TV viewing and dreaming in children: The UK library study

Julia Stephan[1], Michael Schredl[1], Josie Henley-Einion[2], & Mark Blagrove[2]

[1]Central Institute of Mental Health, Medical Faculty Mannheim, Heidelberg University, Germany

[2]Department of Psychology, Swansea University, United Kingdom

Summary. Since watching TV represents a considerable constituent of children's waking-life, TV content should hence have a great influence on dream content. The present study in children (N = 3167) clearly indicates that most children stated that watching TV affect their dreams. Whereas the amount of TV watching is weakly associated with nightmare frequency, the children who incorporate TV contents into their dreams have more nightmares. This is most likely explained by emotional intensity experienced while watching TV and/or personality traits. Carefully designed studies eliciting TV content, emotional response to TV watching, and personality traits are necessary to better understand the effect of TV consumption on dreaming.

Keywords: Dream recall, nightmares, TV watching, continuity hypothesis

1. Introduction

The present study explores the relation between TV viewing and dreaming in children. In addition to the use of other media like video and computer games, and the internet, many children and adolescents spend a great amount of hours per day watching television. The Committee on Public Education of the American Academy of Pediatrics (2001) estimated U.S. children's media use at 6 hr and 32 min per day. Moreover, Eggermont and Van den Bulck (2006) showed that using media as a sleep aid appears to be common practice among adolescents since 36.7% claim to use television to help them fall asleep. In children 4 to 11 years of age, the amount of watching TV was related to sleep disorders (Owens, Spirito, McGuinn, & Nobile, 2000).

According to the continuity hypothesis of dreaming (Schredl, 2012), dreams reflect waking-life experience. Since watching TV represents a considerable constituent of children's waking-life, TV content should hence have a great influence on dream content, especially if the watch TV while falling asleep (see above). Although some previous studies were not able to show a link between the amount of TV viewing and dreaming (e.g., Schredl, Anders, Hellriegel, & Rehm, 2008; Schredl, Blomeyer, & Görlinger, 2000), other findings imply that TV viewing should still be considered an important influencing factor on dream content. Van den Bulck (2004), for instance, demonstrated that TV content appeared frequently in nightmares for 33 % of the children and about 60 % of 13-year-olds and 50 % of 16-year-olds had pleasant dreams related to TV. Nightmare frequency was associated with watching violent films and series (Viemerö & Paajanen, 1992) but not with the TV consumption per day in general (Schredl et al., 2008; Schredl et al., 2000).

The present study investigates the association between the amount of TV viewing and nightmare frequency, and the self-rated effect of TV content on dream content. It is hypothesized that children who watch more TV (including videos and films) and incorporate TV content into their dreams have more often nightmares.

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

Submitted for publication: September 2012
Accepted for publication: October 2012

2. Method

2.1. Participants

The sample included 3167 children (1954 girls, 1213 boys) with the mean age of 11.95 ± 1.85 yrs. The sample sizes for the ages from 6 to 18 are depicted in Table 1.

2.2. Dream questionnaire

The questionnaire entitled "Dream lab: The big library experiment" was devised by the Library Association (United Kingdom) and Mark Blagrove. The following question concerning the amount of TV viewing was given: "How many hours each week do you watch television, videos or films?" Children were asked to indicate the appropriate number of hours.

The first question of the dream section covered dream recall frequency, using a five-point format: "How often do you wake up and are able to remember a dream?" 4 = 4-7 times per week, 3 = 1-3 times per week, 2 = 1-4 times per month, 1 = 1-11 times per year, and 0 = less than 1 time per year, or never. The same scale was given for measuring nightmare frequency including a brief definition for nightmares: "A nightmare is a vivid dream that is frightening or disturbing, and which you can remember clearly and in detail when you wake up. How often do you have such a nightmare?"

The questions about the influence of reading, TV consumption, and daytime experience on dream content were formulated as follows: "Do you find that your dreams are sometimes about what you have been reading?", "Do you find that your dreams are sometimes about what you have

Table 1. Age and gender distribution of the sample

Age group	Total	Females	Males
6-7 yrs.	56	32	24
8 yrs.	95	53	42
9 yrs.	176	110	66
10 yrs.	266	144	122
11 yrs.	544	345	199
12 yrs.	933	582	351
13 yrs.	594	367	227
14 yrs.	289	180	109
15 yrs.	119	79	40
16-18 yrs.	95	62	33

been watching on TV, video or film?", and "Do you find that your dreams are sometimes about what has been happening to you during the day?" Yes/ No / Don't know. For the purpose of the analysis of whether participants' dream content reflected reading content, TV content or daytime experience, the category Yes was used, and the categories No and Don't know were combined.

2.3. Procedure

The dream lab questionnaire was distributed in libraries all over the United Kingdom. The text explicitly stated that one does not have to remember dreams, go to a library or read regularly to fill in the questionnaire: this was in order to minimize possible selection effects. The completed questionnaire could be returned to the library or sent to the Library Association anonymously. For the present analysis, questionnaires completed by children from 6 yrs. to 18 yrs. were included. Because of very small sample sizes in some age groups, it was necessary to combine participants aged 6 and 7 years as well as participants aged 16-18 years for a sufficient number of each gender in each age group. Positive effect sizes for gender mean higher incidence among girls than among boys and negative effect sizes for gender mean higher incidence among boys than girls. Due to missing values, sample sizes vary slightly. Participants claiming to watch more than 50 hours TV, videos or films per week were excluded from the analysis.

ANOVA for testing age effects, gender effects and the interdependency effect of age and gender on the amount of TV viewing and logistic regressions for testing the association between nightmare frequency and age, gender, amount of TV viewing and the influence of TV content on dream content with dream recall frequency as a possible confounder were computed using the SAS 9.2 for Windows software package (SAS Institute Inc., Cary, NC, USA).

3. Results

Table 2 depicts the average amount of TV viewing (including videos and films) for each age group.

Computing an ANOVA with the factors gender and age group, the gender effect ($F=10.7$, $p=.0011$, $df=1,3148$) on the amount of TV viewing was significant with boys watching more hours of TV per week than girls (with the exception of the 15 year old). As expected, the effect of age group ($F=7.0$, $p<.0001$, $df=9,3148$) was also significant, meaning that older children watch more TV than younger ones. Interaction between gender and age ($F=1.5$, $p=.1352$, $df=9, 3148$) was non-significant (i.e. gender difference does not increase significantly with age).

The mean of the dream recall frequency scale was 2.61 ± 1.25 (n=3478), for nightmare frequency scale 1.46 ± 1.20 (n=3516). Children between 6 and 18 years remembered a dream on average 1-4 times per month to 1-3 times per week and had a nightmare 1-11 times per year to 1-4 times per month.

The logistic regression showed non-significant effects for age and the amount of TV viewing on dream recall frequency (see Table 3). In contrast, gender effect with girls recalling more dreams than boys was significant. A significant decrease with age in having nightmares and a significant gender effect with girls reporting more often nightmares than boys have been found. The association of the amount

Table 2. Age and gender difference in the amount of TV viewing (hours per week)

Age group	Total group	Female	Male	Effect size
All	15.57 ± 11.97	14.66 ± 11.40	17.03 ± 12.70	- 0.196
6-7 yrs.	10.38 ± 8.58	9.97 ± 7.17	10.94 ± 10.31	- 0.109
8 yrs.	10.41 ± 9.44	9.36 ± 8.21	11.73 ± 10.75	- 0.248
9 yrs.	12.05 ± 10.78	12.03 ± 11.61	12.08 ± 9.30	- 0.005
10 yrs.	14.85 ± 11.73	14.61 ± 11.95	15.13 ± 11.51	- 0.044
11 yrs.	15.10 ± 12.25	13.54 ± 11.46	17.80 ± 13.11	- 0.346
12 yrs.	16.27 ± 12.12	15.24 ± 11.49	17.99 ± 12.95	- 0.225
13 yrs.	16.99 ± 12.52	16.50 ± 11.80	17.79 ± 13.59	- 0.101
14 yrs.	16.34 ± 11.59	14.39 ± 10.42	19.55 ± 12.71	- 0.444
15 yrs.	16.72 ± 11.57	16.93 ± 11.81	16.31 ± 11.22	0.054
16-18 yrs.	15.43 ± 10.20	14.24 ± 9.23	17.67 ± 11.64	- 0.327

Note. sample sizes are correspondent to those in Table 1

Table 3. Logistic regressions for dream recall frequency (N= 3120) and nightmare frequency (N= 3156)

	Variables	SE[1]	Wald χ2	p -value
Dream recall frequency				
	Age	.0281	2.5	.1150
	Sex	.0737	17.1	<.0001
	TV consumption	.0220	1.5	.2193
Nightmare frequency				
	Age	-.0917	26.6	<.0001
	Sex	.0921	26.9	<.0001
	TV consumption	.0307	3.0	.0838

[1] SE = Standardized Estimates

of TV viewing with nightmare frequency was marginally significant.

As shown in Table 4, 73.65% of the children affirmed that what they had been watching on TV, video or film was reflected in their dreams. The "no" category was ticked by 8.81%, and 17.53% of the sample stated that they don't know whether TV had an effect on their dreams. The percentage for boys (73.76%) did not differ significantly from the figure for girls (73.57%) (see Table 5). Sign tests indicated that the self-reported effect of TV content on dream content was significantly higher than the self-reported effect of reading (M= 433.5, p<.0001) and the self-reported effect of daytime experience (M=198, p<.0001) on dream content.

The age effect was significant – older children indicated more often that their dream content reflected what they had been watching on TV than younger ones (see Table 5). As anticipated, analysis showed a significant effect for the amount of TV viewing – children who watched more TV reported more often that their dream content reflected TV content than children who watched less TV. Furthermore, the influence of TV content on dream content was significantly stronger in children with high dream recall frequency.

The analysis depicted in Table 6 showed that nightmare frequency is higher in children who reported that TV viewing has an effect on their dreams. As reported above, age and gender have an effect on nightmare frequency in this sample (decreasing with age, girls more nightmares than boys). Dream recall frequency was used as covariate; because it is correlated with nightmare frequency (r = .267, p < .0001; N = 3467) and the self-rated effect of TV viewing on dream content (cf. Table 5), it had to be statistically controlled for.

Table 4. The self-rated influence of TV content, reading, and daytime experience on dream contente

Variables	Yes
Effect of TV content on dream content (N=3096)	73.65%
Effect of reading on dream content (N=3115)	45.49%
Effect of daytime experience on dream content (N=3093)	60.85%

4. Discussion

Overall, the findings indicate that children and adolescents report a strong effect of TV consumption on dream content – according to the applied self-rating scales the effect is stronger than the effect of waking life experiences and reading. Whereas the association between the amount of TV watching on nightmare frequency was only marginally significant (cf. Schredl et al., 2008), children who reported that TV had an effect on their dreams also reported more often nightmares. There are two possible explanations which do not exclude each other for this finding. First, TV content might be an important factor to consider; the more intense the emotional reaction during TV watching the higher the probability of this content being incorporated into dreams. Research has shown that more intense waking life experiences are more likely to be incorporated into subsequent dreams (Schredl, 2006). Second, there might be personality traits that modulate the effect of TV on dreaming. A study in adults (Schredl, Kleinferchner, & Gell, 1996) indicates, for example, that persons with thin boundaries incorporate waking-life issues more often into their dreams than do persons with thick boundaries. Another study (Blagrove & Fisher, 2009) also indicated that boundary thinness modulated the correlation between presleep anxiety and nightmare occurrence in persons with boundary scores about the median of the sample. The effect of personality traits on the continuity between waking and dreaming, however, has not been studied systematically yet (Schredl, 2003). In order to

Table 5. Logistic regression for the influence of TV content on dream content (N=2753)

Variables	SE[1]	Wald χ2	p -value
Age	.0483	4.1	.0440
Sex	-.0032	0.0	.8961
TV consumption	.0985	14.9	.0001
Dream recall frequency	.0997	18.0	<.0001

[1] SE = Standardized Estimates

Table 6. Logistic regression for nightmare frequency (N=2743)

Variables	SE[1]	Wald χ2	p -value
Age	-.1157	35.9	<.0001
Sex	.0493	6.6	.0101
TV consumption	.0172	0.8	.3718
Effect of TV on dream content (Yes vs. No/ Don't know)	.0988	21.8	<.0001
Dream recall frequency	.2628	176.2	<.0001

[1] SE = Standardized Estimates

pursue this line of research, future studies should include a detailed description of the TV programs the children are watching (using a diary might be the best approach) and some personality measures like boundary thinness (Hartmann, 1991), openness to experience (McCrae, 1994), or field dependence (Baekeland, Resch, & Katz, 1968).

The gender differences of the present study regarding dream recall and nightmare frequency are in line with meta-analytic findings (Schredl & Reinhard, 2008, 2011), thus supporting the validity of the sampling. The decline with age has also been reported previously (Levin & Nielsen, 2007).

Several methodological issues will be discussed briefly. First, the nightmare definition in the study did not explicitly included the awakening criterion (American Academy of Sleep Medicine, 2005). Research, however, indicated that bad dreams (without awakening) can be as distressing as nightmares with awakening at the end of the dreams (Zadra & Donderi, 2000). For the statistical analysis, we collapsed "Don't know" and "No" answers regarding the self-reported effect of TV on dreams into one group. Interestingly, the "No" group was very small but it was assumed that "Don't know" group might have ticked this category because of low overall dream recall or they did not remember explicitly a dream that was affected by TV watching. In our viewpoint, it made sense to differentiate between subjectively reported effect and no or not remembered effect. As the study was carried out in 2002, only a general question about the amount of TV viewing was included. Ffuture studies, however, should take into account that viewing habits are changing, for example portable devices are used or internet sites like Youtube and include more sophisticated measures.

To summarize, the self-reported effect of TV on dream content was associated with heightened nightmare frequency indicating that watching TV might have negative effects on children's dreams – most likely depending on emotional intensity and/or personality traits. In addition, to elicit content of TV consumption, it would be very interesting to measure the emotional response of the children to the specific TV shows. These ideas clearly indicate that carefully designed studies are necessary to better understand the effect of TV consumption on dreaming.

References

American Academy of Pediatrics Committee of Public Education. (2001). Media violence. Pediatrics, 108, 1222-1226.

American Academy of Sleep Medicine. (2005). The international classification of sleep disorders. (ICSD-2). Westchester: AASM.

Baekeland, F., Resch, R., & Katz, D. (1968). Presleep metation and dream reports: I. Cognitive style, contuigity to sleep and time of the night. Archives of General Psychiatry, 19, 300-311.

Blagrove, M., & Fisher, S. (2009). Trait-state interactions in the etiology of nightmares. Dreaming, 19, 65-74.

Eggermont, S., & Van den Bulck, J. (2006). Nodding off or switching off? The use of popular media as a sleep aid in secondary-school children. Journal of Paediatrics and Child Health, 42(7-8), 428-433.

Hartmann, E. (1991). Boundaries in the mind. New York: Basic Books.

Levin, R., & Nielsen, T. A. (2007). Disturbed dreaming, post-traumatic stress disorder, and affect distress: a review and neurocognitive model. Psychological Bulletin, 133, 482-528.

McCrae, R. R. (1994). Openness to experience: expanding the boundaries of factor V. European Journal of Personality, 8, 251-272.

Owens, J. A., Spirito, A., McGuinn, M., & Nobile, C. (2000). Sleep habits and sleep disturbance in elementary school-aged children. Developmental and Behavioral Pediatrics, 21, 27-36.

Schredl, M. (2003). Continuity between waking and dreaming: a proposal for a mathematical model. Sleep and Hypnosis, 5, 38-52.

Schredl, M. (2006). Factors affecting the continuity between waking and dreaming: emotional intensity and emotional tone of the waking-life event. Sleep and Hypnosis, 8, 1-5.

Schredl, M. (2012). Continuity in studying the continuity hypothesis of dreaming is needed. International Journal of Dream Research, 5, 1-8.

Schredl, M., Anders, A., Hellriegel, S., & Rehm, A. (2008). TV viewing, computer game playing and nightmares in school children. Dreaming, 18, 69-76.

Schredl, M., Blomeyer, D., & Görlinger, M. (2000). Nightmares in children: influencing factors. Somnologie, 4, 145-149.

Schredl, M., Kleinferchner, P., & Gell, T. (1996). Dreaming and personality: thick vs. thin boundaries. Dreaming, 6, 219-223.

Schredl, M., & Reinhard, I. (2008). Gender differences in dream recall: a meta-analysis. Journal of Sleep Research, 17, 125-131.

Schredl, M., & Reinhard, I. (2011). Gender differences in nightmare frequency: a meta-analysis. Sleep Medicine Reviews, 15, 115-121.

Van den Bulck, J. (2004). Media use and dreaming: the relationship among television viewing, computer game play, and nightmares or pleasant dreams. Dreaming, 14, 43-49.

Viemerö, V., & Paajanen, S. (1992). The role of fantasies and dreams in the TV viewing-aggression relationship. Aggressive Behavior, 18, 109-116.

Zadra, A., & Donderi, D. C. (2000). Nightmares and bad dreams: their prevalence and relationship to well-being. Journal of Abnormal Psychology, 109, 273-281.