

Lucid nightmares: An exploratory online study

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Summary. Lucid nightmares are defined as dreams with strong negative emotions in which the dreamer is aware that he or she is dreaming but is unable to change the terrifying plot of the dream and/or is unable to deliberately wake up from it. So far, very little is known about lucid nightmare content. A subsample of a representative survey consisting of 408 participants (248 women, 160 men) with a mean age of 43.54 ± 16.04 yrs. provided a most recent lucid dream experience. Of the 160 nightmarish dreams, 67 could be classified as lucid nightmares with two thirds of the dreams including the inability to wake up. “Including nightmarish elements in the most recent lucid dream report” and “Being able to change the distressing content vs. having a lucid nightmare” was not related to age, gender, education, and ethnicity in this exploratory study. Future studies should focus on the variety of lucid nightmare topics – possibly expand the definition as this is currently focused on the inability to wake up or not being able to change the plot – and intervention strategies, i.e., the most effective ways to deal with lucid nightmares.

Keywords: Lucid dreaming, lucid nightmares, Imagery Rehearsal Therapy

1. Introduction

A widely used definition of lucid dreams is the following: “In a lucid dream, one is aware that one is dreaming during the dream. Thus it is possible to wake up deliberately, or to influence the action of the dream actively, or to observe the course of the dream passively.” (Schredl, Berres, Klingauf, Schellhaas, & Göritz, 2014; Schredl & Erlacher, 2004). This definition highlights that being consciously aware of dreaming while dreaming is the basic criterion of lucid dreams (LaBerge, 1985), whereas the ability to change deliberately aspects of the dream varies from dreamer to dreamer and/or from dream to dream (Harb, Brownlow, & Ross, 2016; Kahan, 1994; Ribeiro, Gounden, & Quaglino, 2016; Schredl, Rieger, & Göritz, 2018; Stumbrys & Erlacher, 2017). If the dreamer is able to influence the dream action, s/he often engages in pleasurable activities like flying, communicating with dream characters, sexuality, and practicing sports skills (Stumbrys, Erlacher, Johnson, & Schredl, 2014). But what about the lucid dreams without control, especially if they are negatively toned or even nightmarish? Van Eeden (1913), for example, reported lucid dreams in which he struggled with intelligent beings of a very low moral order having only very weak control over the dream. Similar, Sparrow (1991) reported a lucid dream with a black panther at his door step but he was unable to make the animal going away. Hurd (2012) coined the term ‘Lucid nightmare’ and the current definition of a lucid nightmare is: “A dream with strong negative emotions in which the dreamer is aware that he or she is dreaming but is unable to change the terrify-

ing plot of the dream and/or is unable to deliberately wake up from it. (Stumbrys, 2018, p. 194)” In a sample of 634 persons with interest in lucid dreaming (recruited via lucid dreaming websites and social media) the percentage of lucid nightmares in regarding to all lucid dreams was about 7% (Stumbrys, 2018). The most often mentioned features were: Lack of dream control (36%), intense fear (35%), violent autonomous dream characters (28%), and inability to wake up (27%). Interestingly, lucid nightmares were more common in women, related to nightmare frequency as well as lucid dreaming frequency, but also more common in persons with spontaneous lucid dreams – in contrast to persons who experienced lucid dreams by practicing induction techniques like reality checks (Stumbrys, 2018). This might indicate that the estimate of 7% lucid nightmares might be an underestimation because persons who visited lucid dream-related websites might have practiced some form of induction technique and learned about the possibility to control the dream action in lucid dreams. Another finding supporting the occurrence of lucid nightmares is the correlation of nightmare frequency with lucid dreaming frequency – even if dream recall frequency is statistically controlled (Hess, Schredl, & Goritz, 2017; Schredl & Erlacher, 2004). On one hand, it can be argued that bizarre nightmares, e.g., with monsters chasing the dreamer, or recurrent nightmares can trigger lucidity, on the other hand negatively toned lucid dreams without dream control can easily transform into nightmares (Schredl, 2018). This is especially important for using lucid dreaming as therapeutic strategy for coping with nightmares, i.e., it’s important to increase the number of lucid dreams via induction techniques but it is equally important to foster skills regarding the ability to change aspects of the dream deliberately (Gavie & Revonsuo, 2010).

The aim of the present study is to investigate the frequency and contents of lucid nightmares obtained in a population-based sample of adults from the United States. The participants who had experienced a lucid dream during their life time also provided reports regarding their most recent lucid dream experience in this online survey; these reports were classified by the first author. Unfortunately the reports

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were very brief and the study did not include any subjective ratings of emotions, that is, the study is clearly of exploratory nature.

2. Method

2.1. Participants

Overall, 3,992 Americans eighteen years and older in age (2,310 women, 1,682 men) completed the online survey. The mean age of the sample was 48.26 ± 17.09 years (range: 18 to 99 years). Of the 1426 participants who had at least one lucid dream, 408 participants filled in the open-ended question eliciting the most recent lucid dream, or some kind of a dream topic that included remarks that indicate lucidity (“I was aware that I was dreaming,” “I was able to control the dream,” “I tried to wake up from the dream”). A total of 648 participants reported a dream or a dream theme but did not mention explicitly lucidity, while 244 participants did not remember any specific content or chose not to disclose a dream, and 126 participants did not answer the question appropriately.

The present analysis is based on the subsample of 408 participants (248 women, 160 men) who reported a most recent lucid dream experience. The mean age of this sample was 43.54 ± 16.04 yrs. The ethnicity of the sample was as follows: White ($N = 323$), Black ($N = 17$), Hispanic ($N = 30$), and other ethnicities ($N = 38$). Educational background was elicited in six categories: No high school ($N = 8$), High school graduate ($N = 87$), some college ($N = 105$), 2-year college ($N = 35$), 4-year college ($N = 106$), and Post-graduate ($N = 67$).

2.2. Research Instruments

The survey included questions about dream recall frequency and dream sharing frequency. The question about lucid dreaming was worded as follows: “Have you ever been aware of being in a dream as it was happening (i.e., a lucid dream)?” with the options “Yes, I have (Please describe the most recent dream of this type, even if it is just a fragment, in as much detail as you can.)” and “No, I haven’t.”

2.3. Procedure

The survey was conducted using an online interview administered by YouGov, a public opinion and data company, to members of its panel of 1.2 million individuals who have agreed to take part in surveys. Email messages were sent to panelists selected at random based on quota (age, gender, education, ethnicity, state) to be representative for U. S. American adults. The message invited them to take part in a survey and provided a generic survey link. Once a panel member clicked on the link they were sent to the survey for which they were most required, according to the sample definition and quotas. The responses for this survey were gathered 2016. As not all participants were willing to participate, YouGov weighted single persons to achieve a representative sample but this was not done for the subsample analyzed in this study. The participants’ answers to the open ended question “most recent lucid dream” were coded by the first author into four categories: 0 = nonsense like a letter or other comments, 1 = Don’t remember or don’t want to share, 2 = dream report or dream topics but without explicitly mentioning lucidity, and 3 = dream report or dream topic including phrases like “I was aware that I am dreaming”, “I tried to wake up”, “I tried to stay within the dream”, or “I was able to control the dream.” In a second step, the lucid dream reports (category 3) were classified into nightmares vs. no nightmares, whether the dreamer tried to wake himself/herself up, and whether s/he was successful in doing so. If the nightmare did not include the wish to wake up, it was classified whether the dreamer could influence the dream action.

2.4. Statistical analysis

Statistical procedures were carried out with the SAS 9.4 software package for Windows. Binary regressions (cumulative logit analyses) were used for analyzing the effect of different predictors on different dream types. Due to small cell sizes, the ethnicity variable was condensed to “white” vs. “other ethnicities”.

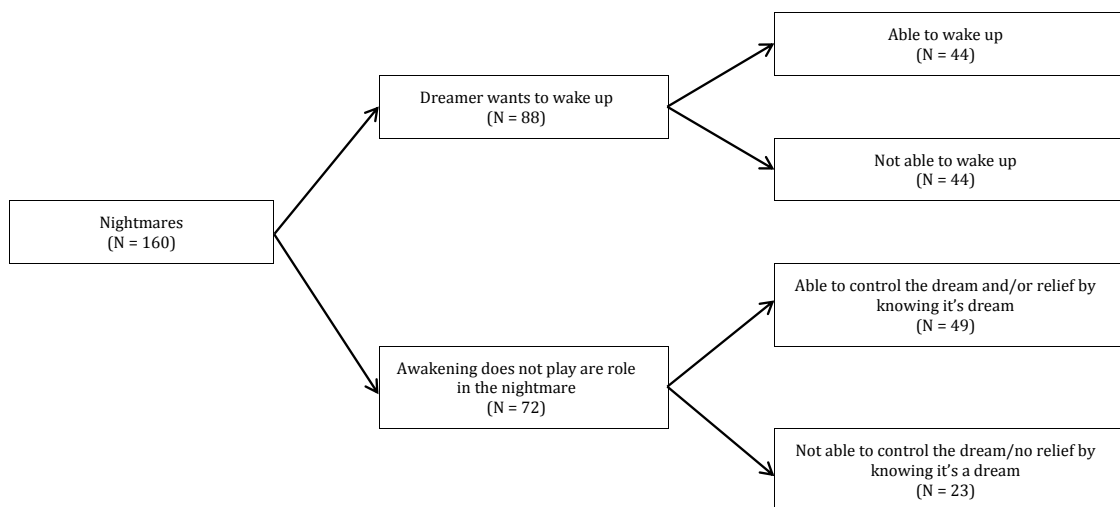


Figure 1. Most recent lucid dream reports that are nightmares

Table 1. Samples of different types of nightmare reports (grouped according to Figure 1)

Category	Examples of dream reports
Trying to wake up: Able to wake up	<p>"I would be in a bad situation and just when I was in real trouble I would realize it was a dream and make myself wake up"</p> <p>"I'm late for my flight at the airport, I still have to go to the hotel and get my suitcase. I come out of the building and can't find my car or anyone to help. It's a classic frustration dream. This dream comes in various flavor but they all have the same frustration theme of "you can't get there from here". I've trained myself to wake up when I have this type of dream (and this seems to work)."</p> <p>"Lost in a mall, wandering through never ending hallways, completely unable to find the people I was with. The dream kept going on and on until I was starting to hyperventilate in the dream, and then I realized I was dreaming and I woke myself up."</p>
Trying to wake up: Not able to wake up	<p>"It was more of a nightmare. I knew I was dreaming and couldn't make myself wake-up."</p> <p>"I was tortured by someone I've had a terrible relationship with, knew it was a dream and couldn't wake up from it."</p> <p>"Feeling as if the dream is real and you cannot wake up is a very scary feeling. The characters were people from my past. Actions that kept replaying over and over of what never happened, but could have happened. Thoughts of why is this happening? Why can't I wake up."</p>
Awakening does not play a role in the nightmare: Able to control the dream and/or relief by knowing it's a dream	<p>"In my nightmare I realized, that I was dreaming, but in my dream I can fly. So I flew away."</p> <p>"I was riding a giant shark through the ocean and became suddenly aware I was about to crash into a boat. I was terrified, so in the dream I was able to make the shark just fly out of the water and avoid the boat."</p> <p>"Realized I wasn't going to die due to being a dream."</p>
Awakening does not play a role in the nightmare: Not able to control the dream/no relief by knowing it's a dream	<p>"I knew I was dreaming about my dad in one dream when he kept calling me and I could hear him and knew it was him, but I couldn't understand him. I was garbled and when I tried to let someone else hear him or record it, the phone would go quiet. It was a nightmare. I know he wanted me to know something."</p> <p>"A recurring dream of witnessing a plane crash – it's frightening, and yet on some level I know it's a dream"</p> <p>"I dream about my cat, and I realize that it has to be a dream because she's gone, and I cry harder than I've ever cried."</p> <p>"I dreamed my husband was dead and I cried but was well aware it was a dream."</p>

3. Results

Of the 408 most recent lucid dreams (mean word count: 33.52 ± 26.48 words), 160 could be classified as nightmares with a mean word count of 38.98 ± 31.23 words (see Figure 1). In more than 55% of the nightmares the dreamer wanted to wake up; however, the success rate was only 50%, in 50% of the nightmares the dreamer could not wake up (see examples in Table 1). If the wish to awaken did not occur in the dream, the dreamer was able to change the dream or was relieved knowing that s/he is dreaming in about 68% of the nightmares. That is, the total number of lucid nightmares is 67 (16.42% of all 408 dream reports).

The regression analysis for reporting a nightmare vs. not reporting a nightmare didn't show significant associations

with age, gender, education, and ethnicity (see Table 2). Similar, whether the dreamer could change distressing aspects of the nightmare or not (lucid nightmare) was not related to age, gender, education, and ethnicity (see Table 2).

4. Discussion

Overall, the findings of the present study indicate that a considerable number (about 16%) of most recent lucid dreaming experiences could be classified as lucid nightmares with the inability to wake up as the most prominent feature. "Including nightmarish elements in the most recent lucid dream report" and "Being able to change distressing aspects of the nightmare vs. having a lucid nightmare" was

Table 2. Binary regression analyses for occurrence of lucid dreams and reporting an explicit lucid dream

Variable	Nightmare vs. non-Nightmare (N = 408)			Successful vs. not successful in changing nightmare (N = 160)		
	SE	χ^2	p	SE	χ^2	p
Age	.0219	0.2	.6983	-.0748	0.6	.4224
Gender (1 = m, 2 = f)	.0467	0.7	.4128	.0194	0.0	.8341
Education	-.0150	0.1	.7934	.0533	0.3	.5705
Ethnicity (1 = white, 0 = other)	-.0265	0.2	.6401	.1344	2.1	.1446

SE = Standardized estimates

not related to age, gender, education, and ethnicity in this exploratory study.

The major methodological challenge of this analysis was the brevity of most reports, for the majority of the reports provided by the participants it was not possible even to determine whether it is referring to lucid dreams, that is, includes some kind of statement about dream awareness. This was the main reason for using an exploratory classification approach and not the more rigorous methodology of dream content analysis. On the other hand, the sampling method aiming at a representative sample is an advantage over other studies, e.g., Stumbrys (2018), who recruited people with an interest in lucid dreaming like visiting related websites. One might assume that in this sample, knowledge about lucid dreaming in general, and the possibility to influence the action within lucid dreams is comparable to population-based samples (cf. Lüth, Appel, Pipa, & Schredl, 2018). The high percentage of participants who want to wake-up from the nightmare (55%) might indicate that those participants did not know much about the possibility to change the dream and doing fun stuff (Stumbrys et al., 2014). Another issue is that lack of self-ratings of dream emotions especially the nightmarish quality of the dream and the effect on becoming lucid on dream emotions. Previous research (Schredl & Doll, 1998; Sikka, Feilhauer, Valli, & Revonsuo, 2017) indicated that intensity of emotions, especially positive emotions, are underestimated by external judges compared to the emotion ratings made by the dreamer himself/herself. Röver and Schredl (2017) were able to demonstrate that underestimating negative dream emotions was related to dream length, i.e., in short dream reports the underestimation was more pronounced. For the present findings, this would mean that the percentage of lucid nightmares might even be higher if self-ratings of dream emotion had been included.

Regarding the topics of lucid nightmares, the most prominent feature (about two thirds of the 67 lucid nightmare reports) included the inability to wake up; this percentage is considerably higher as the figure of 27% reported by Stumbrys (2018). As waking up from a nightmare is also an avoidance strategy like running away – see major components of the Imagery Rehearsal Therapy (Krakow & Zadra, 2006) – one might speculate that the participants on average were less skilled lucid dreamers. Unfortunately, the survey did not include a question about lucid dream frequency which is related to lucid dreaming skills like changing dream element (Schredl et al., 2018). Interestingly, the lucid nightmares not related to the inability to wake up is not always related to lack of control, i.e., there are dream topics like loss for which being lucid is not helpful but – on the contrary – knowing that this is a dream can increase the mental pain. The first author experienced a few lucid dreams in which he felt very lonely (continuous with his waking life at that time) and being lucid, i.e., knowing that you are in a world of your own, didn't help to alleviate the negative feeling. Future content analytic studies might expand the definition of lucid nightmares (cf. Stumbrys, 2018) that currently focuses on lack of control and the inability to wake up from the nightmare.

Regarding the influencing factors of having lucid nightmares, we didn't find a gender effect that was reported by Stumbrys (2018). As gender is related to nightmare frequency with women report nightmares more often than men (Schredl & Reinhard, 2011), it would be very interesting to study population-based samples and include nightmare frequency measure – unfortunately not done in this survey.

As lucid dreaming is widely known in the population (Lüth et al., 2018) and many persons are interested in practicing lucid dream induction techniques to increase lucid dream frequency (Neuhäusler, Schredl, & Göriz, 2018), the question arises whether there are remedies for this lucid dreaming “side effect” of having lucid nightmares. One approach would be to ask skilled lucid dreamers whether they experienced lucid nightmares during times in which their lucid dreaming skills were not very profound and whether they were able to decrease the frequency of these lucid nightmares as skill level increased. Another option would be to carry out intervention studies. Interestingly, Harb et al. (2016) show that PTSD combat veterans who reported very rarely to have control in their dreams and underwent Imagery Rehearsal Therapy (practicing to imagine changes in nightmare content in waking life) were able to increase dream control considerably. So the research question would be whether Imagery Rehearsal Therapy which is very effective in treating idiopathic and posttraumatic nightmares (Hansen, Höfling, Kröner-Borowik, Stangier, & Steil, 2013; Yucel, van Emmerik, Souama, & Lancee, 2019) is also effective in treating lucid nightmares. As lucid dreaming is also used as therapeutic tool for coping with nightmares (de Macêdo, Ferreira, de Almondes, Kirov, & Mota-Rolim, 2019), it seems important not only to focus on lucid dream induction but also include elements aiming at increasing the ability to change distressing aspects of the dream deliberately.

To summarize, the present exploratory findings indicated that lucid nightmares do occur in the general population, that is, lucid dreams with very negative emotions with the dreamer not able to do something about it. Future studies should focus on the variety of lucid nightmare topics and intervention strategies, i.e., the most effective ways to deal with lucid nightmares.

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