Big five personality traits and dream recall frequency in spontaneous vs. self-trained lucid dreamers

Bita Shafiei

Department of Psychology, Rasht branch, Islamic Azad University, Rasht, Iran

Summary. Lucid dreamers were considered as a whole population in most of the studies. Accordingly, this study purpose was to divide them into two groups of spontaneous and self-trained lucid dreamers and also to investigate lucid dreaming frequency, and its association with big five personality traits and dream recall frequency in both spontaneous vs. self-trained lucid dreamers. A total of 324 individuals participated in an online survey and filled out NEO Five-Factor Inventory, and some other questions along with that about lucid dream different aspects and dream recall frequency. The results indicated that there were certain differences established in both spontaneous and self-trained lucid dreamers. In addition, agreeableness and openness to experience were negatively associated with lucid dreaming frequency amongst self-trained lucid dreamers, while the relationship was positive for extraversion. The only factor that could affect lucid dreaming frequency in both spontaneous and self-trained lucid dreamers groups was dream recall frequency with a significant and positive association. As it was observed, there are some personality traits that make self-trained lucid dreamers interested in lucid dreaming, and also lead them to deliberately experience this phenomenon.

Keywords: Lucid dreaming, spontaneous, self-trained, dream recall, Big Five personality traits

1. Introduction

A lucid dream is a dream in which the dreamer is aware that he or she is dreaming while dreaming (LaBerge, 1985). Lucid dreaming is also complementary to and interactive with "control dreaming", the ability to consciously control aspects of a dream such as flight, transmuting the body, summoning characters, changing scenes, or otherwise interact with the dream (Taitz, 2011). As it was revealed, lucid dream frequency is moderately associated with lucid dream controlling (Schredl, Rieger, & Göritz, 2018; Wolpin, Marston, Randolph, & Clothier, 1992).

Although lucid dreaming is considered to be a rare ability, estimates suggest that about half of the general population had a lucid dream at least once in their lives, and about one in five people have lucid dreams regularly, at least once a month (Schredl & Erlacher, 2011). Several surveys showed a range from 47% to 100%. This variability can be attributed to differences in sampling procedures (Erlacher, Schredl, Watanabe, Yamana, & Gantzert, 2008). Moreover, young children seem to have lucid dreams more frequently (Voss, Frenzel, Koppehele-Gossel, & Hobson, 2012).

Spontaneous lucid dreaming could be started as early as 3 or 4 years old, although it seems to originate most frequently from 12 to 14 year old adolescents. After the age of 25, a spontaneous onset of lucid dreaming appears to be very infrequent (Stumbrys, Erlacher, Johnson, & Schredl, 2014). Based on LaBerge (1980) study, lucid dreaming is a learnable skill, and its frequency can be increased (Stumbrys, Erlacher, Schädlich, & Schredl, 2012). Also many subjects in experimental studies were trained by researchers, in order to become lucid dreamers (Taitz, 2011; Voss, Holzmann, Tuin, & Hobson, 2009).). Trained lucid dreamers had shorter lucid dreams but were more likely to take an active role in the development of the lucid dream plot and more likely to try some waking intentions in their lucid dreams, in comparison with spontaneous lucid dreamers (Stumbrys et al., 2014).

It is important to investigate the relationships between lucid dreaming and other variables so for better understanding about why some people are able to have lucid dream while some others cannot. Due to that fact that there are individual differences regarding one's ability to engage in lucid dreaming, along with the frequency in which one has lucid dreams, it stands to reason that there are individual traits that account for these differences (Lambert, 2015). There are several studies that tried to find common personalities of lucid dreamers. Internal locus of control (Blagrove & Hartnell, 2000; Blagrove & Tucker, 1994; Prescott & Pettigrew, 1995) and need for cognition (Blogrove & Hartnell, 2000) were found to be correlated with lucid dreaming. However, Wolpin, Marston, Randolph, and Clothier (1992) had not succeeded in discovering the relationship between internal locus of control and lucid dreaming frequency. Some studies concentrated on introversion trait (Glicksohn, 1989; Hearne, 1978; Snyder & Gackenbach, 1988; Phillips, 1995; Watson, 2001) and most of them demonstrated no correlation. Neuroticism and well-being are other factors that attracted many attentions (Doll, Gittler, & Holzinger, 2009; Gackenbach, 1978; Gruber, Steffen, & Vonderhaar, 1995; Brussington & Hicks, 1996; Hearne, 1978; Watson, 2001; Wolpin et al, 1992). Some other researchers Studied Big Five personality dimensions and their relationships with

Corresponding address:
Bita Shafiei, Department of Psychology, Rasht branch, Islamic Azad University, Rasht, Iran.
Email: bita.shafiei@gmail.com

Submitted for publication: March 2019
Accepted for publication: September 2019

lucid dreaming frequency. Watson's (2001) investigation on students revealed that lucid dreaming frequency was negatively correlated with agreeableness and conscientiousness in two samples. In addition, he found a positive relationship with openness to experience and extraversion in only one sample. Schredl and Erlacher (2004) found small but significant correlation between fantasy and ideas, two facets of openness to experience, and lucid dream frequency. Moreover, in Schredl and Noveski's (2017) research performed on students, regardless of the negative association between lucid dream frequency and agreeableness, they also pointed out a negative correlation between lucid dream frequency and neuroticism which was considered as a new outcome. As most studies methodologically were concentrated on students, Schredl, Henley-Einion, & Blagrove (2016) conducted a survey on adolescents and adults and findings indicated that there was a significant relationship between lucid dreaming and the openness to experience factor. Furthermore, lucid dreaming seemed to be related to the Big Five conscientiousness factor. Additionally, an online survey conducted by Hess, Schredl, & Goritz, (2016) proposed that openness to experience was positively correlated with lucid dreaming frequency, whereas the correlation was negative for agreeableness. Other personality dimensions which can be conceptualized as sub-dimensions of the Big Five factor openness to experiences (McCrae, 1994) such as hypnotic suggestibility (Hoyt, Kihlstrom, & Nadon, 1992), thin boundaries (Galvin, 1990; Hicks, Bautista, & Hicks, 1999; Schredl & Erlacher, 2004), creativity (Blagrove & Hartnell, 2000; Zink & Pietrowksy, 2013), and absorption (Schredl & Erlacher, 2004) were found to be related to lucid dreaming frequency.

In addition, many researches indicated a significant relationship between lucid dream frequency and dream recall frequency (Belicki, Hunt, & Belicki, 1978; Erlacher, Stumbrys, & Schredl, 2011; Hearne, 1978; Schredl & Erlacher, 2004, 2011; Schredl et al, 2012; Stumbrys et al, 2014; Watson, 2001; Wolpin et al, 1992). As it seems the more people recall their dreams the more chance they have to recall their lucid dreams or in another direction, the more people are familiar with their dreams (i.e. able to better recall them), the more they are likely to recognize them while dreaming.

Briefly explained, openness to experience and extraversion were found to be positively correlated with lucid dreaming frequency, while the correlations were negative for agreeableness and neuroticism. Moreover, a positive correlation was found between dream recall frequency and lucid dreaming frequency. As observed, almost all studies consider lucid dreamers as a whole group. However, this study categorized lucid dreamers into two groups of spontaneous and self-trained, and assessed Big Five personality traits and dream recall frequency within these groups of lucid dreamers. In an exploratory analysis, we studied personality differences between spontaneous and self-trained lucid dreamers.

2. Method

2.1. Participants

A total of 324 Iranian individuals participated in this study through online survey (men=177, women=147, mean age=31.5±11.08, range from 13-71). The questionnaire was posted on the Persian lucid dreaming website www.khaab.info from June 6, 2018 to July 6, 2018. The participants were anonymous, only gender and sex were asked in order to be determined.

2.2. Research Instruments

2.2.1 Lucid dreaming frequency

For measuring frequency of lucid dreaming, an 8-point rating scale developed by Schredl (2004) was presented ("How often do you experience so-called lucid dreams (see definition)?" 0=never, 1=less than once a year, 2=about once a year, 3=about two to four times a year, 4=about once a month, 5=two to three times a month, 6=about once a week, 7=several times a week). In order to ensure a clear understanding of the phenomenon, a short definition was also presented: "During lucid dreaming, one is, while dreaming, aware of the fact that one is dreaming. It is possible to deliberately wake up or to control the dream action or to observe passively the course of the dream with this awareness". The re-test reliability of this scale was found to be high (r=.89; p<.001; Stumbrys, Erlacher, & Schredl, 2013).

2.2.2 Dream recall frequency

Dream recall frequency was assessed using a 7-point scale developed by Schredl (2004): (0=never, 1=less than once a month, 2=about once a month, 3=about two to three times a month, 4=about once a week, 5=several times a week, and 6=almost every morning) with a high retest reliability of r = .85 (Schredl, 2004).

2.2.3 NEO Five-Factor Inventory–Form S (NEO-FFI-S)

The NEO-FFI-S (Costa & McCrae, 1992) is a 60-item self-report measure assessing personality traits. The NEO-FFI-S was developed as a shorter version of the 240-item NEO Personality Inventory. The scale is consist of 5 subscales: Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness. Participants respond to items on a 5-point, Likert-type scale ranging from 0 (strongly disagree) to 4 (strongly agree). McCrae and Costa (2004) found the internal consistency varied between r=.69 and r=.86 for in adult sample. The Cronbach alpha was found to be acceptable for the five factors among Iranian sample as well. Three different research showed the great reliability for neuroticism (r = .76 to r = .83), extraversion (r = .58 to r = .63), agreeableness (r = .48 to r = .60), and conscientiousness (r = .81 to r = .83). The only factor with low reliability was openness to experience (r = .31 to r = .39; Anisi, Majdian, Joshanloo, & Gohari-Kamel, 2012; Nilforooshan, Ahmadi, Fatehizadeh, Abedi, & Ghasemi, 2012; Roshan Chesly et al, 2006).

2.2.4 Lucid dream questions

As a final point, participants who have experienced lucid dreaming at least once in their life were requested to respond to two different questions. The first question was: Did you practice for experiencing lucid dream through induction methods or it happened accidentally? There was two options for selecting as follows: Participants who chose 'through training' option, were considered as self-trained and who chose 'accidentally' were considered as spontaneous. In the next step, they were asked to indicate whether

Table 1. Lucid dreaming frequency (N=324)

Category	Frequency	Percentage (%)
Never	65	20.06
Less than once a year	41	12.65
About once a year	52	16.04
About two or three times a year	84	25.92
About once a month	32	9.87
Two or three times a month	20	6.17
About once a week	8	2.46
Several times a week	22	6.79

they are able to actively control their dreams or not (Through yes/no options) and they were given some examples for better understanding like the ability of changing the environment, summoning the characters, etc.

2.3. Statistical analysis

Data were analysed using IBM SPSS statistics 22 software. Ordinal and logistic regression were applied in order to indicate the correlation between variables.

3. Results

Table 1 indicates the frequency of lucid dreaming in the present sample. Eighty percent of the participants have experienced lucid dreaming at least once in their life. However, only 25% are frequent lucid dreamers.

The overall means and standard deviations for the Big Five personality traits are indicated in Table 2.

Amongst participants, 258 experienced lucid dreaming at least once in their lives (Spontaneous lucid dreamers=163, Self-trained lucid dreamers=95). Note that one was missed due to an unclear answer.

Twenty-eight percent of spontaneous lucid dreamers are frequent ones, and the rest of them are infrequent. On the other hand, the percentage is 39 for frequent self-trained lucid dreamers.

As it is depicted in Table 3 the ordinal regression for lucid dreaming frequency using gender, age, the Big Five personality traits, and dream recall frequency as predictors

Table 3. Ordinal regression for lucid dream frequency

Variable	**Lucid dreaming frequency**		
	SE	χ^2	p
Gender	.068	0.111	.739
Age	-.008	0.699	.403
Neuroticism	-.016	0.625	.429
Extraversion	-.036	3.734	.053
Openness to experience	.031	2.523	.112
Agreeableness	-.020	0.748	.387
Conscientiousness	.006	0.129	.720
Dream recall frequency	.259	23.138	.001

SE = Standardized estimates

Table 2. Means and standard deviations for the Big five personality traits

Variable	M ± SD
Neuroticism	23.93±6.45
Extraversion	25.23±6.69
Openness to experience	31.01±5.27
Agreeableness	27.79±4.98
Conscientiousness	31.17±6.53

M = Mean, SD = Standard Deviation

were applied for the whole sample. None of the variables correlated with lucid dreaming frequency. However, dream recall was associated with the large regression coefficient ($p<.001$).

Table 4 indicates logistic regression for spontaneous vs. self-trained lucid dreamers. It is clear that the gender effect was different between two groups of spontaneous and self-trained lucid dreamers. In addition, agreeableness was another distinctive predictor from those Big Five personality traits. For lucid dream frequency, the analysis indicates that there is certain differences found in two groups of spontaneous and self-trained lucid dreams.

In order to achieve more details, ordinal regression were applied for lucid dreaming frequency with gender, age, Big Five personality traits, and dream recall frequency in spontaneous lucid dreamers. As it is shown in Table 5, only dream recall frequency is a significant predictor of lucid dreaming frequency.

It is noteworthy to state that 44 percent of spontaneous lucid dreamers claimed to have an active role by considering their responses to our question about the ability of controlling the lucid dream's features.

In addition, ordinal regression for lucid dreaming frequency was applied to self-trained lucid dreamers. Likewise, dream recall frequency was identified as the most significant lucid dreaming frequency predictor. Moreover, the gender of self-trained lucid dreamers has an impact on their lucid dreaming frequency. In this sample generally men were self-trained lucid dreamers (76 out of 95). Furthermore, among Big Five personality traits extraversion positively correlated

Table 4. Logistic regression for spontaneous vs. self-trained lucid dreamers

Variable	**Spontaneous vs. self-trained**		
	SE	χ^2	p
Gender	-2.014	33.733	.001
Age	-.013	.565	.452
Neuroticism	-.060	3.356	.067
Extraversion	-.036	1.404	.236
Openness to experience	.063	3.810	.051
Agreeableness	.078	4.191	.041
Conscientiousness	-.048	3.216	.073
Lucid dreaming frequency	.225	5.546	.019
Dream recall frequency	.046	.283	.595

SE = Standardized estimates

Table 5. Ordinal regression for spontaneous lucid dreamers

Variable	Lucid dreaming frequency		
	SE	χ^2	p
Gender	-.550	3.29	.069
Age	-.008	.269	.604
Neuroticism	.059	3.39	.066
Extraversion	-.023	.845	.358
Openness to experience	-.012	.191	.662
Agreeableness	.021	.423	.516
Conscientiousness	-.013	.278	.598
Dream recall frequency	.303	14.08	<.0001

SE = Standardized estimates

with lucid dreaming frequency while the correlations were negative for openness to experience and agreeableness.

Additionally, 61% of self-trained lucid dreamers are capable of controlling their lucid dream content.

4. Discussion

In the present study we aimed to investigate Big Five personality traits and dream recall frequency in spontaneous vs. self-trained lucid dreamers. Generally, the results indicated that personality factors could play a role in trained lucid dreamers but not in spontaneous lucid dreamers in terms of the lucid dreaming frequency. Some factors such as gender, extraversion, openness to experiences, agreeableness, and dream recall frequency correlate with lucid dreaming frequency among self-trained lucid dreamers. However, only dream recall frequency is in association with lucid dreaming frequency in spontaneous lucid dreamers. No relationship between Big Five personality traits and lucid dreaming frequency in earlier studies could be explained by higher number of spontaneous lucid dreamers in those samples (e.g. one of the two samples of Watson, 2001; Schredl & Erlacher, 2004). In addition, the difference between spontaneous and self-trained lucid dreamers regard to lucid dreaming frequency is a considerable finding. Analysis indicated that self-trained lucid dreamers experience lucid dreams more frequently in comparison with spontaneous ones. Lastly, by considering the percentages, self-trained lucid dreamers have the ability of controling their lucid dreams and take an active role more than the spontaneous group.

Methodologically, the sample was elicited via a lucid dreaming website, which makes the result biased due to the more interested participants in taking part in this study. It also should be mentioned that it is not clear how many of the lucid dreams were spontaneous and how many of them were induced in the group of self-trained lucid dreamers.

Based on our finding, there was no gender difference among spontaneous lucid dreamers. However, men seemed more interested in eliciting lucid dreams through training which is in line with Stumbrys et al, (2014). Generally, frequencies in our sample indicated that people only rarely trained themselves to become lucid dreamers (Stumbrys et al, 2014).

The present study showed that there were some personality traits associated to lucid dream experiencing among self-trained lucid dreamers. One of the Big Five personality dimensions, which correlated with lucid dreaming frequency, was extraversion. As a result, people who were characterized as extraverted are more likely to experience lucid dreaming. Extraversion is defined as being assertive, active, positive, energetic, and talkative (McCrae & Costa, 1997). Extraverted lucid dreamers, by considering those definitions, are willing to talk about their experiences with others which in this case talking about dreams brings about more dream recall (Schredl, 2002_2003; 2003; Schredl et al, 2016) and consequently more lucid dreams (Belicki, Hunt, & Belicki, 1978; Erlacher, Stumbrys, & Schredl, 2011; Hearne, 1978; Schredl & Erlacher, 2004, 2011; Schredl et al, 2012; Stumbrys et al, 2014; Watson, 2001; Wolpin et al, 1992; Zink & Pietrowsky, 2013). A positive relationship was found between extraversion and lucid dreaming frequency in one sample of students in Watson's (2001) study, in contrast with Hearne (1978) theory which links introversion to lucid dreaming (Schredl & Erlacher, 2004).

Earlier studies demonstrated a positive correlation between openness to experience and lucid dreaming frequency (Hess et al, 2016; Schredl et al, 2016; Schredl et al, 2017; Watson, 2001). However, a small negative correlation was discovered among self-trained lucid dreamers in the present sample. People who score high in this dimension are recognized as creative, imaginary, curious and unconventional. Those with low level are conventional and like the feeling of familiarity (Robbins, Judge, Millett, & Boyle, 2013). Even now, more studies are required in order to investigate about the relationship between openness to experience and lucid dreaming frequency.

Negative correlation between agreeableness and lucid dreaming frequency was another finding, in accordance with earlier researches (Hess et al, 2016; Schredl & Noveski, 2017; Watson, 2001). People with low level of agreeableness are identified as antagonistic, cold and disagreeable (Robbins et al, 2013). Lucid dreamers are more likely to be focused on fulfilling their own needs, and less likely to reflect on the needs of others; they might thus be less agreeable in waking life (Hess et al, 2016).

Many researches support our result about positive correlation between dream recall frequency and lucid dreaming frequency (Belicki, Hunt, & Belicki, 1978; Erlacher, Stumbrys, & Schredl, 2011; Hearne, 1978; Schredl & Erlacher, 2004, 2011; Schredl et al, 2012; Stumbrys et al, 2014; Watson, 2001; Wolpin et al, 1992; Zink & Pietrowsky, 2013). As it was mentioned earlier, dream recall frequency is a signifi-

Table 6. Ordinal regression for self-trained lucid dreamers

Variable	Lucid dreaming frequency		
	SE	χ^2	p
Gender	-1.60	8.59	.003
Age	-.038	2.30	.129
Neuroticism	-.079	3.50	.061
Extraversion	.124	3.50	.016
Openness to experience	-.134	5.97	.015
Agreeableness	-.185	8.55	.003
Conscientiousness	-.013	.130	.718
Dream recall frequency	.375	11.54	.001

SE = Standardized estimates

cant predictor for both spontaneous and self-trained lucid dreamers groups. However, it needs further researches on other possible factors related to lucid dreaming frequency among spontaneous lucid dreamers.

As percentages showed self-trained lucid dreamers appeared to be more active in their lucid dreams. Stumbrys et al (2014) also declared in their research that in comparison with spontaneous lucid dreamers, trained lucid dreamers were more likely to take an active role rather than a passive role in the development of the dream plot.

In summary, self-trained lucid dreamers tend to experience lucid dreams more frequent than spontaneous lucid dreamers. Also, openness to experience and agreeableness were negatively correlated with lucid dreaming frequency whereas the correlations were positive between extraversion and dream recall frequency among self-trained lucid dreamers. However, dream recall frequency was the only predictor for lucid dreaming frequency among spontaneous lucid dreamers. Gender had an impact on lucid dreaming frequency only in the group of self-trained lucid dreamers. At last, it was demonstrated that self-trained lucid dreamers were more likely to take an active role in their lucid dreams.

Future studies should explore more about the possible differences between self-trained and spontaneous lucid dreamers. It would be also interesting to know what methods were utilized for inducing lucid dreams by self-trained lucid dreamers. Due to the reason that nightmare frequency is correlated with lucid dreaming frequency (Glicksohn, 1989; Hess et al, 2016; Schredl & Erlacher, 2004; Spadafora & Hunt, 1990; Stepansky et al., 1998) and the difference is still not investigated between the two groups of spontaneous and self-trained lucid dreamers, it can be considered as a good idea to fill this gap.

Acknowledgements

The author would like to thank Michael Schredl for his help with preparing the manuscript.

References

Anisi, J., Majdian, M., Joshanloo, M., & Gohari-Kamel, Z. (2012). Validity and reliability of NEO Five-Factor Inventory (NEO-FFI) on university students. Journal of Behavioral Sciences, 5(4), 351-355

Blagrove, M., & Tucker, M. (1994). Individual differences in locus of control and the reporting of lucid dreaming. Personality and Individual Differences, 16(6), 981-984. Doi: 10.1016/0191-8869(94)90242-9

Blagrove, M., & Harttnel, S. J. (2000). Lucid dreaming: associations with internal locus of control, need for cognition and creativity, Personality and Individual Differences, 28(2000), 41-47. Doi: 10.1016/S0191-8869(99)00078-1

Belicki, D., Hunt, H., & Belicki, K. (1978). An exploratory study comparing self-reported lucid and non-lucid dreams. Sleep Research, 7, 166.

Brussington, G. G., & Hicks, R. A. (1996). Arousability and types of dreams recalled in college students. Sleep Research, 25, 201.

Costa, P. T., Jr., & McCrae, R. R. (1992). Four ways five factors are basic. Personality and Individual Differences, 13, 653-665. Doi: 10.1016/0191-8869(92)90236-I

Doll, E., Gittler, G., & Holzinger, B. (2009). Dreaming, lucid dreaming and personality. International Journal of Dream Research, 2(2), 52-57. Doi: 10.11588/ijodr.2009.2.142

Erlacher, D., Schredl, M., Watanabe, T., Yamana, J., & Gantzert, F. (2008). The incidence of lucid dreaming within a Japanese university student sample. International Journal of Dream Research, 1(2), 39-43. Doi: 10.11588/ijodr.2008.2.79

Erlacher, D., Stumbrys, T., & Schredl, M. (2011–2012). Frequency of lucid dreams and lucid dream practice in German athletes. Imagination, Cognition and Personality, 31(3), 237-246. Doi: 10.2190/IC.31.3.f

Gackenbach, J. (1978). A personality and cognitive style analysis of lucid dreaming. Doctoral Dissertation, University of Richmond.

Galvin, F. (1990). The boundary characteristics of lucid dreamers. Psychiatric Journal of the University of Ottawa, 15(2), 73-78.

Glicksohn, J. (1989). The structure of subjective experience: Interdependencies along the sleep-wakefulness continuum. Journal of Mental Imagery, 13(2), 99-106.

Gruber, R. E., Steffen, J. J., & Vonderhaar, S. P. (1995). Lucid dreaming, waking personality and cognitive development. Dreaming, 5(1), 1–12. Doi: 10.1037/h0094419

Hearne, K.M.T., (1978). Lucid dreams: an electrophysiological and psychological study. Doctoral dissertation, University of Liverpool

Hess, G., Schredl, M., & Goritz, A.S. (2016). Lucid Dreaming Frequency and the Big Five Personality Factors, Imagination, Cognition and Personality: Consciousness in Theory, Research, and Clinical Practice, 36(3), 240-253. Doi: 10.1177/0276236616648653

Hicks, R. A., Bautista, J., & Hicks, G. J. (1999). Boundaries and the level of experience with six types of dreams. Perceptual and Motor Skills, 89(3, Pt 1), 760-762. Doi: 10.2466/pms.1999.89.3.760

Hoyt, I. P., Kihlstrom, J. F., & Nadon, R. (1992). Hypnotic, prolucid, lucid and night dreaming: Individual differences. Journal of Mental Imagery, 16(1-2), 147-153.

LaBerge, S. (1980). Lucid dreaming as a learnable skill: A case study. Perceptual and motor skill, 51(3_supple 2), 1039-1042. Doi: 10.2466/pms.1980.51.3f.1039

LaBerge, S. (1985). Lucid dreaming. The power of being awake and aware in your dreams. Los Angeles: Tarcher.

Lambert, J. (2015). A study on the personality characteristics of dreamers. Masters Theses, Eastern Illinois University. http://thekeep.eiu.edu/theses/1964

McCrae, R. R., & Costa, P. T. Jr. (1997). Personality trait structure as a human universal. American psychologist, 52(5), 509. Doi: 10.1037/0003-066X.52.5.509

McCrae, R. R. (1994). Openness to experience: Expanding the boundaries of factor V. European Journal of Personality, 8(4), 251-272. Doi: 10.1002/per.2410080404

McCrae, R. R. & Costa, P. T. Jr. (2004). A contemplated revision of the NEO Five-Factor Inventory. Personality and Individual Differences, 36, 587–596 Doi: 10.1016/S0191-8869(03)00118-1

Nilforooshan, P., Ahmadi, A., Fatehizadeh, M., Abedi, M. R., & Ghasemi, V. (2012). Studying the hierarchical structure of personality using the NEO-Five Factor Inventory. Quarterly Journal of Psychological Studies, 7(4), 107-130. Doi: 10.22051/PSY.2011.1538

Phillips, L. (1995). The temperament of lucid dreamers. NightLight: Lucidity Institute Newsletter, 7(3&4), 17-21.

Prescott, J. A., & Pettigrew, C. G. (1995). Lucid dreaming and control in waking life. Perceptual and Motor Skills, 81(2), 658. Doi: 10.1177/003151259508100258

Robbins, S., Judge, T. A., Millett, B., & Boyle, M. (2013). Organisational behaviour. Pearson Higher Education AU.

Roshan Chesly, R., Shaeeri, M., Atrifard, M., Nikkhah, A., Ghaem Maghami, B., & Rahimierad, A. (2006). Inves-

tigating Psychometric Properties of “NEO-Five Factor Inventory” (NEO-FFI). Training & Learning Researches, 1 (16), 27-36

Schredl, M. (2002–2003). Factors influencing the gender difference in dream recall frequency. Imagination, Cognition and Personality, 22(1), 33-39. Doi: 10.2190/JR55-WYC2-1GC0-023D

Schredl, M. (2004). Reliability and stability of a dream recall frequency scale. Perceptual & Motor Skills, 98(3 Pt 2), 1422-1426. Doi: 10.2466/pms.98.3c.1422-1426

Schredl, M., & Erlacher, D. (2004). Lucid dreaming frequency and personality. Personality and Individual Differences, 37(7), 1463-1473. Doi: 10.1016/j.paid.2004.02.003

Schredl, M., & Erlacher, D. (2011). Frequency of lucid dreaming in a representative German sample. Perceptual and Motor Skills, 111, 60-64. Doi: 10.2466/09.PMS.112.1.104-108

Schredl, M., & Noveski, A. (2017). Lucid dreaming : A diary study, Imagination, Cognition and Personality: Consciousness in Theory, Research, and Clinical Practice, 0(0) 1-13. Doi: 10.1177/0276236617742622

Schredl, M., Henley-Einion, J., & Blagrove, M. (2012). Lucid dreaming in children: The UK library study. International Journal of Dream Research, 5(1), 94-98. Doi: 10.11588/ijodr.2012.1.9274

Schredl, M., Henley-Einion, J., & Blagrove, M. (2016). Lucid dreaming and personality in children / adolescents and adults: The UK library study, International Journal of Dream Research, 9(1), 75-78. Doi: 10.1177/0276236617742622

Schredl, M., Rieger, J., & Göritz, A. (2018). Measuring lucid dreaming skills: A new questionnaire (LUSK), International Journal of Dream Research, 11(1), 54-61. Doi: 10.11588/ijodr.2018.1.44040

Spadafora, A., & Hunt, H. T. (1990). The multiplicity of dreams: Cognitive–affective correlates of lucid, archetypal and nightmare dreaming. Perceptual and Motor Skills, 71(2), 627-644.

Stepansky, R., Holzinger, B., Schmeiser-Rieder, A., Saletu, B., Kunze, M., & Zeitlhofer, J. (1998). Austrian dream behavior: Results of a representative population survey. Dreaming, 8(1), 23-30.

Stumbrys, T., Erlacher, D., Schädlich, M., & Schredl, M. (2012). Induction of lucid dreams: A systematic review of evidence. Consciousness and Cognition, 21(3), 1456-1475. Doi: 10.1016/j.concog.2012.07.003

Stumbrys, T., Erlacher, D., & Schredl, M. (2013). The reliability and stability of lucid dream and nightmare frequency scales. International Journal of Dream Research, 6(2), 123-126. Doi: 10.11588/ijodr.2013.2.11137

Stumbrys, T., Erlacher, D., Johnson, M., & Schredl, M. (2014). The Phenomenology of Lucid Dreaming: An Online Survey, American Journal of Psychology, 127(2), 191-204. Doi: 10.5406/amerjpsyc.127.2.0191

Taitz, I. (2011). Learning lucid dreaming and its effect on depression in undergraduates. International Journal of Dream Research, 4(2), 117-126.

Voss, U., Holzmann, R., Tuin, I., & Hobson, J.A. (2009). Lucid Dreaming: A State of Consciousness with Features of Both Waking and Non-Lucid Dreaming, Sleep, 32(9), 1191-1200. Doi: 10.1093/sleep/32.9.1191

Voss, U., Frenzel, C., Koppehele-Gossel, J., & Hobson, A. (2012). Lucid dreaming: An age-dependent brain dissociation. Journal of Sleep Research, 21(6), 634-642. Doi: 10.1111/j.1365-2869.2012.01022.x

Watson, D. (2001). Dissociations of the night: individual differences in sleep-related experiences and their relation to dissociation and schizotypy. Journal of Abnormal Psychology, Doi: 10.1037/0021-843X.110.4.526

Wolpin, M., Marston, A., Randolph, C., & Clothier, A. (1992). Individual difference correlates of reported lucid dreaming frequency and control. Journal of Mental Imagery, 16(3-4), 231-236.

Zink, N., & Pietrowksy, R. (2013). Relationship between lucid dreaming, creativity and dream characteristics. International Journal of Dream Research, 6(2), 98-103. Doi: 10.11588/ijodr.2013.2.10640.