Factors affecting the frequency of music dreams: An online study

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Summary. Despite numerous anecdotal accounts of music dreams, empirical research in this area is scarce. The present online study (N = 2929) found a prevalence of about 6% of all dreams include some element of music. Age was negatively related to the frequency of music dreams, whereas dream recall frequency, the overall emotional tone of the dreams, and the attitude towards dreams showed positive correlations. Future studies are needed to investigate factors that might affect the frequency of music dreams like time spent during the day with music (e.g., music students, musicians) and/or the involvement in music (e.g., listening to background music vs. performing in front of a huge crowd). It would also be interesting to study the effect of music dreams on the mood and creativity of the next day as they tend to be positively toned and stimulating.

Keywords: Music, dreaming, dream recall, attitude towards dreams

1. Introduction

Music in dreams is a fascinating topic because there are numerous anecdotal accounts in which musicians created masterpieces of music based on their dreams, for example Tartini's "The Devil's Trill Sonata or of Paul McCartney who dreamed the melody of the song "Yesterday" (Barrett, 2001; Grace, 2012). Despite all the anecdotal material, systematic empirical research has been scarce. Uga, Lemut, Zampi, Zilli, and Salzarulo (2006) carried out a 30-day dream diary study with 30 persons who had never played an instrument and with 35 professional musicians. As expected, the number of dreams with music elements were higher in the musician group (about 40%) compared to the non-musicians (20%). This is in line with the continuity hypothesis of dreaming (Schredl, 2003) stating that waking-life experiences are reflected in dreams (assuming that total music-related activity per day (practicing, listening to music) is higher in musicians compared to the non-muscicans). As music is a frequent element in waking life (Theorell, 2014), one would expect that music dreams are also quite common but large-scaled studies on this topic are still lacking. In a sample of 128 participants (mainly students), the percentage of music dreams was about 12% (Kern et al., 2014). An interesting finding of the Kern et al. study was that music dreams were rated more positive with regard to their emotional tone than dreams in general

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The aim of the study was to determine the frequency of music dreams in a large sample in order to determine whether socio-demographic factors like age, gender, education and dream-related variables like dream recall frequency, overall emotional tone, and attitude towards dreams are related to the occurrence of music dreams.

2. Method

2.1. Research instrument

Four questions of the MADRE questionnaire, available in full length in German and English (Schredl, Berres, Klingauf, Schellhaas, & Göritz, 2014), were used for the present study. For eliciting dream frequency, a 7-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 presented. The retest reliability of the scale is high (r = .756; Schredl et al., 2014). The emotional tone of the dreams in general was measured on 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).

Attitude towards dreams were measured by six items showing high internal consistency (r = .910) and high retest reliability (r = .842; Schredl et al., 2014). The items have a five-point format, e. g., "I think that dreaming is in general a very interesting phenomenon. (0 = Not at all, 1 = Not that much, 2 = Partly, 3 = Somewhat, and 4 = Totally).

In addition, the participants were asked to estimate the percentage of dreams that included music. The following definition was used: "Music as a dream element can be a very possible occurrence, ranging from background music to attending a music show or playing an instrument." A specific time interval was not given, e.g., last months. The two-week retest reliability of this item was r = .679 (N = 2273).

2.2. Procedure and Participants

Overall, 2929 persons (1742 women, 1187 men) completed the online survey between April 18, 2014 and April 29, 2014. The mean age of the sample was 45.88 ± 14.38 years (range: 16 to 92 years). The distribution regarding education was the following: not finished school (N = 25), 9 years ("Hauptschule"; N = 314), 10 years ("Mittler-eReife"; N = 848), 12-13 years ("(Fach)Hochschulfreife"; N = 829), 16-18 years ("(Fach)Hochschulstudium"; N = 839), doctoral degree (N = 74). The link for the study was posted on the online panel www.wisopanel.net. Within this panel persons with an interest in online studies and with heterogenic demographic backgrounds are registered. For some surveys, prizes or money are offered for study participation, but this study was completely voluntary and unpaid.

Statistical procedures were carried out with the SAS 9.4 software package for Windows. Ordinal regressions (cumulative logit analyses) were used for analyzing the effect of different predictors on dream variables. For interval scales, linear regression analyses have been computed. For determining retest reliability, three indices were used: exact agreement for binary items, Spearman Rank correlations for ordinal scales, and Pearson correlation for interval scales.

3. Results

The overall mean of the percentage of music dreams was 6.15% ± 12.44%. As the data were not normally distributed, several categories were chosen in order to use a non-parametrical statistical approach. The distributions for the categories are depicted in Table 1. About half of the participants reported no music dreams whereas a small subgroup of the sample reported that more than 40% of their dreams included music elements. Mean dream recall frequency was 3.57 ± 1.77. With the dream recall scale ranging from 0 = never to 6 = almost every morning, the average is around one morning per week with dream recall. The average overall general tone of the dreams was balanced (0.04 ± 0.83; ranging from – 2 to + 2). The mean value of the 6-item attitude towards dreams scale was 2.48 ± 0.92.

The ordinal regression analysis depicted in Table 2 yielded a R^2 of .1200. Age was negatively associated with the percentage of music dreams whereas gender and education did not show any effects. High dream recall frequency, more positively toned dreams, and a more positive attitude towards dreams were associated with a higher percentage of music dreams.

4. Discussion

Even though more than 50% of the participants reported no music dreams, this first large-scaled study indicates that music in dreams occurs now and then: about 6% of all dreams include some form of music. This figure is considerably smaller compared to the study of Uga et al. (2006) who reported about 20% diary dreams with music elements, even in those persons who had never played in instrument. However, this study has to be viewed with caution because (1) the participants were recruited via advertisements, i.e., they might be self-selected for music dreams, and (2) participating in an study about music in dreams might increase demand characteristics which have been shown to affect dream content (Stern, Saayman, & Touyz, 1978). The figure is also lower than that reported by Kern et al. (2014) of about 12%. The discrepancy might be explained by the younger age of this sample (music dreams declined with age in the present sample) but not by demand characteristics as the Kern et al. study focused on political dreams and music dreams were used as a distractor. One has to keep in mind that the present sample is – despite its large range in age and education – not representative as high recallers are slightly overrepresented (Schredl et al., 2014), i.e., a self-selection regarding dream recall but not particularly regarding the topic of music. From a methodological viewpoint it should be added that retrospective questions about dream content might be difficult to answer, especially for low dream recallers (Schredl, 2002), i.e., the challenge is to have an overview of all the recent dreams and estimate the percentage of music dreams. Erlacher and Schredl (2004) and Schredl and Erlacher (2008) found almost identical percentages of sports dreams in sport students and psychology students using either content analysis of diary dreams or a retrospective question about the percentage of sports dreams. Nonetheless, it would be very desirable to complement the present findings using larger samples of unselected students and community samples recording their dreams to determine the frequency of music elements in dreams.

The significant decline of music dreams with age in the present study might be explained by less exposure to or interest in music in the elderly; the hypothesis between music exposure during the day (listening to music, talking about music, playing an instrument) and the percentage of music dreams should be tested in the future by including appropriate items. The correlation between dream recall frequency and percentage of music dreams might be due to the following reason: Persons with very low dream recall frequency might have the impression that they don't have

Table 1. Percentage of music dreams (N = 2907)

Category	Frequency	Percentage
0%	1952	54.76%
0.01% to 5.00%	584	20.09%
5.01% to 10.00%	350	12.04%
10.01% to 20.00%	164	5.64%
20.01% to 40.00%	136	4.68%
40.01% to 100%	81	2.79%

Table 2. Ordinal regression analysis for the categorized music dream percentage variable (N = 2907)

Factors	ß	χ^2	p
Age	-.1708	65.4	<.0001
Gender (1 = m, 2 = f)	-.0201	0.9	.3384
Education	.0012	0.0	.9550
Dream recall frequency	.2285	98.3	<.0001
Overall emotional tone	.1090	28.8	<.0001
Attitude towards dreams	.1335	33.1	<.0001

β = Standardized estimates

music dreams because they are so rare. In order to test this assumption of underestimation it would be necessary to carry out diary studies over a long time period in order to collect sufficient numbers of dreams of low dream recallers. Long dream series would offer an excellent opportunity for studying the frequency of music dreams across longer time periods.

In addition to dream recall frequency, a positive attitude toward dreams was also related to the percentage of music dreams. Since persons with an interest in dreams are more open to new experiences (Schredl, Wittmann, Ciric, & Götz, 2003) one might speculate that they are also more open to music and experience music more intensely – as the Big Five personality factor encompasses concepts like thin boundaries and absorption (McCrae, 1994). The emotional intensity of the waking-life experiences increase their chance to be incorporated into subsequent dreams (Malinowski & Horton, 2014; Schredl, 2006). I.e., future studies should include – in addition to measuring the amount of time spent with music activities – the emotional involvement in these activities. It would be also interesting to test whether playing a musical instrument has a more marked effect on dreaming than listening to music.

Very interesting is the finding that the percentage of music dreams is related to more positive dream emotions in general. Kern et al. (2014) found that the average emotional tone of music dreams was about + 1 (using a similar scale as in the present study) compared to the balanced ratio of all dreams (around zero, comparable to the mean of the present study). To follow up this line of research, it would be promising to analyze a large set of music dreams in order to shed light on the reasons why these dreams are often experienced as positive.

To summarize, the present study indicated that music in dreams occur in a sample with large age range. Future studies are needed to investigate factors that might affect the frequency of music dreams like time spent during the day with music (e.g., music students, musicians) and/or the involvement in music (e.g., listening to background music vs. performing in front of a huge crowd). It would also be interesting to study the effect of music dreams on the mood and creativity of the next day as they tend to be positively toned and stimulating.

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