrent nightmares found a high prevalence of lucid dreaming (LD), the awareness while a dream continues that one is dreaming, and an "LD profile" characterized by frequent dream awareness and rare dream content control. Given the importance of the nightmare disturbance in PTSD, this study assessed with questionnaires the prevalence and characteristics of lucid nightmares, specifically, in a sample of 54 veterans with PTSD. Over half the sample endorsed experiencing LD, with nearly all of these individuals explicitly reporting lucidity in nightmares. The lucid nightmare profile was characterized by high awareness and low content control. Veterans reported feeling stuck and anxious, trying unsuccessfully to awaken from lucid nightmares. We conclude that lucid nightmares may occur commonly in veterans with PTSD, with a profile resembling that previously reported for LD experiences generally in this group.

Keywords

lucid dreaming; posttraumatic stress disorder; veterans; nightmares; sleep

The typical dream state is characterized by a loss of cognitive control and the absence of higher order consciousness and capacity to reflect on past memories, plan ahead, and act accordingly (Voss et al., 2009). The state of lucid dreaming (LD), in contrast, involves the awareness, while experiencing a dream, that one is dreaming. In contrast to non-LD, LD involves multiple cognitive processes including self-reflection, access to waking memories, third-person perspective, capacity for future planning, and ability to control dream content

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and purposefully awaken oneself (Voss et al., 2009, 2013). LD has been viewed as a possible avenue to treating dream disturbances in certain mental disorders, including posttraumatic stress disorder (PTSD; Macêdo et al., 2019).

In our previous study of LD in a sample of treatment-seeking veterans with PTSD and recurrent nightmares (Harb et al., 2016), 40% of the participants reported frequent lucid dreams (i.e., an LD experience once a month or more often). In this population, we identified an LD profile characterized by frequent dream awareness but rare dream content control. Lucid nightmares, as distinguished from all lucid dreams, were not specifically characterized. Because recurrent posttraumatic nightmares are a highly prevalent and distressing feature of PTSD (American Psychiatric Association, 2013), it is important to investigate lucidity in posttraumatic nightmares.

Forty-six percent ($n = 266$) of an online sample of lucid dreamers ($N = 574$) endorsed experiencing lucidity in nightmares; however, lucid nightmare reports were rare, comprising just 7% of all lucid dream reports, and only 1% of these lucid dreamers experienced lucid nightmares once a week or more often (Stumbrys, 2018). The prevalence of lucid nightmares in lucid dreamers with PTSD is not known. Such information would be essential to considering LD as a possible treatment for posttraumatic nightmares.

Stumbrys (2018) found that lucid nightmare reports most often featured fear, lack of content control, and inability to awaken oneself. On this basis, he proposed the following definition of lucidity in nightmares: nightmare awareness accompanied by strong, often terrifying, negative emotion; absent plot control; and inability to purposefully awaken (Stumbrys, 2018). Whether individuals with PTSD would describe lucid nightmares similarly has not been investigated; negative emotional tone, but not necessarily limited capacities for plot control and self-awakening, could be predicted.

Although lucid dreams are only a small fraction of all dreams, a higher frequency of LD has been related to general well-being, assertiveness, autonomy, and self-confidence (Blagrove et al., 2010; Doll et al., 2009; Soffer-Dudek et al., 2011). However, LD also has been associated with psychological distress (Aviram & Soffer-Dudek, 2018; McLaughlin et al., 2015), a discrepancy that may be due, in part, to the perceived level of control of dream content. Specifically, lucid awareness accompanied by a sense of uncertainty, absence of control, and negative affect has been associated with greater distress (Aviram & Soffer-Dudek, 2018). If posttraumatic lucid nightmares conform to Stumbrys' (2018) definition of a lucid nightmare (nightmare awareness, accompanied by negative emotion, absent plot control, and inability to purposefully awaken), they would be expected to evoke nightmare distress. A more comprehensive understanding of the constructs associated with post-traumatic lucid nightmares can be gathered with the Lucidity and Consciousness in Dreams Scale (LuCiD; Voss et al., 2013), which characterizes lucid dreams along several dimensions: insight, thought, control, dissociation, realism, memory, negative emotion, and positive emotion (Voss et al., 2013).

Two hypotheses were explored: (a) given the report of a high prevalence of dream awareness in Operation Enduring Freedom (OEF)/Operation Iraqi Freedom (OIF)/Operation New

Dawn (OND) veterans with current PTSD and recurrent nightmares (Harb et al., 2016), dream awareness in nightmares, specifically, as well as dreams, overall, would be high in this sample of PTSD-diagnosed veterans; and (b) given the finding of low content control in the lucid dreams, overall, of OEF/OIF/OND veterans with PTSD and recurrent nightmares (Harb et al., 2016), together with the report of absent content control in a recent study of lucid nightmares in a heterogeneous population (Stumbrys, 2018), content control in lucid nightmares would be reported rarely if at all in this group of PTSD-diagnosed veterans. In addition, we used the LuCiD (Voss et al., 2013) to conduct an exploratory characterization of LD experiences in veterans reporting posttraumatic lucid nightmares. Finally, we sought to identify any clinical correlates of LD in nightmare characteristics.

Material and Method

Participants

Participants were veterans currently receiving mental health treatment at the Corporal Michael J. Crescenz VA Medical Center (CMCVAMC), Philadelphia, PA. They were recruited from among veterans of any war era with a diagnosis of lifetime PTSD documented in their electronic medical record. An exclusionary criterion was evidence of active suicidal or homicidal ideation or psychotic symptoms in the medical record. Fifty-four veterans consented and participated.

The veterans (78% male) had served in the Army ($n = 29$, 54%), Air Force ($n = 8$, 15%), Marines ($n = 8$, 15%), Navy ($n = 7$, 13%), Coast Guard ($n = 1$, 2%), and the National Guard ($n = 1$, 2%). They were aged 24–60 years ($M = 42.6$, $SD = 10.7$), and they identified as African American ($n = 29$, 54%), Caucasian ($n = 19$, 35%), Asian ($n = 2$, 4%), and American Indian ($n = 2$, 4%); two individuals chose not to disclose. Eight veterans (15%) identified their ethnicity as Hispanic. Nineteen veterans (35%) had a high school or trade school education, 30 (56%) had completed some college or had a college degree, and four (7%) had some postgraduate education.

Procedure

Participants presented to the CMCVAMC and provided written informed consent in accordance with the approved procedures of the Institutional Review Board. Prior to completing a battery of self-report assessments, veterans were given a verbal, detailed description of nightmares (i.e., distressing or disturbing dreams that cause you to awaken) and lucid dreaming (i.e., awareness that you are dreaming as a dream is going on), and their understanding of these concepts was verified prior to and during their completion of the assessment. Additional mental health diagnoses and medication prescriptions were recorded from the electronic medical record.

Measures

Demographics and PTSD Symptoms—Participants were asked demographic questions regarding age, sex, race, education level, marital status, and military and employment history. The PTSD Checklist for *DSM–5* (PCL-5; Weathers et al., 2013) was used to assess total PTSD symptom severity in the past month. The 20 self-report items are

rated on a 5-point Likert scale (0 = *not at all* to 4 = *extremely*), with higher scores indicating greater total severity. The four PTSD symptom clusters also were calculated, by summing the scores for the items within a given cluster: intrusions (cluster B; Items 1–5), avoidance (cluster C; Items 6–7), alterations in cognitions and mood (cluster D; Items 8–14), and reactivity/arousal (cluster E; Items 15–20). The internal consistency for the present study was excellent (a = .93).

Nightmare Frequency and Characteristics—Nightmare frequency was assessed with the Nightmare Frequency Questionnaire (NFQ; Krakow et al., 2002) in two ways: number of nights with nightmares per unit time (e.g., per week, per month) and number of nightmares per unit time. In a sample of female sexual assault survivors, assessment of test-retest reliability yielded a correlation coefficient and a weighted kappa value greater than .85 (Krakow et al., 2002).

The Nightmare Distress Questionnaire (NDQ; Belicki, 1992) measured nightmare-related distress; for this study, two questions related to interest in therapy or professional help were removed, as previous reports have found that these two items contribute minimally to the content of the scale and reduce internal consistency (Böckermann et al., 2014; Martínez et al., 2005). The remaining 11 questions used a 5-point Likert scale (0 = *never* to 4 = *always*) and were summed to create a total nightmare distress score (0 to 44). Cronbach's a for this modified NDQ was .80.

To capture the subjective intensity of emotional experiences (images and other sensory details) in nightmares and the frequencies of characteristics of posttraumatic nightmares, two measures were developed for this study, the Nightmare Intensity Scale (NIS) and the Posttrauma Nightmares Questionnaire (PNQ), respectively. The NIS contains three items rated on a 0 (*not at all*) to 5 (*very strong*) scale: vividness of images (sharp, clear, detailed), vividness of other sensory detail (sound, smell, taste, bodily sensation), and intensity of emotion in nightmares. One additional item assesses the two strongest emotions, from a list of 11 (fear, helplessness, anxiety, guilt, shame, disgust, grief, despair, anger, horror, sadness), experienced in nightmares. The PNQ assesses the likelihood of nightmare content replaying the trauma narrative, the feeling of reliving the actual event during the nightmare, body movements during sleep, and dream enactment behavior. These items are rated on a 0 to 5 scale (0 = *never*, 1 = *rarely*, 2 = *sometimes*, 3 = *often*, 4 = *almost always*, 5 = *always*). As each item stands alone, no total score is created.

Lucid Dreaming Frequency and Characteristics—To assess the frequency of the three LD dimensions (subjective awareness of dreaming, degree of subjective control of dream content, and ability to wake oneself from a dream), the Lucid Dreaming subscale of the Iowa Sleep Experiences Survey (ISES; Watson, 2001) was used. The three items are rated on a 7-point Likert scale (1 = *never* to 7 = *several times a week*). An earlier categorization of LD dimension frequency was employed (Schredl & Erlacher, 2004): none, rare (< once a month), and frequent (monthly). This measure was administered first for reporting LD experiences in nonnightmare dreams. If a participant endorsed LD in nightmares, she/he was asked to complete the measure a second time, to report on LD experiences in nightmares.

Those individuals endorsing lucidity in nightmares also marked whether they experienced any of the following in their lucid nightmares: feeling anxious, feeling relieved by awareness of dreaming, feeling stuck, trying to change the nightmare story, changing parts of the nightmare story, trying to awaken from the nightmare, and successfully self-awakening. The LuCiD (Voss et al., 2013) was used to further characterize LD dimensions in the veterans reporting lucid nightmares. This instrument, with 28 items, rated on a 6-point scale (0 = *strongly disagree* to 5 = *strongly agree*), creates eight dimensions of lucidity: Insight (awareness that one is currently dreaming), Thought (logical thought), Realism (perceptual realism), Memory (access to elements of waking life), Dissociation (third person perspective), Control (control of the dream plot), and Negative and Positive Emotion. The mean score for a given factor is considered high when it lies above the scale mean (2.5). Participants were instructed to report on their "typical" LD experiences in dreams including nightmares. Only data from those endorsing LD in nightmares are included in this report. The internal consistency for the total scale was .84.

Data Analytic Plan

Descriptive and inferential statistics for all measures were computed using R, Version 3.5.3 (R Core Team, 2019). To assess demographic and clinical differences between groups on variables of interest (PTSD symptoms, nightmare frequency, and characteristics), *t* tests and chi-square tests were used.

Results

Sample Description

All 54 participants had a diagnosis of lifetime PTSD in their medical chart, with a current average PTSD Checklist for *DSM–5* (PCL-5) symptom severity score of 53 (*SD* = 15.5). All participants but one were engaged in current mental health outpatient treatment. Twenty-five veterans (46%) also had a current documented diagnosis of a depressive mood disorder, 15 (27%) a traumatic brain injury, and 13 (24%) a sleep disorder, including insomnia disorder, obstructive sleep apnea, sleep disorder not otherwise specified, and REM sleep behavior disorder. One participant had been diagnosed with narcolepsy. Fourteen veterans (26%) had received a sleep-focused psychotherapeutic intervention (e.g., cognitive behavioral therapy for insomnia) in the past, and eight (15%) were using positive airway pressure therapy for sleep-disordered breathing. Thirty-five participants (65%) were prescribed one or more psychotropic medications, with these most frequently: prazosin (*n* = 18), trazodone (*n* = 8), bupropion (*n* = 7), citalopram (*n* = 6), quetiapine (*n* = 6), sertraline (*n* = 5), escitalopram (*n* = 5), and clonazepam (*n* = 5).

Nightmare Frequency and Characteristics

The entire group of participants reported an average of 4.5 nightmares per week (*SD* = 4.1, range = 0–20) and an average of three nights with a nightmare per week (*SD* = 2.7, range = 0–7). Results from the NDQ indicate nightmare distress (*M* = 26.47, *SD* = 6.63, range 11–39) comparable with that of other trauma-exposed groups (Belleville et al., 2019). As shown in Table 1, results from the NIS indicate that images and other sensory experiences (i.e., sound, smell, taste, and bodily sensations) in nightmares were moderately to strongly

vivid and the emotional intensity of the nightmares was strong. The four emotions most commonly rated as strongest were helplessness ($n = 24$), fear ($n = 24$), anxiety ($n = 16$), and anger ($n = 16$). With the PNQ, participants described their nightmares as almost always replaying actual events ($M = 3.4$, $SD = 1.3$) and almost always associated with a feeling of reliving actual events ($M = 3.4$, $SD = 1.3$). They reported often moving their arms and legs during sleep ($M = 3.3$, $SD = 1.5$) and sometimes or often acting out their nightmares ($M = 2.9$, $SD = 1.4$), but rarely leaving their bed during a nightmare ($M = 1.2$, $SD = 1.4$).

Lucidity Experiences in Nonnightmare Dreams and Nightmares

Frequency of Lucid Awareness and Content Control—Over half of the sample ($n = 32$, 59%) endorsed experiencing lucid awareness in nonnightmare dreams. A majority of these individuals ($n = 27$; 84%) also explicitly endorsed lucid awareness in nightmares. Table 2 describes key dimensions of LD in nonnightmare dreams and in nightmares, as measured by the Lucid Dreaming subscale of the ISES, to characterize differences in LD experiences between these two types of dreams. Among individuals reporting lucid nonnightmare dreams, 65% reported frequent awareness in these dreams, but only 35% reported frequent content control. Among individuals with lucid nightmares, 70% reported frequent awareness in these nightmares, but only 26% reported frequent content control.

Lucidity Dimensions and Characteristics in Nightmares—In the sample reporting LD in nightmares ($n = 27$), the mean scores on the dimensions of the LuCiD were: Negative Emotion ($M = 3.48$, $SD = 1.45$), Thought ($M = 3.22$, $SD = 1.18$), Memory ($M = 2.99$, $SD = 1.10$), Realism ($M = 2.81$, $SD = 1.28$), Dissociation ($M = 2.64$, $SD = 1.25$), Insight ($M = 2.64$, $SD = 1.11$), Control ($M = 2.48$, $SD = 1.25$), and Positive Emotion ($M = 2.17$, $SD = 1.38$). All dimensions, except Control and Positive Emotion, were highly endorsed.

The most commonly endorsed reactions to lucid nightmare experiences were feeling stuck ($n = 19$, 70%), trying to wake up ($n = 18$, 67%), and feeling anxious ($n = 18$, 67%). Ten individuals (37%) reported trying to change a nightmare narrative, with only five (19%) having success. Similarly, 18 individuals (67%) reported trying to wake themselves from a nightmare, with only five (19%) having success. Only three individuals (11%) endorsed feeling relieved to know that they had been dreaming.

Clinical Correlates of LD in Nightmares—As shown in Table 1, there were no significant differences in nightmare frequency, nightmare-related distress, and nightmare intensity between participants reporting LD in nightmares and those denying LD experiences. Those denying LD experiences compared with those reporting LD in nightmares had greater PTSD symptom severity, driven by differences in intrusion and hyperarousal symptoms. No differences in overall medication use were observed between these reporting LD in nightmares (78%) and those without (64%), $\chi^2 = .28$, $p = .59$.

Discussion

Consistent with reports from Harb and colleagues (2016), we found that a majority of a sample of veterans with lifetime PTSD reported at least one lifetime LD experience. In contrast to a general sample of lucid dreamers (Stumbrys, 2018), nearly all these veterans

who endorsed LD reported at least one lifetime lucid nightmare. A majority of those with a history of lucid nightmares reported experiencing them frequently (monthly). These findings highlight the importance of further exploration of LD in PTSD-diagnosed populations including veterans.

The lucid nightmare profile we observed on the ISES, a combination of frequent conscious awareness of dreaming and relatively less frequent control of dream content and purposeful self-awakening from a dream, conformed to the operational definition of a lucid nightmare proposed by Stumbrys (2018). The profile also is consistent with the one identified previously in lucid dreams (not characterized as nightmare or nonnightmare) of a veteran population with PTSD and recurrent nightmares (Harb et al., 2016). Distinguishing LD in nightmares from LD in nonnightmares in the current study, we found similar LD profiles in the two.

The LuCiD Scale dimensions endorsed most often by our sample reporting lucid nightmares were, in addition to Negative Emotion, Thought and Memory, that is, thinking about the situation and actions and remembering aspects of waking life. The Positive Emotion and Control dimensions were the least endorsed. The low endorsement of Control corroborates the ISES measures and is consistent with the previous report, in veterans with PTSD, of a general LD profile characterized by high awareness and low control (Harb et al., 2016). These results also are consistent with the observation that LD can be associated with psychological distress (Aviram & Soffer-Dudek, 2018) and are in contrast to the finding that the leading LD dimensions in a sample of university students and participants in a lucid dream group were Positive Emotion and Control, as well as Insight and Thought (Voss et al., 2013). As previous research on LD has focused on dreams, categorically, earlier findings may not generalize to the experience of those reporting lucid nightmares explicitly.

Insight, the awareness that experiences in the dream are not real, has been viewed as the defining feature of lucidity (Voss et al., 2013), but it was not the most strongly endorsed construct by our group reporting LD in nightmares. This difference may relate to the replay quality of the nightmares reported by these veterans with PTSD and may indicate difficulty in distinguishing such nightmares from real-life experiences and generating the explicit thought that they are dreams. Future research should consider the relationship between nightmare content and lucidity in more detail. As a corollary, it is not surprising that content control was rarely endorsed by this group, as dream content control may only emerge in the presence of insight (Voss et al., 2013). Low control of lucid nightmare content may, in turn, contribute to associated negative emotion.

Despite the prevalence of Negative Emotion in the LuCiD Scale reports of the veterans reporting lucidity in nightmares, this group, compared with that reporting no LD, had no greater nightmare-related distress, as measured by the NDQ. One explanation is that the NDQ does not distinguish between distress related to lucid and nonlucid nightmares. Interestingly, our finding is consistent with a previous report of comparable distress associated with lucid and nonlucid nightmares in a general sample of lucid dreamers (Stumbrys, 2018). Future studies might incorporate the newly developed Frequency and Intensity Lucid Dreaming Questionnaire (FILD; Aviram & Soffer-Dudek, 2018) to further

delineate the relations between dimensions of LD (e.g., frequency, intensity, emotional valence), sleep problems, and other posttraumatic symptoms.

Given the evidence that a large proportion of veterans with PTSD report frequent lucid awareness in nightmares and that these experiences are often distressing, the frequency and dimensions of lucid nightmares may be important to assess prior to and during sleep- and nightmare-focused treatments in this population. The American Academy of Sleep Medicine (Morgenthaler et al., 2018) recently included lucid dreaming therapy (LDT), which teaches individuals to become lucid in their dreams, as a treatment option for reducing nightmare frequency in individuals with nightmare disorder, a nightmare disturbance that is not specifically trauma-related (American Psychiatric Association, 2013). In fact, in one study of LDT in individuals with posttraumatic or idiopathic nightmares, nightmare frequency was reduced; however, this change did not depend on achieving lucidity (Spoormaker & Van Den Bout, 2006).

We speculate that low insight and content control in the lucid nightmares of veterans with PTSD may be impediments to benefiting from LDT. Distinguishing real-life experiences from memories of the past and addressing perception of control frequently are incorporated into treatments for trauma-related nightmares (i.e., Imagery Rehearsal [IR; Krakow et al., 2001]; and Exposure, Relaxation, and Rescripting Therapy [ERRT; Davis, 2009]). These capacities may help patients to learn that remembering is different from reexperiencing and that confronting, rather than avoiding, trauma-related content can increase feelings of power and control (Harb et al., 2016; Miller et al., 2014). Successfully tailoring LDT to the treatment of posttraumatic nightmares in veterans and others with PTSD may depend on promoting insight into the distinction between real-life and memory and on honing a sense of mastery over nightmare content. Adjunctive IR and ERRT may need to be modified accordingly.

Several limitations of the current study should be noted. Although the finding of a high prevalence of LD in veterans with PTSD replicated that from Harb et al. (2016), the sample size was small, limiting statistical power. The types of trauma exposure and the time elapsed posttrauma were not recorded, and it is unknown how these factors may influence the frequency or characteristics of LD experiences in posttraumatic nightmares. Similarly, we are unable to comment on any contribution of comorbidities, past or current mental health treatments, and medication categories to these findings.

We used the LuCiD (Voss et al., 2013), which does not distinguish non-nightmare dreams from nightmares across the LD constructs, preventing a comparison of the LuCID constructs between the two. It would be important, in future studies of lucid nightmares, to use the LuCiD to inquire about nightmares alone among other dream experiences.

Finally, with self-report measures, we cannot be certain whether lucid awareness was captured reliably. Baird et al. (2019) suggest that, when including objective sleep measurement and eye-signaling tasks in assessing LD is not practical, it can be helpful to collect dream reports with details of how the dreamer became lucid in the dream.

Conclusions

To our knowledge, this is the first study to characterize lucid nightmares in individuals with PTSD. Half of a sample of veterans with PTSD reported at least one lifetime lucid nightmare experience, with a majority of these individuals experiencing lucidity regularly in their nightmares. Lucid nightmares were most often characterized as a negative experience, with anxiety and feelings of being stuck. Few participants reported success in purposefully changing the content of, or in awakening from, lucid nightmares. Also, few reported awareness that dream experiences were not real. Incorporating the study of LD in sleep research in PTSD could help to understand the mechanisms underlying posttraumatic nightmares and improve treatment options.

Acknowledgments

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Table 1

Characteristics of the Total Sample and by LD Experience

Variable	Total sample, *N* = 54 *M (SD)* or *n* (%)	Denied *all* LD experiences, *n* = 22 *M (SD)* or *n* (%)	Reported LD in nightmares, *n* = 27 *M (SD)* or *n* (%)	*t*
PCL-5 PTSD severity	52.78 (15.46)	59.05 (9.61)	49.44 (18.48)	2.33*
Cluster B: Intrusion	13.24 (4.57)	15.05 (3.39)	12.37 (5.10)	2.20*
Cluster C: Avoidance	5.83 (2.09)	6.32 (1.59)	5.41 (2.37)	1.60
Cluster D: Alterations in Cognitions and Mood	17.26 (6.33)	18.95 (4.67)	16.37 (7.54)	1.47
Cluster E: Arousal/Reactivity	16.44 (5.08)	18.73 (2.8)	15.30 (5.97)	2.65*
NFQ Nightmare frequency (*per week*)	4.46 (4.18)	4.55 (2.94)	4.89 (5.10)	–0.29
NFQ Nights with nightmares (*per week*)	3.04 (2.16)	3.41 (2.26)	3.07 (2.06)	0.54
NIS Nightmare intensity Vividness of images	4.11 (1.16)	4.00 (1.31)	4.37 (1.01)	–1.09
Vividness of other senses	3.80 (1.38)	3.59 (1.50)	3.96 (1.37)	–0.90
Intensity of emotions	4.44 (0.77)	4.50 (0.67)	4.37 (0.88)	0.58
Strongest emotions	Fear (*n* = 24, 44%); Helpless (*n* = 24, 44%); Anxiety (*n* = 16; 30%); Anger (*n* = 16; 30%)	Fear (*n* = 12, 55%); Anger (*n* = 9, 41%); Anxiety (*n* = 7, 32%); Helpless (*n* = 6, 27%)	Helpless (*n* = 15, 56%); Fear (*n* = 11, 41%); Anxiety (*n* = 7, 26%); Anger (*n* = 5, 19%)	
NDQ Nightmare distress PNQ	26.48 (6.63)	26.68 (6.51)	28.00 (5.64)	–0.75
Replay of actual events	3.43 (1.33)	3.77 (1.07)	3.37 (1.33)	1.17
Reliving actual events	3.41 (1.31)	3.5 (1.10)	3.52 (1.37)	–0.05
Arms and legs move	3.26 (1.47)	3.59 (1.01)	3.26 (1.70)	0.85
"Act out" nightmares	2.91 (1.43)	3.00 (1.27)	3.15 (1.49)	–0.38
Leave bed	1.24 (1.39)	1.36 (1.47)	1.33 (1.39)	0.07

Note. *N*s for scores vary due to missing data on some scales; means were calculated based on all available data. The nightmare frequency, intensity, and distress measures pertain to all nightmares, lucid and nonlucid. LD = lucid dreaming; PCL-5 = PTSD Checklist for *DSM–5*; NFQ = Nightmare Frequency Questionnaire; NIS = Nightmare Intensity Scale; NDQ = Nightmare Distress Questionnaire; PNQ = Posttrauma Nightmares Questionnaire; PTSD = posttraumatic stress disorder; *DSM–5 = Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition.*

*
p < .05.

Table 2

Frequency of LD Dimensions (Dream Awareness, Control and Purposeful Waking) in Lucid Nonnightmare
Dreams and Lucid Nightmares

Lucid dreaming dimensions	None	Rare	Frequent
Veterans who report lucid nonnightmare dreams ($n = 31^a$)			
Dream awareness (% of total)	6.45	29.03	64.52
Dream control (% of total)	35.48	29.03	35.48
Purposeful waking (% of total)	41.94	22.58	35.48
Veterans who also report lucid nightmares ($n = 27$)			
Nightmare awareness (% of total)	3.70	25.93	70.37
Nightmare control (% of total)	22.22	51.85	25.93
Purposeful waking (% of total)	25.93	37.04	37.04

Note. LD = lucid dreaming. Dream awareness, control and purposeful waking scores obtained from the Iowa Sleep Experiences Survey. None = no
LD experience; Rare = an LD experience less than once a month; Frequent = an LD experience once a month or more often.

[a]One participant who endorsed LD experience did not complete the measure.