

Dreaming of Europe: Locations in a long dream series of an US American

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Summary. Previous research has shown that traveling to new places can affect dream content and, thus, offer an opportunity to study the continuity between waking and dreaming. In the present study, a dream series (N = 2090 dreams) spanning 10 yrs. from 2013 to 2022 was analyzed. The participant (an US American) visited Europe for the first time in 2015 and a second time in 2022. As predicted, dreams with Europe as the setting increased while he was there, but even after 6 yrs. the frequency of Europe dreams was elevated in respect to baseline levels. The findings support the continuity hypothesis and demonstrated that analyzing places in dreams can further our knowledge of how dreams are linked to waking life.

Keywords: Dream content analysis, dream places, Europe, dream series, continuity hypothesis

1. Introduction

The original formulation of the continuity hypothesis by Calvin S. Hall and coworkers (Bell & Hall, 1971; Hall & Nordby, 1972) has stimulated dream research (Schredl, 2012a, 2018). The following quote condenses the basic idea of this hypothesis: "There is considerable congruence between what a person dreams about at night and what he does or thinks about when he is awake. (p. 125, Hall & Nordby, 1972)" From an empirical viewpoint, the challenge is to find paradigms to test this hypothesis, e.g., showing an emotionally arousing film and analyze whether film contents show up in the dream diary filled in for seven days (Powell et al., 1995), or overlap between pre-sleep thoughts and dream content (Wang & Feng, 2024), or instruction participants to keep a daytime diary recording waking-life events and a dream diary and match afterwards the two data sets (Blagrove et al., 2011), or asking participants retrospectively when a specific dream element has occurred in their waking life (Vallat et al., 2017). Links between dreams and different waking-life aspects, e.g., major daily activities, personally significant events, autobiographical memory has been studied (Eichenlaub et al., 2019; Malinowski & Horton, 2014; van Rijn et al., 2015). Even though the empirical findings clearly support the continuity hypothesis (Domhoff, 2022; Schredl, 2018), there are methodological challenges to face, for example, for a dream in which the mother of the dreamer occurs, it might be difficult to match this dream with a specific waking-life experience, e.g., phone call with her last week, pre-sleep thoughts about, or precious childhood memories. One approach to deal with this problem is to investigate experiences that are completely new to the dreamer; Jouvett (1979), for example, analyzed the dream setting after start-

ing a journey. A German translation of this publication was published later (Jouvett, 1994), an English translation with some addition can be found in Jouvett (1999). He recorded dreams from Dec 1970 to Aug 1978; overall 2,525 dreams. Whereas other topics (everyday events – not further specified by the author) showed a day residue effect (dream element occurred the day before in waking) in 34.6%, the new surroundings typically showed up in his dreams after 7 or 8 days. In the first six days being in a new location, this location was almost completely absent in the dreams (1 out of 104 dreams) – leading Jouvett (1999) to the hypothesis that spatial memory processing might differ from other memory processes. However, the findings of Marrou and Arnulf (2018), also a single-case study, yielded different results. A professional university geographer recorded all locations he visited in 2015 with 75% his hometown and adjacent cities, the other locations were work-related and holiday-related. He also kept a dream diary recording 801 dreams in 2015, 680 dreams with a word count over 20 words were analyzed. Overall, 122 cities were visited in waking life and 107 cities showed up in his dreams – with 24% of the cities visited in waking life showed up in the dreams (Marrou & Arnulf, 2018). However, of the 107 cities 81.3% were known to the dreamer but not visited in 2015, 18.7% were never visited (three dream cities even did not exist in the real world). Looking at the temporal connection between travelling and dreams showed that the day residue effect did play the biggest part, that is, 32.5% of the locations were found in dreams if the dreamer was just arriving at the new location the previous day (Marrou & Arnulf, 2018), whereas references to the new location were quite rare after 2 to 10 days (13.5%). Some dreams (11.5%) even showed anticipation, that is, the dream included a location the dreamer was planning to visit the next day(s), most often the next day. Using a matching approach, that is, the participants were asked to match diary pages with dream reports kept over a two-week period allowing for all possible combinations (also diary pages after recording the dreams, i.e., anticipation), Blagrove et al. (2011) showed that the anticipatory effect is smaller compared to the frequency that events occur in subsequent dreams. This would support the finding of a relatively small number of dreams in which the dreamer is dreaming about the new location before arriving there

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(Marrou & Arnulf, 2018). Overall, the two single-case studies indicate that studying dream locations can be a promising way to study the continuity between waking and dreaming.

The present study is based on a 10-yrs. log dream series of a male US American. During this time he visited Europe twice (the first visit was his first in his life). Based on the continuity hypothesis, two hypotheses were formulated: (1) We expected more dreams that include Europe as a setting while he was there. And (2), as dream also include more distant memories, it was also expected that Europe as a dream setting was more prominent after the dreamer visited Europe for the first time than before.

2. Method

2.1. Participant

The dreamer (male) was born in March 1994. He studied psychology and philosophy (bachelor degree) from August 2012 to December 2016, from September 2015 to December 2015 he studied abroad in the United Kingdom but also enjoyed travelling to different places in Europe very much: Scotland (Edinburgh, Glasgow), Switzerland (Zurich, Interlaken, Geneva, Sion), Italy (Rome), Germany (Berlin), Czech Republic (Prague), and Austria (Vienna, Salzburg). This was his first time traveling to Europe. In September 2022, he started his master in philosophy in Lugano, Switzerland. Overall, he reported at least one dream on 2,090 nights. Given that this time interval included 3,652 days, dream recall was present on 57.23% of all mornings. The mean word count of the morning reports was 203.20 ± 153.44 words (range: 5 to 1,341). The number of mornings per year with recalling at least one dream ranged from 107 (2016) to 317 (2020) with a mean of 209 mornings with successful dream recall per year.

2.2. Dream content analysis

For the purpose of this study, a new scale was developed (see procedure section). The scale measured whether the dreamer was in Europe (UK and other European countries). Talking about Europe or thinking about Europe was not coded. The interrater reliability for the dream content analytic scale (dream location in Europe Yes/No) was $\kappa = .659$ with an exact agreement of 98.3% (for further information about the coding process see procedure section).

2.3. Procedure

The dreamer contacted the author in his function as one of the editors of the International Journal of Dream Research via email (Feb 23, 2024). He stated that he has a long interest in dreams and recorded his dreams since he was a child. After a Zoom-Meeting (March 19, 2024), he agreed to provide the unedited version of the dreams he recorded from Jan 2013 to Dec 2022 in a Word file. The dreams (English language as the dreamer is an US citizen) were copied into an Excel sheet, information not related to the actual dream was removed, for example, statements about waking-life events or thoughts he had about the possible meaning of his dreams. For the coding, the dates of the dreams were removed and their order was randomized to ensure that the raters had not information about the time period the dreams was reported. All dream reports (no dream reports were excluded) were coded by eight external judges; each judge rated one eighth of the dreams. All raters were trained with 50 dreams applying a scale that measures the occurrence of study-related topics (Schredl, 2025). For determining interrater reliability, each of the eight raters coded 12 to 16 dreams that were already coded by another rater – resulting in $N = 117$ dreams with two ratings.

Europe as location in the dream

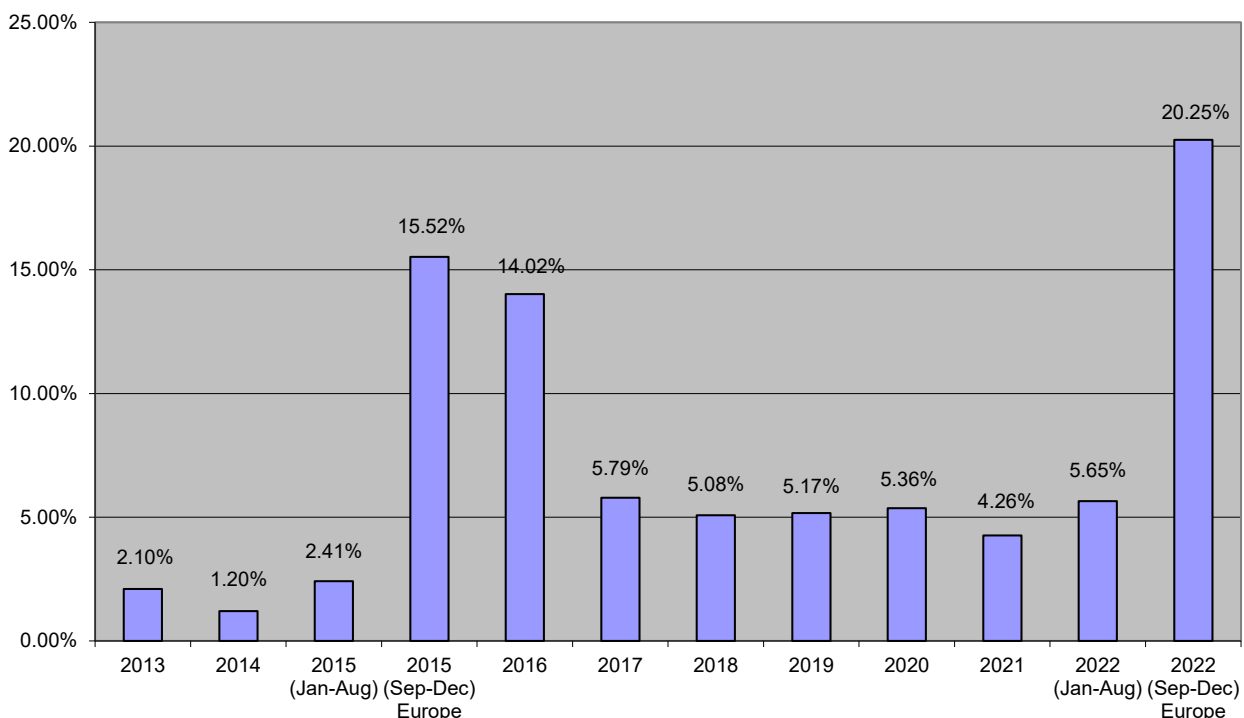


Figure 1. Percentage of Europe-related dreams per period (N = 2090 dreams).

The hypothesis were tested using the algorithm for analyzing a binary time series with gaps published by Klingenberg (2008). Within the software package SAS 9.4 for Windows, an autoregressive Generalized Linear Mixed Model (AR-GLMM) with a logit link within the procedure GLIMMIX with a power covariance structure was used.

3. Results

Within the long dream series, the overall percentage dream reports with a European location was 5.84% ($N = 122$ dreams). The time interval from January 2013 to August 2015 was the baseline ($N = 392$ dreams) with 1.79% dreams in which the dreamer was in a place in Europe (see first dream example.) The increase from baseline to the first period in Europe ($N = 58$ dreams) was statistically significant ($t = 6.8$, $p < .0001$, one-tailed) (see Figure 1). Similar, the increase in dreams with Europe as a location increased from the interval from Jan 2020 to Aug 2022 (5.03%, $N = 776$ dreams) to the second stay in Europe starting with Sep 2022 ($t = 6.1$, $p < .0001$) (see Figure 1). Interestingly, the percentage of Europe dreams did not drop significantly from the first stay in Europe (Sep 2015 to Dec 2015) to 2016 ($t = -0.6$, $p = .5586$). However, the percentages of Europe dreams were lower in the years 2017 ($t = -2.7$, $p = .0080$) and 2018 ($t = -3.3$, $p = .0014$) (see Figure 1).

Comparing the years 2018 and 2021 with the baseline before making a trip to Europe (Jan 2013 to Aug 2015), the percentage of Europe dreams was significant higher: 5.08% (2018) vs. 1.79% (baseline), $t = 3.4$, $p = .0008$ and 4.26% (2021) vs. 1.79%, $t = 2.8$, $p = .0057$.

Dream examples with Europe as a setting

"I remember riding in a boat with Dad and Uncle Bill. We were going to visit some cabin or lake house that we owned on a lake in Sweden. I remember riding on the boat at night. (Name was changed, Date: Nov 4, 2014)."

"Hanging out with G-Eazy and my friend Ben. We were driving in a car to go somewhere. Ben put "HYFR" on and I started rapping it also with a slight intention to impress G-Eazy. He was on his phone writing lyrics pretty much the whole time yet still carrying on conversations with us. The only other part is I remember walking by the Bataclan venue in Paris and feeling razzed, thinking about the terror attacks there. (Name was changed, Date: Nov 20, 2015)"

4. Discussion

The findings indicate that visiting new places affect dreams in the short-run (dreaming about the new places while being there) but also for a longer period of time (over 6 yrs.) To a smaller extend, the results also support the idea of creativity in dreams and/or the effect of thoughts and media on dreams as the dreamer dreamed of Europe before he was ever being there.

From the methodological view, the scale's interrater reliability has been sufficiently high; this value is comparable with other scales, e.g., measuring the occurrence of verbal interactions, physical interactions, or aggression in dreams (Schredl et al., 2004). This should not have affected the results. However, the external raters did not have the infor-

mation which places in Europe the dreamer visited during his stay; thus, measuring being in Europe without specifying the exact place is a first step studying continuity. In future studies, a more detailed analysis, for example involving the dreamer in the rating process would allow a more detailed analysis (cf. Marrou & Arnulf, 2018). The findings are based on a dream series of a single person, thus, they cannot be generalized. On the other hand, analyzing single dream series is almost mandatory to study long-lasting effects of waking-life experiences on dreams as typical research designs include only two or four weeks keeping a dream diary (Schredl, 2018). The dreamer was a high dream recaller, an aspect that also limit generalizability but is also crucial for performing such analyses as a sufficient large number of dreams recorded during the different time periods is necessary (cf. Schredl, 2024). One has to keep in mind that dream content analytic studies rely on remembered dreams (Schredl, 2018), that is, how often topics like Europe might occur during dreaming that is not remembered is unclear. However, this issue does not affect the statistical comparison between the different time periods as all data are remembered dreams.

Overall, the specific setting (Europe) was present in about 6% of the remembered dreams – indicating that analyzing dream locations is a feasible approach to study the continuity between waking and dreaming as reported by Jouvett (1979) and Marrou and Arnulf (2018). Whereas these two studies were limited to studying short-term effects – Jouvett (1979) limited his analysis to temporal references below two weeks and Marrou and Arnulf (2018) analyzed one year, the present findings aimed at studying long-term effects not only short-term effects. First, the present results support the findings of Marrou and Arnulf (2018) that being in a new place is increasing the chance to be also in this place in the dream. The resolution regarding time (using year-long intervals) and place (not coding cities but a whole continent) was much lower in the present study compared to the Marrou and Arnulf (2018) study. As the time intervals the dreamer visited Europe were 3 months, the effect that he dreamed about being in Europe while being in Europe in waking is more in the short-term range, and in resonance with the continuity hypothesis (Schredl, 2003). In addition to this short-term effect, we could demonstrate a long-term effect, even 6 years after visiting Europe for the first time, the participant "visits" Europe in his dreams clearly more often than prior to his first visit to Europe. The percentage of Europe dreams were especially high in the year after the first visit, a direct after effect of the exciting stay. Previous research, e.g., analyzing the frequency of partner dreams (Schredl & Reinhard, 2012) or being in the old school building in the dream (Schredl, 2012b), is also indicating that dreams not only reflect current waking-life experiences but also long-term memories that are more distant (Botman & Crovitz, 1989; Strauch & Meier, 1996).

Marrou and Arnulf (2018) reported an anticipation effect, that is, their participant was dreaming about the city he was going to visit beforehand. Even one can speculate whether this might be the case in the present data set, it is more likely that the non-zero frequency of Europe dreams prior to the first visit, might reflect thoughts, stories the dreamer heard, or media reports about Europe. This would also fit in with the original continuity hypothesis cited in the introduction (Bell & Hall, 1971) and empirical findings indicating that thoughts, e.g., sexual fantasies (Schredl et al., 2009)

and media consumption (Moverley et al., 2018) are related to dreaming about these contents. It might also reflect the creative aspect of dreaming as the raters should only code dreams in which the dreamer was actual in Europe, not just thinking or talking about it in the dream. This addition to the continuity hypothesis was conceptualized by Schredl (2024) formulating the CDC theory (Continuity, Discontinuity, and Creativity) in order to account for dream content that is not continuous to waking life, e.g., flying dreams.

To summarize, studying dreams in which the dreamer was in Europe before, during, and after his first visit and his second visit to this continent provided support for the continuity hypothesis of dreaming (Schredl, 2003). The approach to analyze long dream series might be valuable to test the hypothesis proposed by Juvet (1979) that different aspects of waking life may show different time courses of their occurrences in dreams; persons show a strong day-residue effect whereas setting might underlie a dream-lag effect of 7 to 8 days (Strauch & Meier, 1996). Using events that are unique in the life of the dreamer would be suitable for empirical studies, e.g., analyzing the frequency of the Europe setting and the frequency of persons he met in Europe for the first time over the years and compare the trajectories of both topics.

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