

# Frequency of sport dreams and dreams about politics: An online study

Alina Noveski<sup>1</sup>, Michael Schredl<sup>1</sup>, & Anja Göritz<sup>2</sup>

<sup>1</sup>Central Institute of Mental Health, Medical Faculty Mannheim, Heidelberg University, Germany

<sup>2</sup>Department of Psychology, University of Freiburg, Germany

**Summary.** Many recent studies supported the continuity hypothesis of dreaming which suggests that dream content reflects waking life experiences. This study investigated factors that affect the frequency of sport and politics dreams. The online survey (N=2929 German speaking participants) showed a prevalence of about 6% sport dreams and 4% politics dreams. Results indicated that younger and male participants dreamed more often about sport and politics. Furthermore, higher education was positively correlated with a higher frequency of politics dreams. Moreover, a positive correlation between lucid dream recall frequency and sport dreams was found. Further research is needed to corroborate the present findings using dream diaries to minimize the bias of the retrospective estimates. In addition, the political and sport-related activities of the participants during the day should be assessed in order to correlate waking variables with frequencies of the dream topics directly. These studies might help to further understand the continuity between dream content and waking life experiences.

**Keywords:** Sport dreams, dreams about politics, lucid dreams, dream recall frequency, attitude toward dreams, continuity hypothesis

## 1. Introduction

Previous studies have shown that daily waking life events are mirrored in the contents of dreams (Schredl, 2003). This relation is defined by the so-called “continuity hypothesis” which was first named in its general form by Hall and Nordby (1972). One study (Schredl & Hofmann, 2003) showed, for example, that the frequency of dreaming of driving reflects the amount of car driving in waking life. In addition, there was a close connection between daytime mood and emotional tone while dreaming (Schredl & Reinhard, 2009–2010). The continuity between waking and dreaming has been demonstrated in many areas (Schredl, 2012) and, thus, should also be valid for themes like sports and politics.

In accordance with the continuity hypothesis, studies measuring the frequency of sport dreams reveal that sport students have more dreams of sport than psychology students (Erlacher & Schredl, 2004; Schredl & Erlacher, 2008). In a dream diary study, 38% of the dream content of sport students refer to sporting activities compared to only 14% in the dreams of psychology students (Erlacher & Schredl, 2004). Using a retrospective estimate for the frequency of sport dreams, the overall frequencies were lower but showed a comparable difference (Schredl & Erlacher, 2008): 17.30% in sport students compared to 4.49% in psychology students. Furthermore, German athletes reported that 23.7% of recalled dreams were sport dreams

(Erlacher & Schredl, 2010). Time spent doing sports in waking life correlated positively with the frequency of sport dreams (Erlacher & Schredl, 2010; Schredl & Erlacher, 2008). A survey in German athletes (Erlacher, Strumbys & Schredl, 2012) showed that 9% used lucid dreaming for practicing sport skills. For future research it would be of great interest to estimate the frequency of sport-related dreams in the general population.

A study by Kern et al. (2014) showed that 11.72% of the dreams of politics students are dreams about politics, compared to a frequency of only 6.71% in psychology students. These results support the continuity hypothesis as well since politics students spent more time with political topics in waking life than psychology students. Once again it would be interesting to know the frequency of politics dreams not only in specific groups of students but also in the general population.

The present study aims to determine the frequency of sport and politics dreams in a population-based sample. In addition, the effects of socio-demographic factors such as gender, age and education were studied – controlling for possible confounders like dream recall frequency and attitude towards dreams. It was expected that the effect of age and gender are comparable to age and gender effects on these domains in waking life and, thus, supporting the continuity hypothesis of dreaming. We also studied the relationship between sport dreams, lucid dream recall frequency, and overall emotional tone of dreams.

## 2. Method

### 2.1. Research Instrument

Several items of the MADRE Questionnaire (Schredl, Berres, Klingauf, Schellhaas, & Göritz, 2014) have been used as the basis for the present study. The participants had to estimate

Corresponding address:

Prof. Dr. Michael Schredl, Sleep laboratory, Central Institute of Mental Health, PO Box 122120, 68072 Mannheim, Germany.  
Email: Michael.Schredl@zi-mannheim.de

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their dream recall frequency on 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) with a high retest reliability ( $r = .756$ ; Schredl et al., 2014) and their lucid dreaming frequency on an eight-point scale (coded as 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) with a retest reliability of  $r = .89$  (Stumbrys, Erlacher, & Schredl, 2013). The definition of lucid dreaming included in the questionnaire was as follows: "In a lucid dream, one is aware that one is dreaming during the dream. Thus it is possible to wake up deliberately, to influence the action of the dream actively, or to observe the course of the dream passively". The overall emotional tone of the dreams was measured by a five-point scale (-2 = very negative, -1 = somewhat negative, 0 = neutral, +1 = somewhat positive, +2 = very positive); the retest reliability was  $r = .617$  (Schredl et al., 2014). The general attitude towards dreams was measured by six items (Schredl et al., 2014). All of them have a five-point format, e.g., "I think that dreams are meaningful" (0 = not at all, 1 = not that much, 2 = partly, 3 = somewhat, 4 = totally) with high internal consistency ( $r = .910$ ) and high retest reliability ( $r = .842$ ; Schredl et al., 2014).

The participants were asked to estimate the percentage of their recalled dreams that had political or sport content. The following definitions of political and sport dreams were given: Politics dreams are defined as "dreams with social and/ or political content, for example, when politicians discuss and review social questions such as integration or global problems. The dreamer can be the actor as well as an observer. It is also adequate, if the dream's setting is political.", and sport dreams as "every way of direct or indirect activity with a sportive topic, that means sporting activity as well as informing and discussing about sport events". No time interval was given. The two-week retest reliability of the subjective estimated frequency of politics dreams was  $r = 0.612$  ( $N = 2274$ ) and the two-week retest reliability of the subjective estimated frequency of sport dreams was  $r = 0.559$  ( $N = 2280$ ); unpublished data.

## 2.2. Procedure and participants

The link for the study was posted on the online panel [www.wisopanel.net](http://www.wisopanel.net) from April 18th, 2014 to April 29th, 2014. In this panel, German speaking persons who are interested in online studies and having heterogenic demographic backgrounds are registered. For some studies they receive a reward such as money. However, participating in this study was voluntary and unpaid. In total, 2929 persons participated in the study (1742 women, 1187 men) with the mean age of  $45.88 \pm 14.38$  years. Evaluating the question regarding education showed that  $N = 25$  participants did not finish school,  $N = 314$  went to school for 9 years ("Hauptschule"),  $N = 848$  for 10 years ("Mittlere Reife"),  $N = 829$  for 12 - 13 years ("(Fach-)Hochschulreife"),  $N = 839$  for 16 - 18 years ("(Fach)Hochschulstudium") and  $N = 74$  participants had a doctoral degree.

The SAS 9.4 software package for Windows was used for statistical evaluation. To analyze the predictors that effect dream variables ordinal regressions (cumulative logit analyses) were used.

## 3. Results

Overall, the averaged sport dream percentage was  $5.94\% \pm 12.90\%$  ( $N = 2901$ ) and  $4.11\% \pm 10.22\%$  ( $N = 2902$ ) was the percentage political dreams. As can be seen in Table 1, different categories were used because the data were not normally distributed. About 80% of the participants dreamed never or very seldom of politics or sport. However, a small group of people reported that 40% and more of their dreams have politics or sport content. The mean dream recall frequency was  $3.57 \pm 1.77$ , which means that dreams are remembered between 2 to 3 times a month and once every week. The mean lucid dream frequency on the eight-point scale was  $2.01 \pm 2.08$ . The mean general tone of dreams (scale ranging from -2 to +2) was neutral ( $0.04 \pm 0.83$ ). The mean value of the 6-item attitude towards dreams scale is  $2.48 \pm 0.92$ .

Age, gender, dream recall frequency, lucid dream frequency, and general tone towards dreams affected the frequency of sport dreams (see Table 2). The ordinal regression showed a  $R^2 = 0.134$ . Young and male participants dreamed more often of sports. The general tone towards dreams significantly influenced the frequency of sport dreams: Participants with a positive tone towards dreams dreamed more often about sports as well as participants with a positive attitude towards dreams. Lastly, the lucid dream frequency and dream recall frequency correlated with the frequency of sport dreams. The more often a person can recall lucid dreams and dreams in general, the more they dream of sports.

The results regarding the factors that influence political dream frequency were similar as for sport dreams (see Table 2). The explained variance of the ordinal regression was  $R^2 = .0930$ . Interestingly, in contrast to the effect on sport dreams education had a highly significant influence on the percentage of political dreams: The more educated the participants were, the more they dreamed of politics. The general tone factor did not correlate with the frequency of political dreams.

As it can be seen in Table 3, lucid dream frequency correlated positively with the frequency of sport dreams. The effects of the other variables on sport dream percentage were not altered by introduction lucid dream frequency into the regression analysis.

Table 1. Percentage of sport dreams ( $N=2901$ ) and dreams about politics ( $N=2902$ )

Category	Sport dreams		Dreams about politics	
	N =	Percent	N =	Percent
0 %	1668	57.50%	1924	66.30%
0.01% - 5%	577	19.89%	471	16.23%
5.01% - 10%	286	9.89%	232	7.99%
10.01% - 20%	149	5.14%	151	5.20%
20.01% - 40%	128	4.41%	76	2.26%
40.01% - 100%	93	3.21%	48	1.65%

Table 2. Ordinal regression analysis for the categorized sport dreams variable (N=2901) and the categorized dreams about politics variable (N=2902)

Variable	Sport dreams			Dreams about Politics		
	$\beta$	$\chi^2$	p	$\beta$	$\chi^2$	p
Age	-.2491	130.5	<.0001	-.1133	25.1	<.0001
Gender	-.1587	54.8	<.0001	-.1419	39.0	<.0001
Education	.0055	0.1	.7934	.0765	11.8	.0006
Dream recall frequency	.2358	100.2	<.0001	.2665	107.9	<.0001
Overall emotional tone	.1049	25.7	<.0001	-.0222	1.0	.3068
Attitude toward dreams	.0501	4.6	.0314	0.995	15.8	<.0001

$\beta$  = Standardized estimates

#### 4. Discussion

The present study showed that 6% of the participant's dreams were sport dreams; this is comparable to previous studies (Kern et al., 2014; Schredl & Erlacher, 2008) ranging from about 5% to 10% sport dreams. Referring to our result of 4% of dreams about politics, the study of Kern et al. (2014) showed a similar frequency of 6.7% in psychology students. The frequency of political and sport dreams declined with age and men reported more dreams of politics and sports. Moreover, higher education was associated with more dreams about politics.

One has to keep in mind that the present sample is – despite its large range in age and education – not representative as high dream recallers are slightly overrepresented (Schredl et al., 2014), i.e., there was a self-selection regarding dream recall but not particularly regarding the topic of sports and politics. As dream recall frequency is related to the percentage of sport dreams and dreams about politics, the percentages might be somewhat lower in representative samples.

The percentage of sport dreams found in the present study using retrospective estimates is smaller compared with the diary study findings of Erlacher and Schredl (2004) of about 14% of those dreams in psychology students. This difference might be explained by a recall bias in the retrospective measure, i.e., forgetting some incidences of sport dreams. This underestimation of retrospective measures has been demonstrated for other dream-related variables by Zunker et al. (2015). In addition, the positive correlations between dream recall frequency and sport (as well as politics dreams) also support the recall bias hypothesis as low dream recallers might forget their sport dreams more easily. On the other hand, the difference in sport dreams of sport students and psychology students was of comparable magnitude, irrespective of using diaries (Erlacher & Schredl, 2004) or retrospective measures (Schredl & Erlacher, 2008), i.e., the retrospective measure is a reliable and valid measure for determining influencing factors despite the overall underestimation. For future studies, it would be very interesting to use diaries in a larger, more diverse sample to assess sport dream frequencies.

The gender difference regarding sport dreams can be explained by the continuity hypothesis which states that waking life events are mirrored in dreams (cf. Schredl, 2003)

as Taniguchi and Shupe (2014) found a significant gender difference: 19.0% of men participated in sports (average of 1.8 hours per day) compared to only 15.3% of women participating in sports (average of 1.2 hours per day). Asking 30292 Participants (16873 women, 13419 men), Apostolou (2015) found that younger persons engage in sports more frequently than older people and, thus, the negative correlation between age and sport dreams might also be explained by the continuity hypothesis.

Similar to music dreams (Schredl, Berres, Klingauf, Schellhaas, & Göritz, 2015), the frequency of sport dreams were associated with a more positive overall emotional tone of dreams. This would also fit into the continuity hypothesis as practicing sports is generally experienced as more positive than negative (Lavega, Alonso, Etxebeste, Lagardera, & March, 2014).

Our result that lucid dream recall correlated with sport dreams fits in with the study by Erlacher, Stumbrys, and Schredl (2011-2012) as German athletes reported a higher percentage of lucid dreams compared to the general population (14.5% vs. 7.5%). This increased incidence of lucid

Table 3. Ordinal regression analysis for the categorized sport dream percentage variable (N = 2901)

Variable	Sport dreams		
	$\beta$	$\chi^2$	p
Age	-.2451	126.2	<.0001
Gender	-.1555	52.4	<.0001
Education	.0027	0.0	.8978
Dream recall frequency	.2003	66.0	<.0001
Overall emotional tone	.1065	26.4	<.0001
Attitude toward dreams	.0353	2.2	.1340
Lucid dream frequency	.1079	24.7	<.0001

$\beta$  = Standardized estimates

dreaming and sports might be explained by the fact that some athletes practice sport during lucid dreaming and have the impression that this enhances their skills in waking life (Erlacher et al., 2011-2012).

Regarding the result that men dream more often about politics, a study by Verba, Burns, and Schlozman (1997) showed that women are less politically interested, informed, and efficacious and, again, the gender difference in dreams parallels the gender difference in waking life.

Di Gennaro and Dutton (2006) investigated the political participation in the UK with a peak in the age group 35 to 54 years (for example: contacting politicians online, getting political information online, offline political participation, etc.) and that after the age of 55 years political participation was declining. This would explain the decrease in frequency of dreams about politics with age in the present sample (mean age: 45.88 years) – based on the continuity hypothesis of dreaming.

The continuity hypothesis is also able to explain the result that more educated participants dreamed more often about politics as Kam and Palmer (2008) showed that education and political participation correlated positively. For example, about 80% of college graduates engaged themselves in collecting signatures for petitions compared to only about 60% without college graduation (Gisart, 2016). Gisart (2016) also showed that younger persons participated less often in political meetings than older persons (32% vs. 23%).

To summarize, age, gender, education, lucid dream frequency, and general attitude towards dreams affected the frequency of sport and political dreams and, thus, the findings were congruent with the continuity hypothesis as comparable effects were found for sports and politics in waking life. Further research is needed to corroborate the present findings, using dream diaries to minimize the bias of the retrospective estimates. In order to correlate waking variables with frequencies of dream topics directly, it would be necessary to assess the political and sport-related activities of the participants during the day. These studies might help to elucidate the continuity between dream content and waking life experiences.

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