*Original Research Article*

# Continuity Between Waking Life and Dreaming: A Research Note and Study in Adolescents

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**Abstract**

A vast number of empirical findings support the continuity hypothesis of dreaming. Interestingly, research on that topic in adolescents is scarce. In a sample of 100 adolescents (50 female, 50 male) with a mean age 15.30 ± 0.80 years, it was found that for all six topics (watching TV, video gaming, social media use, engage in hobbies, caring for pets, and spending time with the partner), dream percentages of a specific topic was higher if the adolescents spent more time with this activity in waking life. Partner dreams and social media dreams were more frequent compared to adults, stressing the importance these issues have for adolescents. Future research can help to understand the well-being of adolescents by analyzing the emotional quality and content of their dreams.

**Keywords**

Dreaming, continuity hypothesis, adolescents, partner dreams

## Introduction

The original formulation of the continuity hypothesis is as follows: "This hypothesis states that dreams are continuous with waking life; the world of dreaming and the world of waking are one. The dream world is neither discontinuous nor inverse

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in its relationship to the conscious world. We remain the same person, the same personality with the same characteristics, and the same basic beliefs and convictions whether awake or asleep. The wishes and fears that determine our actions and thoughts in everyday life also determine what we will dream about (p. 104; Hall & Nordby, 1972)." Whereas the neurocognitive theory of dreaming proposed by Domhoff (2018) focuses on the continuity between conceptions and personal concerns and dreams, other researchers (Schredl, 2018) simply correlated the amount of time spent with a particular activity during the day and the percentage of dreams including this topic, without specifically addressing personal concerns and conceptions. For example, sport students dream more often about sports than psychology students (Erlacher & Schredl, 2004; Schredl & Erlacher, 2008), or politics students dream more often about politics (Vogelsang et al., 2016). These correlations between time spent with an activity during waking and dreaming about this activity has been demonstrated for many different areas, e.g., driving a car (Schredl & Hofmann, 2003), spending time with the partner (Schredl, Cadiñanos Echevarria, et al., 2020), professional life (Schredl, Anderson, et al., 2020), spending time with pets (Schredl et al., 2021; Schredl, Bailer, et al., 2020), hobbies (Schredl et al., 2023), musical activities (König et al., 2018), and media consumption (Moverley et al., 2018). Interestingly, most of these studies looking at the continuity of waking and dreaming have been carried out in adults (Schredl, 2018), whereas studies in adolescents are quite rare (Domhoff, 1996). There is a body of research on dream content in adolescents, e.g., on gender differences (Schredl et al., 2019) with more physical aggression in boys' dreams whereas girls dreamed more of indoor setting. Other studies focused on the ratio of male and female dream characters (Karagianni et al., 2013), aggression (Dale et al., 2014; Domhoff, 2022), Covid19-related dreams (Parrello et al., 2021), and dreams about school (Maggiolini et al., 2016). In a small sample of adolescents (N = 19), Bédard et al. (2021) were able to show that an insecure attachment style was associated with less frequent "security"-related dreams. In a dream series with N = 183 dreams of a girl who recorded her dreams between 14 and 16 yrs. old, the topics she was engaged in in her waking life (soccer, hockey) did also show up in her dreams (Bulkeley, 2012). Moreover, Lambrecht et al. (2013) reported that about 75% of the adolescents stated that daily activities and/or watching TV affected their dreams. This brief overview indicates that studies assessing the continuity between waking and dreaming by directly correlating time spent in waking life with an activity and dreaming about an activity are still lacking for adolescents.

The aim of this study was to investigate the frequency of different dream topics (TV-related topics, video gaming, social media, pets, hobbies, and partner) in adolescents. Based on the continuity hypothesis of dreaming, we expected that adolescents spending more time with a particular activity in waking life also dream more often about this activity.

## Method

### Participants

Overall, 100 adolescents (50 female, 50 male) participated in the study and completed the questionnaire. The mean age of the sample was $15.30 \pm 0.80$ years (range: 14 to 17 years).

### Research Instruments

For assessing dream recall frequency, a seven-point scale (coded as 0 = never, 1 = less than once a month, 2 = about once a month, 3 = about 2 to 3 times a month, 4 = about once a week, 5 = several times a week, 6 = almost every morning) was applied. The scale is part of the MADRE questionnaire (Schredl et al., 2014) and has a high retest reliability (mean interval about 8 weeks) with $r = 0.85$ (Schredl, 2004).

The next question elicited the percentage of dreams related to a particular waking-life activity: Film/Series/TV, videogames, social media, pets, hobbies, and partner relationship. For the category pets the following information was given: Please include time spent actively with the pet, e.g., walking the dog, cuddling. Six answer categories were presented: More than 50%, 31 to 50%, 21 to 30%, 11 to 20%, 1 to 10%, and 0%.

After presenting the question about dreams about the activities, the amount of time spent with these activities per day was elicited. The following eight categories were presented: More than 10 h., 9 to 10 h., 7 to 8 h., 5 to 6 h., 3 to 4 h., 1 to 2 h., Less than 1 h., and Not at all.

### Procedure

Four students of a German school ("Gymnasium") developed the questionnaire under the supervision of the author. Overall, 120 questionnaires were distributed within the school, 100 complete questionnaires were returned. In Germany, a study of this kind (course project) does not require ethical approval. The four students entered the data according to a coding system developed by the author. For the analysis, the author received an Excel file with completely anonymized data; that is the file did not include codes that would allow linking the entries with personal information of the participants.

Statistical procedures were carried out with the SAS 9.4 software package for Windows. Ordinal regressions were used for analyzing the effect of age, gender, and time spent with the waking-life activity on the percentage of remembered dreams featuring this specific waking-life activity. All variables were entered simultaneously. For these analyses, participants with no dream recall were excluded. Effect sizes were calculated according to Cohen (1988) using the webpage of Lenhard and Lenhard (2016). For descriptive purposes only (presenting means and standard deviations), the scales

were transformed using class means: Percentages (More than 50% → 75.5%, 31 to 50% → 40.5%, 21 to 30% → 25.5%, 11 to 20% → 15.5%, 1 to 10% → 5.5%, and 0% → 0%), time spent with the activity in waking life (More than 10 h. → 11.5 h., 9 to 10 h. → 9.5 h., 7 to 8 h. → 7.5 h., 5 to 6 h. → 5.5 h., 3 to 4 h. → 3.5 h., 1 to 2 h. → 1.5 h., Less than 1 h. → 0.5 h., Not at all → 0 h.).

## Results

The dream recall frequency distribution is depicted in Table 1. About one third of the participants had high dream recall (at least once a week) whereas 7% of the adolescents reported that they had no dream recall in the last several month. An ordinal regression indicated that age was not significantly associated with dream recall frequency (standardized estimate: .1129, $\chi^2 = 1.3$, $p = .2519$, effect size = 0.230) but gender was significantly related with dream recall frequency (standardized estimate: -.2166, $\chi^2 = 4.6$, $p = .0316$, effect size = 0.439). Females tended to report higher dream recall compared to males.

The activities the adolescents spent most of their time in waking life were social media, hobbies, and watching films/series/TV (see Table 2). On the other hand, the highest percentage of dreams featuring particular waking-life activities were found for partner relationship, hobbies, watching films/series/TV, and spending time with pets (see Table 3). The average percentage of partner dreams in adolescents who did not spent any time with a partner, presumable having no partner (N = 56) was 16.22% ± 21.45%. On the other hand, the 37 adolescents with partner reported 43.61% ± 24.76% partner dreams. Participants who did not spent any time with a pet in waking life (N = 29), reported an average frequency of pet dreams of 3.78% ± 6.32%, whereas participants spending time with pets (N = 64) reported that 14.96% ± 14.07% of their dreams included pets.

As expected, the time spent with a particular waking-life activity was significantly associated (medium to large effect sizes) with the percentage of dreams about this waking-life activity for all six waking-life activities included in the study (see Table 4). Interestingly, dream recall frequency was associated with the percentage of dreams including a specific topic in four analyses (see Table 4). Gender or age were each only once associated with one of the dream variables.

**Table 1.** Dream Recall Frequency (N = 100).

| Category | N | Percent |
|---|---|---|
| Almost every morning | 4 | 4.00% |
| Several times a week | 30 | 30.00% |
| About once a week | 26 | 26.00% |
| About 2 to 3 times a month | 19 | 19.00% |
| About once a month | 9 | 9.00% |
| Less than once a month | 5 | 5.00% |
| Never | 7 | 7.00% |

**Table 2.** Waking Life Activities (N = 93).

| | Film/Series/TV | | Videogames | | Social media | | Pets | | Hobbies | | Partner relationship | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hours per day | N | Percent | N | Percent | N | Percent | N | Percent | N | Percent | N | Percent |
| More than 10 h. | 0 | 0.00% | 0 | 0.00% | 0 | 0.08% | 1 | 1.08% | 0 | 0.0% | 3 | 3.23% |
| 9 to 10 h. | 0 | 0.00% | 0 | 0.00% | 0 | 0.00% | 0 | 0.00% | 2 | 2.15% | 3 | 3.23% |
| 7 to 8 h. | 1 | 1.08% | 2 | 2.15% | 5 | 5.38% | 1 | 1.08% | 2 | 2.15% | 4 | 4.30% |
| 5 to 6 h. | 1 | 1.08% | 5 | 5.38% | 15 | 16.13% | 2 | 2.15% | 6 | 6.45% | 7 | 7.53% |
| 3 to 4 h. | 28 | 30.11% | 12 | 12.90% | 30 | 32.26% | 8 | 8.60% | 25 | 26.88% | 6 | 6.45% |
| 1 to 2 h. | 39 | 41.94% | 19 | 20.43% | 31 | 33.33% | 27 | 29.03% | 41 | 44.09% | 5 | 5.38% |
| Less than 1 h. | 21 | 22.58% | 28 | 30.11% | 11 | 11.83% | 25 | 26.88% | 14 | 15.05% | 9 | 9.68% |
| Not at all | 3 | 3.23% | 27 | 29.03% | 1 | 1.08% | 29 | 31.18% | 3 | 3.23% | 56 | 60.22% |
| Mean ± SD (hrs.) | 1.94 ± 1.38 | | 1.37 ± 1.77 | | 2.98 ± 1.95 | | 1.19 ± 1.75 | | 2.40 ± 1.93 | | 1.77 ± 3.13 | |

**Table 3.** Percentage of Dreams Including the Waking Life Activities (N = 93).

| | Film/Series/TV | | Videogames | | Social media | | Pets | | Hobbies | | Partner relationship | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Percent | N | Percent | N | Percent | N | Percent | N | Percent | N | Percent | N | Percent |
| More than 50% | 2 | 2.15% | 0 | 0.00% | 0 | 0.00% | 1 | 1.08% | 6 | 6.45% | 16 | 17.20% |
| 31 to 50% | 6 | 6.45% | 4 | 4.30% | 3 | 3.23% | 5 | 5.35% | 21 | 22.58% | 19 | 20.43% |
| 21 to 30% | 9 | 9.68% | 7 | 7.53% | 12 | 12.90% | 14 | 15.05% | 13 | 13.98% | 10 | 10.75% |
| 11 to 20% | 19 | 20.43% | 3 | 3.23% | 17 | 18.28% | 19 | 20.43% | 22 | 23.66% | 13 | 13.98% |
| 1 to 10% | 42 | 45.16% | 27 | 29.03% | 31 | 33.33% | 25 | 26.88% | 17 | 18.28% | 16 | 17.20% |
| 0% | 15 | 16.13% | 52 | 55.91% | 30 | 32.26% | 29 | 31.18% | 14 | 15.05% | 19 | 20.43% |
| Mean ± SD (%) | 11.97 ± 13.96 | | 5.46 ± 9.65 | | 8.75 ± 9.54 | | 10.87 ± 12.64 | | 21.69 ± 19.67 | | 26.69 ± 26.45 | |

**Table 4.** Ordinal Regression Analyses for the Percentages of Dreams Including Particular Waking-Life Activities (N = 93).

| | Age | | | | Gender (1 = f, 2 = m) | | | | Dream recall frequency | | | | Waking-life activity (hrs.) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variable | SE | $\chi^2$ | p | d | SE | $\chi^2$ | p | d | SE | $\chi^2$ | p | d | SE | $\chi^2$ | p | d |
| Film/Series/TV | .0441 | 0.2 | .6805 | 0.093 | .1915 | 3.0 | .0839 | 0.365 | .1174 | 1.2 | .2791 | 0.229 | .3490 | 9.3 | .0012[1] | 0.667 |
| Videogames | .2972 | 4.6 | .0456 | 0.456 | .3002 | 3.6 | .0576 | 0.401 | .3475 | 5.3 | .0209 | 0.492 | .8784 | 23.6 | <.0001[1] | 1.166 |
| Social media | -.0944 | 0.8 | .3839 | 0.186 | -.1366 | 1.6 | .2047 | 0.265 | .2360 | 4.6 | .0321 | 0.456 | .1879 | 3.0 | .0412[1] | 0.365 |
| Pets | .0566 | 0.3 | .5967 | 0.114 | .0781 | 0.5 | .4702 | 0.147 | .2747 | 4.5 | .0336 | 0.451 | .4737 | 15.8 | <.0001[1] | 0.905 |
| Hobbies | .0914 | 0.8 | .3840 | 0.183 | .0855 | 0.7 | .4159 | 0.147 | .1596 | 2.3 | .1243 | 0.319 | .3511 | 9.8 | .0004[1] | 0.686 |
| Partner relationship | .2122 | 3.9 | .0481 | 0.418 | -.0752 | 0.5 | .4791 | 0.147 | .3192 | 8.4 | .0038 | 0.630 | .6197 | 22.5 | <.0001[1] | 0.565 |

SE = Standardized estimates, d = Effect size, [1]one-tailed.

**Table 5.** Comparison of Dream Topics in Adolescents' Dreams (Present Study) and Adults' Dreams (Percentages of All Remembered Dreams).

| Topic | Adolescents | Adults |
|---|---|---|
| Partner dreams (Partnership) | 43.61% | 23.96%[1] |
| Partner dreams (Singles) | 16.22% | 15.66%[1] |
| Hobby dreams | 22.25% | 10.46%[5] |
| Pet dreams (Participants having a pet) | 14.96% | 19.29% (dog dreams)[2]<br>11.26% (cat dreams)[3] |
| Social media dreams | 9.26% | 2.15%[4] |

[1]Schredl, Cadiñanos Echevarria, et al. (2020), [2]Schredl, Bailer, et al. (2020), [3]Schredl et al. (2021), [4]Moverley et al. (2018), [5]Schredl et al. (2023).

In Table 5, the present findings in adolescents were compared to studies in adult samples that applied a comparable methodology (retrospective estimates of the percentage of dreams including a specific topic). Whereas partner dream percentages for singles and pet dream percentages were roughly comparable, adolescents with partner report much more partner dreams than adults in partnership. Similar, adolescents reported a higher frequency of social media and hobby dreams compared to adults.

## Discussion

The most frequent dream topics were the partner (real or fantasized) and hobbies, even though the activity the adolescents spent most time with was related to social media. For all areas (TV/Film, video gaming, social media, pets, hobbies, and partners), the amount of time spent with the particular activity was related to the percentage of dreams about the activity, thus, supporting the continuity hypothesis of dreaming.

From a methodological viewpoint, it is important to notice that frequency of specific dream content was elicited retrospectively and not by carrying out content analysis on dream reports. However, it has been shown that these two different approaches yielded similar findings in the field of sports dreams (Erlacher & Schredl, 2004; Schredl & Erlacher, 2008) and partner and ex-partner dreams (Schredl & Wood, 2021; Schredl, Cadiñanos Echevarria, et al., 2020). This would imply that possible biases due to memory, that is recalling how often a specific topic showed up in the dreams recently remembered, seem to be rather small. As dream recall frequency was related to the percentage of four out of the six dream topics (see also, for example, Schredl, Anderson, et al., 2020), one might speculate that the retrospective approach might be not that suited for participants with low dream recall frequencies. That is, persons with rare dream recall might underestimated the frequency of certain dream topics. However, this effect was statistically controlled for in the analysis and, thus, should not have affected the findings. In addition, there might be an alternative explanation for the

positive correlation between dream recall frequency and the percentage of specific dream topics: As dream recall frequency is related to openness to experience (Schredl & Göritz, 2017) and boundary thinness which is closely associated with openness to experience might facilitate the continuity between waking and dreaming (Schredl et al., 1996), it would make sense that more open persons would dream more often about a specific theme on top of the amount of time spent with this activity in waking life. However, systematic studies testing this hypothesis in detail are still lacking.

Overall, the six topics that were elicited in the present study reflect themes that show up in dreams of adolescents quite often. This selection of relevant topics is likely not be comprehensive as dreams related to family members, friends, or school have not been included. The results regarding the continuity between waking and dreaming were comparable to the findings in adults (Schredl, 2018); that is, the more time the adolescent spends with an activity in waking life, the more often she or he dreams about this particular activity. The clear continuity between waking and dreaming for topics like hobbies or pets, poses the question whether limiting the waking-life aspects to personal concerns and conceptions within the framework of the continuity hypothesis (Domhoff, 2018) is an open question (Schredl, 2012); as these topics would normally not categorized as personal concerns or a conception. A broader view based on the original formulation of the continuity hypothesis that stresses the relationship between overt behavior ("acting out") and covert behavior (thoughts, feelings, and fantasies) in waking life and dreams (Hall & Nordby, 1972) might be more beneficial for empirical researchers (Schredl, 2017) as sound psychometric measures to quantify "personal concerns" or "conceptions" have not been applied in dream research.

Taking a look at Table 5, there are very pronounced differences regarding the percentage of specific dream topics between adolescents and adults, especially for partner dreams, hobby dreams, and social media dreams. Whereas the partner dream percentage was almost equal in adult and adolescent singles, the percentage of partner dreams was much higher for adolescents with partnership compared to adults with partnership. One explanation might be that romantic partnerships in adolescence are very important (Gómez-López et al., 2019). In addition, there is some evidence that partnership quality and partnership duration (inversely related) are associated with partner dream frequency. This could at least partly explain the difference as the duration of a romantic relationship in adolescence might be shorter and being newly in love the hormones are goint wild. Within this context, dream research add information to the understanding of romantic relationships in adolescence. Whereas dreams about pets (compared to dog and cat dreams in adults) yielded comparable percentages, adolescents reported hobby dreams twice as often compared to adults. It might be possible that in adults, work-related dreams play a more important role that hobby dreams as they occur more often (17.56% vs. 10.46%) (Schredl et al., 2023), whereas hobbies for adolescents are more engaging in waking life compared to school-related issues. Unfortunately, the balance between school-related dreams and hobby-related dreams were not addressed in this study.

The higher number of social media dreams in adolescents is most likely explained by the fact that the adolescents participating in the present study spent almost three hrs. per day with social media, whereas in the adult sample of Moverley et al. (2018) the average time spent with social media was on average 4.37 h. per week. Interestingly, social media dreams can be nightmarish (Shabahang et al., 2024) and reflect possibly negative effects of social media use (Schredl & Göritz, 2019). Thus, dream research can help to shed light on problematic social media use; a problem that is quite common in adolescents all over the world (Boer et al., 2020).

Overall, the present study adds to the understanding that dreams are continuous to waking life in adolescents – similar to the findings in adults. Even the differences in specific topics (partner dreams and social media dreams) can be explained within the framework of the continuity hypothesis of dreaming (Schredl, 2003). For future research, it would be very interesting to study the emotional tone of dreams with specific topics, e.g., social media dreams or partner dreams, to investigate whether dreams contribute to the understanding of the well-being in adolescence. In adults, for example, more negatively toned partner dreams are related to a poorer relationship quality (Schredl, Cadiñanos Echevarria, et al., 2020).

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