Time specifications in dreams of a long series: Time of day and day of the week

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Summary. The present study analyzed the frequency of time specifications (time of day, day of the week, exact time references) in a long dream series (N = 10,148 dreams) reported by a single participant. Comparisons were made with a dream sample of students (N = 1612 dreams of 425 students). Overall, about 10% of the dreams of the series included such references—similar to that of the student sample. The results indicate that time of day and day of the week are not equally distributed in the dream series, i.e., morning settings and weekend days are overrepresented. This line of research might provide insights into the continuity between waking and dreaming, e.g., that social interactions taking place in leisure time might be of more importance to the dreamer compared to work-related topics and, thus, are incorporated into the dream more often than every-day work issues.

Keywords: Dream series, time of day, day of the week, continuity hypothesis

1. Introduction

In order to study the continuity between waking and dreaming (Hall & Nordby, 1972), studies have focused on specific waking activities like sports (Schredl & Erlacher, 2008), driving (Schredl & Hofmann, 2003), cognitive activities (Hartmann, 2000), politics (Kern et al., 2014), or current concerns (Domhoff, 2003), i.e., the thematic content of dreams was in the spotlight. On the other hand, research has also focused on formal characteristics of dreams like bizarreness (Hobson, Hoffman, Helfand, & Kostner, 1987), colors (Hoss, 2010), or meta-cognition (Kahan & LaBerge, 1996). Despite the large number of investigated dream aspects, there are some characteristics very rarely looked at but nevertheless very interesting when studying the continuity between waking and dreaming. Schredl (2004) compared the frequency of summer and winter themes in two dream samples, one obtained during a winter month and one obtained during a summer month. For winter topics, the expected result (present more often in dreams recorded in the winter) was found but not for summer themes. I.e., the seasonal experience in waking life had – at least partially – an effect on dream content. Another study (Schredl & Knoth, 2012) looked at the time of day within the dream and found, as expected, that dreams with temporal references to the nighttime are more negatively toned (reflecting waking-life fears and worries about nighttime) than dreams with temporal references to the daytime. Beside those two studies, systematic research into the temporal characteristics of dreams has not been carried out.

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The present study analyzed the frequency of time specifications (time of day, day of the week, exact time references) in a long dream series reported by a single participant. The purpose was to determine whether these time references are equally distributed over the day and over the week and, thus, might provide clues for the interaction between waking and dreaming. The continuity hypothesis would predict that days of the week should be equally distributed and time of day according to the waking hours of the person. Comparisons for the time of day data were made with a sample of students (N = 1612 dreams of 425 students).

2. Method

2.1. Participant and dream diary

The male participant kept an unstructured dream diary from the age of 22, beginning in September, 1984 through December 2011. For the present analysis, all 10,148 dreams from that period were included. The mean dream length was 131.0 ± 83.4 words. The participant was studying till the age of 28 (N = 2682 dreams) and then worked as a researcher (N = 7462 dreams).

2.2. Procedure

The dream reports were typed and entered into a database, Alchera 3.72, created by Harry Bosma (www.mythwell.com). This database allows the assignment of key words to the dreams, a task carried out by the dreamer himself. Each dream was rated for the time of the day with the categories: early morning, morning, forenoon ("Vormittag"), midday, afternoon, evening, late evening, and night. The ratings were done post-hoc and time of day was one coded if explicitly mentioned in the dream report. For the comparison with another dream sample (Schredl & Knoth, 2012), early morning and morning were grouped together, and also evening and late evening. In order to test whether these time references are equally distributed within the 24-hours, rough estimates regarding the time intervals were made (see Table 1). Fur-

Table 1. Time of day in the dream series (N = 10,148) and in a student sample (N = 1,612)

Time of day	Dream series	Student sample[1]	Time interval (percentage)	Time interval estimated
Morning	26.23%	23.37%	12.5%	3 hours (6 to 9)
Forenoon	8.25%	1.63%	12.5%	3 hours (9 to 12)
Midday	5.01%	5.43%	4.17%	1 hour (12 to 13)
Afternoon	13.46%	9.24%	16.67%	4 hours (13 to 17)
Evening	30.45%	29.35%	25.00%	6 hours (17 to 23)
Night	16.50%	30.98%	29.17%	7 hours (23 to 6)
Total number of references	100% (1018)	100% (184)	100% (24 hours)	

[1]Schredl and Knoth (2012)

thermore, the dreamer coded whether there was a specification on which day of the week the dream action took place. Lastly, it was coded whether explicit time specifications, e.g., 17.00, were made in the dream. These specifications were grouped into one-hour intervals. It was also coded whether there was a reference to a date within the dream.

The Alchera software also provides a word count for each dream report. The analysis unit was a single dream report. The data were exported into an Excel spreadsheet (Microsoft) and data analysis was carried out using the SAS 9.4 software package for Windows. Distributions were compared using the Chi-Square test.

3. Results

Overall, time specifications (time of day, day of the week, date) were present in 1027 dreams (10.12% of the total dream series). Most often the dreams included references to the time of the day (961 dreams) and explicitly mentioned clock times (332 dreams) whereas the days of the week were less often mentioned in the dream (207 dreams). Very rarely, a specific date (day and month) played a role (4 dreams); year was never explicitly mentioned in the dream series.

In Table 1, the distribution of the times of day within the dream is presented. Early morning (N = 40) and morning

(N = 211) were combined; similarly, evening (N = 270) and late evening (N = 40) were combined. Comparing the distribution of temporal references in the dream series with that of a student sample (1612 dreams recorded by 425 students; mean age: 23.5 ± 5.3 yrs.) reported by Schredl and Knoth (2012) resulted in a significant difference (Chi^2 = 29.7, p < .0001). Also, the tests for comparing the two distributions with regard to the estimated percentage representing equally distributed time references across the day were significant: Time series (Chi^2 = 104.7, p < .0001) and student sample (Chi^2 = 31.6, p < .0001). Table 1 indicates that the most striking differences between the two samples are the high number of night references in the student sample. In both samples, "morning" references are over-represented, and "night" references are under-represented. The dream series was divided into the phase when the participant studied and the phase when he was working as a researcher. The distribution of the time of day references did not differ (Chi^2=5.2, p = .3927)

The distribution of days of the week is depicted in Table 3. The statistical test against equally distributed references is significant (Chi^2 = 104.9, p < .0001). The data show that Saturdays and Sundays are mentioned more often than weekdays.

Lastly, the exact references to time were analyzed (see Table 4). These references were mentioned in contexts like time to get up, time to get to work, pending appointments, missed appointments, time pressure, meeting someone,

Table 2. Time of day in the first part of the dream series (N = 2,686 dreams) and the second part of the dream series (N = 7,462 dreams)

Time of day	Student phase	Researcher phase
Morning	28.25%	25.75%
Forenoon	7.14%	8.67%
Midday	3.21%	5.69%
Afternoon	11.79%	14.09%
Evening	33.21%	29.40%
Night	16.79%	16.40%
Total number of references	100% (280)	100% (738)

Table 3. Time of day in the first part of the dream series (N = 2,686 dreams) and the second part of the dream series (N = 7,462 dreams)

Day of the week	Frequency
Monday	19
Tuesday	14
Wednesday	8
Thursday	19
Friday	29
Saturday	53
Sunday	71

conferences (work-related), attending a lecture, train schedules, closing hours of stores and so on. The data indicate that the time references are roughly equally distributed over the waking hours but refer to nighttime hours less often. The date references (N = 4) were related to appointments.

4. Discussion

Overall, time specifications were found relatively often in the dreams of this series, a value similar to the previous figure (9.99% of the dreams mentioned time of day) found by Schredl and Knoth (2012). This clearly demonstrates that these aspects of dreams are worth studying in relation to waking life. Solely, explicit references regarding the date were extremely rare (4 out of 10,148).

The most prominent deviation from the expected frequency of time of day references was the morning; the male dreamer and the students reported about it being morning in dreams more often. Based on some examples of the dream series, this might reflect the fact that the time to get up, the time to go to work or to the university might be an important topic for the dreamer and, thus, is relatively often reflected in his dreams. For students, nighttime was also mentioned very often (keeping in mind that most of the sleep typically falls in this time slot) and, thus, might reflect that social activities (meeting friends in clubs, at parties etc.) are very important for this group. This is in line with the finding that talking with friends is overrepresented in dreams compared to reading, working on the computer, typically daytime activities of students (Schredl & Hofmann, 2003). I.e., the distribution of times of day nicely fit into the framework of the continuity hypothesis (Schredl, 2012) stating that dreams reflect waking life, especially those things that are important to the dreamer.

On the other hand, the dreams of the series included much less references to nighttime and this did not change from the student phase to the working phase of the participant and, thus, not supporting the idea that those nighttime activities are particular important for students. To clarify this issue, it would be very interesting to study time references in dreams in a sample with a larger age range, i.e., not restricted to students.

The notion of continuity between waking and dreaming also supported by the distribution of the exact time references given in dreams. Night references are quite rare because there is not much waking life during these hours as the dreamer was most often sleeping during this time interval. On the other hand, the time references are quite equally distributed about the "normal" waking hours from about 6 to 22, with frequencies ranging from 11 to 22.

The finding is that the days of the week are not equally distributed in this dream series, weekends were mentioned far more that week days, might be related to previous findings showing that cognitive activities like reading, writing, and working with a computer are under-represented compared to talking to friends and driving a car (Schredl & Hofmann, 2003). As work is a big part of the days from Monday to Friday, the preponderance of Saturday and Sunday may reflect the focus of dreams on leisure time and spending time with close persons – topics also very often reflected in dreams (Paul & Schredl, 2012).

Taken together all findings, the day of time references and the days of week are not equally distributed as expected (with the exception of the exact time references), indicating that other factors like emotional involvement may affect

Table 4. Explicit time specifications (N = 332) in the dream series (N = 10,148)

Time interval (24 hrs)	Frequency
0 to 0:59	4
1 to 1:59	6
2 to 2:59	0
3 to 3:59	1
4 to 4:59	7
5 to 5:59	7
6 to 6:59	11
7 to 7:59	22
8 to 8:59	17
9 to 9:59	20
10 to 10:59	20
11 to 11:59	14
12 to 12:59	11
13 to 13:59	17
14 to 14:59	20
15 to 15:59	17
16 to 16:59	16
17 to 17:59	22
18 to 18:59	22
19 to 19:59	22
20 to 20:59	22
21 to 21:59	17
22 to 22:59	9
23 to 23:59	8

the continuity between waking and dreaming. The present study analyzing a long dream series of a single participant is limited regarding the conclusion but indicate that studying time specifications in dream can provide information regarding the continuity between waking and dreaming. It would be very interesting to use diaries that not only elicit the emotional intensity and emotional tone of the waking life event (Malinowski & Horton, 2014; Schredl, 2006) but also the time of day. This could confirm the hypothesis that some topics in the morning might be of specific importance to the person and, thus, are more often incorporated into subsequent dreams. Furthermore, it would be very interesting to replicate the preponderance of weekend days as dream settings compared to work days in samples with a larger age range.

Acknowledgements

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