Gender differences in the dream content of children and adolescents: The UK library study

Michael Schredl[1], Verena Murowski[1], Christine Schwert[1],

Melanie Bleich[1], Josie Henley-Einion[2] and Mark Blagrove[2]

[1] Central Institute of Mental Health, Mannheim, Germany

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

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Send correspondence to:

M. Schredl, Ph. D., Sleep laboratory, Central Institute of Mental Health, PO Box 12 21 20, 68072 Mannheim, Germany, phone: ++49-621-1703-1782, fax: ++49-621-1703-1785

email: Michael.Schredl@zi-mannheim.de

Abstract

While gender differences in the dreams of adults have been studied extensively, large-scale studies in children and adolescents are relatively scarce. The UK Library study collected 1995 most recent dreams of children and adolescents. Boys reported more physical aggression and less female characters in their dreams, whereas indoor settings were more prominent in girls' dreams – results that are consistent with the findings in adults and the continuity hypothesis of dreaming. The study indicates that dream content analysis is a valuable tool for studying the inner world of children and adolescents as dreams reflect their waking life experiences, thoughts, and concerns. It would be informative to include measures of waking-life aggression, frequency of social contacts and leisure time activities in order to provide evidence for direct links between waking and dreaming.

Dreaming is defined as mental activity during sleep (Schredl, 2008b). One question in the field of dream research is how waking life affects dream content. The so-called continuity hypothesis of dreaming suggests that topics of waking life (experiences, concerns, etc.) are reflected in dreams (Schredl, 2012). Empirical research has adopted different approaches to study the effect of waking life on dreaming, for example, experimental manipulation of the pre-sleep situation (De Koninck & Brunette, 1991) or field studies correlating time spent with waking-life activities and their occurrence in dreams (Schredl & Erlacher, 2008). Another option is to compare groups with presumably different waking-life experiences and compare the dreams of these groups, e.g., patients with mental disorders and healthy controls (Skancke, Holsen, & Schredl, 2014), and evaluate to see if differences in dream content reflect the waking-life differences.

A considerable number of studies have looked at gender differences in dream content (overview: Schredl, 2007). The first large-scale dream content analysis carried out by Hall and Van de Castle (1966) showed that men's dreams take place in outdoor settings more often and include more physical aggression, weapons and sexuality. Women's dreams, on the other hand, involve a larger number of dream persons, more explicitly mentioned emotions, household items and clothes. In addition, men's dreams are dominated by males, whereas women's dreams show a balanced ratio regarding the gender of dream persons (Hall & Van de Castle, 1966). Subsequent studies confirmed most of the early findings (Hall, Domhoff, Blick, & Weesner, 1982; Schredl & Keller, 2008-2009; Schredl & Piel, 2005; Schredl, Sahin, & Schäfer, 1998; Winget, Kramer, & Whitman, 1972). As meta-analyses revealed more sexual behavior like masturbation in men (Oliver & Hyde, 1993) as well as a higher incidence of physical aggression in boys and men (Eagly & Steffen, 1986) in waking life, several of the gender differences in dream content are similar (heightened incidence of sexual dream and physical aggression in men's dreams) and, thus, support the notion of continuity between waking and dreaming. Several studies (Paul & Schredl, 2012; Schredl & Jacob, 1998; Schredl, Loßnitzer, & Vetter, 1998) were able to demonstrate that waking-life social interactions

(how much time spent with men) correlated directly with the gender ratio of the dream characters. Similarly, the amount of sexual fantasies was related to erotic dream content (Schredl, Desch, Röming, & Spachmann, 2009).

Whereas the gender differences in dream content of adults are quite well established (Schredl, 2007), similar studies in children are relatively scarce. In children older than 10 years, most gender differences are comparable to those in adults, i.e., increased physical aggression in boys and higher percentage of indoor settings in girls (Avila-White, Schneider, & Domhoff, 1999; Crugnola, Maggiolini, Caprin, De Martini, & Giudici, 2008; Domhoff, 1996; Karagianni et al., 2013; Oberst, Charles, & Chamarro, 2005; Strauch & Lederbogen, 1999). Girls' dreams contain a balanced proportion of male and female dream persons, whereas boys' dreams are dominated by male dream persons (Avila-White et al., 1999; Domhoff, 1996; Foulkes, 1982; Foulkes, Hollifield, Sullivan, Bradley, & Terry, 1990; Karagianni et al., 2013; Siegel, 2005; Strauch, 2005; Strauch & Lederbogen, 1999) – findings similar to the findings in adults. Interestingly, Karagianni et al. (2013) found similar gender differences in the age groups of 8 to 12 years and 13 to 18 yrs. In younger children (8 yrs. and younger), two studies with small sample sizes (Saline, 1999; Sándor, Szakadát, Kertész, & Bódizs, 2015) showed no difference regarding the percentage of physical aggression, however Honig and Nealis (2012) reported that fighting and chasing were prominent in 3 to 5 year-old boys compared to girls in this age group. However, the sample sizes of several studies were very small, e.g., N = 24 (Strauch & Lederbogen, 1999) or N = 40 (Sándor et al., 2015) and replications in larger samples are needed. Schredl and Pallmer (1998) found that human aggressors in children's dreams are more often male strangers than known male or female characters; this finding was similar in boys and girls and was interpreted as reflecting aggression in waking life as men committing more often violent crimes than women (Broidy & Agnew, 1997).

The present study is based on 1995 dream reports of children and adolescents collected within the UK Library study which had the aim of replicating previous findings regarding gender differences in

dream content. We expected more physical aggression and male dream characters in boys' dreams compared to girls' dreams, whereas girls' dreams should include more indoor settings. We also want to replicate a specific gender difference regarding dream aggressors, i.e., that male strangers are much more often the aggressors in dreams – regardless the gender of the dreamer – compared to known males or female aggressors (Schredl & Pallmer, 1998). This is based on the idea that aggression in society is gender-related, i.e., men committing more often violent crimes than women (Broidy & Agnew, 1997).

Methods

Participants

The sample included 3535 children (2150 girls, 1385 boys) with the mean age of 11.95 ± 1.85 yrs. (6 to 18 yrs). Overall, 56.44% of the participants reported a most recent dream. The report rate was higher for girls (61.63%) than for boys (48.38%) and declined with age (logistic regression for dream report Yes/No; Age: standardized estimate: -.1013, χ^2 = 27.8, p < .0001; Gender: .1492, χ^2 = 62.6, p < .0001). The resulting sample (N = 1995) consisted of 1325 girls and 670 boys. The mean ages of the girls (11.85 ± 1.85 yrs.) and boys (11.73 ± 1.85) did not differ significantly (t = -1.3, p = .1879). Most of the participants (84.4%) were 10 to 14 years old; only 9.7% were 9 years old or younger and 5.9% were 15 to 18 years old. Mean word count of the dream reports was 60.74 ± 54.83 words per dream report. Girls reported longer dream reports than boys (68.78 ± 58.78 (girls) vs. 44.82 ± 44.71 (boys), t = -10.5, p < .0001).

Dream questionnaire and dream content analysis

The questionnaire entitled “Dream lab: The big library experiment” was devised by the Library Association (United Kingdom) and Mark Blagrove. The questionnaire covered reading habits, frequency of library visits, and several questions about dreaming. The instructions to elicit a most recent dream reports were as follows: “We would like you to write down the last dream you remember having, whether it was last night, last week, or last month, or whenever.” and “Now please write down the dream in the space opposite, as fully as you can remember it, including where you were in your dream, who was in it, what happened to you and the other people in your dream.”

The dream content analytic scales used in this study were adopted from Schredl, Sahin, et al. (1998) and Schredl and Pallmer (1998): realism/bizarreness (1 = realistic to 4 = two or more bizarre elements within the dream report), positive and negative emotions (two four-point scales: 0 = none, 1 = mild, 2 = moderate, 3 = strong), number of all dream characters, number of male dream characters, and number of female dream characters. The occurrence of verbal and physical aggression (directed towards the dreamer and aggression of the dreamer towards others) was coded binary (1 = present or 0 = not present). If aggressors occurred in the dream report, it was coded whether it is an animal, a fantasy figure or a human aggressor. For human aggressors, gender and familiarity (familiar vs. stranger) were also coded. Using the criteria devised by Hall and Van de Castle (1966), the presence or absence of indoor settings (1 = at least one indoor setting within the dream report) and the same for outdoor settings were coded. The “outdoor percentage” variable was computed as number of outdoor setting divided by the sum of outdoor and indoor setting.

The interrater reliability of these scales are satisfactory (Schredl, Burchert, & Grabatin, 2004): r = .765 (realism/bizarreness), r = .642 (positive emotions), r = .825 (negative emotions; all Spearman rank correlations), occurrence of aggression (96% exact agreement). Also the other scales showed good interrater reliability (Domhoff, 1996; Schredl & Pallmer, 1998).

Procedure

The dream lab questionnaire was distributed to 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. Analyses regarding dream recall frequency and other dream variables have been published by Georgi, Schredl, Henley-Einion, and Blagrove (2012). For the present analysis of dream reports, questionnaires completed by children from 6 yrs. to 18 yrs. were included. The dream reports were typed and rated by an independent judge. Logistic regressions were computed using the SAS 9.4 for Windows software package (SAS Institute Inc., Cary, NC, USA). The logistic regressions included word count of the dream reports as additional independent variable, in order to control the findings for possible gender differences in dream report length. Effect sizes regarding the gender differences were based on the χ^2-value or t-value of the regression analysis because the gender effect should be corrected for differences in word count between the two groups.

Results

The results of the dream content analyses are depicted in Tables 1 to 3. As dream report lengths differed between boys and girls, word count was included in the logistic regression in order to control for the effect of this possible confounder. Boys tended to report more bizarre dream reports, whereas the girls' dream reports included more intense positive emotions, more dream persons, especially female dream characters (see Table 1). The male/female ratios were 66.28% for boys and 46.18% for girls. The numbers varied only slightly if the sample was divided into two age groups: 6 to 11 yrs. (68.18% (boys) vs. 43.46% (girls)) and 12 to 18 yrs. (65.06% (boys) vs. 47.76% (girls)).

Whereas there was no gender difference regarding the percentage of dreams reports with outdoor settings, indoor settings were found more often in the girls' dream reports compared to the boys' dream reports (see Table 2). The outdoor percent (percentage of outdoor settings divided by percentages of outdoor and indoor settings) was 52.94% for boys and 48.12% for girls. Whereas girls reported a higher percentage of dream reports including verbal aggression, especially receiving verbal aggression, physical aggression (both expressing and receiving) was much more prominent in boys' dream reports (see Table 2). For both genders, the ratio of physical aggression to all forms of aggression was well beyond 50%: 94.97% (boys) and 78.70% (girls). Animal aggressors were slightly more common in boys' dream reports but fantasy figures as aggressors and human aggressors were equally prevalent in both sexes (see Table 2).

Overall, in 362 dream reports human aggressors were coded. Of these 362 human aggressors 181 were male, 41 were female. In 11 dream reports the group of aggressors included males and females and in 129 cases the gender of the aggressor was undetermined ["someone", "person", "my friend"]). In Table 3, the dream reports with human aggressors with specified gender (N = 233) are depicted. Boys tend to report unknown male aggressors more often, whereas girls reported more often about female aggressors in their dream reports. Comparing the percentages of the four groups using Sign tests clearly indicated that "Unknown male aggressors" are significantly more prominent compared to all of the other three groups which did not differ among themselves: "Unknown male aggressors" vs. "Known male aggressors" ($M = 61.0$, $p < .0001$), "Unknown male aggressors" vs "Unknown female aggressors" ($M = 65.5$, $p < .0001$), "Unknown male aggressors" vs "Known female aggressors" ($M = 65.0$, $p < .0001$), "Known male aggressors" vs. "Unknown female aggressors" ($M = 4.5$, $p = .3057$), "Known male aggressors" vs. "Known female aggressors" ($M = 4.0$, $p = .3317$), and "Unknown female aggressors" vs. "Known female aggressors" ($M = -0.5$, $p = 1.000$).

Discussion

The present findings regarding the gender difference in the dream content of children and adolescents are in line with the findings in adults (Schredl, 2007) and previous small-sample studies (Foulkes, 1982; Strauch, 2005): Boys reported more physical aggression and higher percentage of male characters compared to the sum of female and male characters in their dream reports, whereas indoor settings were more prominent in girls' dream reports. As reported previously (Schredl & Pallmer, 1998), the male stranger is by far the most frequent human aggressor.

Before discussing the findings in detail, several methodological considerations should be addressed. The findings of the present study are based on most recent dreams. Depending on the dream recall frequency of the participant, the time interval between having dreamed the dream and recording the dream for the study might be very long and, thus, the recall might be biased, most often in a sense that more bizarre, more intense and recurring dreams are more easily remembered and reported (Schredl, 2008b). In order to test whether this methodological aspect might have an effect on the gender differences in dream content, it would be informative to use dream diaries (Strauch & Lederbogen, 1999) or home dream logs based on structured interviews upon morning awakenings (Sándor et al., 2015) which allow recording the dream immediately upon awakening. Several previous studies (Foulkes, 1982; Strauch, 2005) are based on laboratory dreams. Even though the procedures in the lab setting are standardized and the dream report is collected immediately after being awakened from sleep, research has shown that lab dreams have also their disadvantages, i.e., they often contain references to the lab or the experimenter (Schredl, 2008a) and show less aggression compared to home dreams (Weisz & Foulkes, 1970). Therefore, it is encouraging that the gender differences in dream content are comparable between the present study and the lab studies (Foulkes, 1982; Strauch, 2005), showing that the collection method might affect the overall frequency of some topics but the gender differences are still preserved. Within this study only one

external judge coded the dream reports, i.e., the reliability of the scales might be different due to specific characteristics of the data set (Krippendorff, 2018), the scales used in the present study have applied to a variety of dream report samples and yielded comparable reliability coefficients (Schredl et al., 2004).

Another methodological issue which is important in eliciting written dream reports in children samples is the possibility that children make up a dream or report a waking fantasy, especially in children younger than 8 yrs. (Domhoff, 2003). In the present study, the proportion of this age group was relatively small, i.e., a possible bias should also be very small. In addition, the participants who filled out the questionnaire are very likely interested in dreams as they were titled “Dream Lab – the big library experiment”. This might help to explain the increased report rates of young children because those were particularly motivated and overcame possible difficulties with reading and writing in order to participate. One should keep in mind that the present sample is not representative but self-selected for some form of interest in dreams. This, however, is also the case for most of the previous studies (Foulkes, 1982; Oberst et al., 2005; Sándor et al., 2015; Strauch, 2005).

Girls reported dreams more often than boys – replicating a previous study eliciting reports of bad dreams (Schredl & Pallmer, 1998) and also reflecting the heightened dream recall frequency found in girls (Schredl & Reinhard, 2008). Girls also reported longer dream reports which have also been reported previously in children/adolescents (Avila-White et al., 1999; Schredl & Pallmer, 1998; Strauch, 2005) and adults (Schredl, Paul, Lahl, & Göritz, 2010-2011). In this respect the present findings seem to be valid as they are in line with the literature. Interestingly, the finding of more bizarre dreams in boys has not been reported previously. One explanation might be the above mentioned bias due to recall, as boys tend to have poorer dream recall: the more bizarre dreams might be better remembered if the retention interval is longer. In order to test this hypothesis, it would be necessary to elicit the time interval between having the dream and reporting the dream, and then test whether the dream bizarreness is affected by the length of this time interval. The finding that girls reported more persons per dream and more intense positive

emotions is in line with the Hall and Van de Castle (1966) gender differences in adults. Regarding the emotions, however, it should be kept in mind that subjective ratings of dream emotions showed higher percentages of emotions and emotional intensity compared to external ratings by judges (Schredl & Doll, 1998; Sikka, Valli, Virta, & Revonsuo, 2014). In adults, no gender difference was found for self-rated dream emotions (Schredl, Sahin, et al., 1998) in contrast to the findings regarding explicitly mentioned emotions in the dream report (Hall & Van de Castle, 1966). Similarly to the findings in adults (Röver & Schredl, 2017; Schredl & Doll, 1998), the intensity of negative emotions is higher than the intensity of positive emotions when using external judges to rate the emotions. As the ratio of positive and negative emotions is balanced if measured via self-ratings (Schredl & Doll, 1998), it would be clarifying to include self-ratings of dream emotions in the dream collection procedure in order to test a possible effect of how dream emotions were measured (external judges of dream reports vs. self-rated) on the gender difference in children and adolescents regarding this variable and on the overall ratio of positive and negative dreams.

The percentages of male dream characters in boys' and girls' dream are almost identical to those reported by Hall and Van de Castle (1966); for boys 66.28% (present study) vs. 67% (Hall & Van de Castle), for girls 46.18% (present study) vs. 48% (Hall & Van de Castle) and also corroborate previous findings in children (Avila-White et al., 1999; Domhoff, 1996; Foulkes, 1982; Foulkes et al., 1990; Karagianni et al., 2013; Siegel, 2005; Strauch, 2005; Strauch & Lederbogen, 1999). Whereas Hall (1984) speculated that the Oedipus complex might be an explanation (the importance of the father as a rival regarding the love of his mother) of this gender difference, several studies (Paul & Schredl, 2012; Schredl, Loßnitzer, et al., 1998) indicate that the waking-life pattern of social contacts serve as an explanation for this gender difference – in line with the continuity hypothesis of dreaming (Schredl, 2003). Empirical research (e.g., Leaper, 2011) clearly indicates that same-sex peers are preferred, especially by boys and, thus, the preponderance of male dream characters in dreams of boys would also be explained by their waking-life social contact pattern. The balanced ratio of male and female characters in dream reports of girls might be affected by

the preponderance of male occupations like policeman, bus driver (Strauch & Meier, 1996) but systematic research in this area is relatively scarce.

Whereas there was no gender difference regarding outdoor settings, the expected difference for indoor settings was found, i.e., girls reported more indoor settings – which is again in line with the continuity hypothesis of dreaming as girls prefer indoor activities more than boys (Rosenblum, Sachs, & Schreuer, 2010). Even though, the relative gender difference regarding the percentage of physical aggression in relation to all aggressive interactions is comparable to the findings in adults, e.g., 50% physical aggression for men, 34% for women (Hall & Van de Castle, 1966), the amount of physical aggression is much higher in children: 94.97% (boys) and 78.70% (girls) – even higher than the figures reported for children by Hall and Domhoff (1963) and other studies in children (Avila-White et al., 1999; Crugnola et al., 2008; Domhoff, 1996; Karagianni et al., 2013; Oberst et al., 2005; Strauch & Lederbogen, 1999). One possible explanation might be that most recent dreams might include more dramatic topics than diary dreams and laboratory dreams (Schredl, 2018) but systematic research how the method of dream collection affect the content of children's dream reports has not yet been carried out. It would be informative to study whether this high percentage of physical aggression in boys (including aggression directed to other dream characters) is related to media consumption and/or video/computer gaming (first-person shooter games). Gackenbach, Rosie, Bown, and Sample (2011) have demonstrated that excessive gaming has a strong effect on dream content. The higher percentage of verbal aggression in girls – even though much lower than the overall figures for physical aggression – might reflect the higher amount of relational aggression of girls in waking life (Wei, Fan, Zhou, Tian, & Qi, 2011). As waking life aggression is related to dream content in adults (Schredl & Mathes, 2014), it would again be fruitful to study the direct relationship between aggressive behavior in waking life (being the aggressor and being the recipient of aggression) and aggression in dreams in children and adolescents.

The high percentage of male strangers as human aggressors in children's dreams – also reported by Schredl and Pallmer (1998) – seems also to support the continuity hypothesis of dreaming as criminal rates including homicide are much higher for men compared to women (Broidy & Agnew, 1997). I.e., the gender distribution of violent criminals is also reflected in the dreams of children and adolescents.

Overall, the findings of the present study regarding gender differences in dream content in children and adolescents are in line with the literature for adults and with the continuity hypothesis of dreaming. I. e., the gender differences in dream content reflect gender differences in waking life. The study indicates that dream content analysis is a valuable tool for studying the inner world of children and adolescents. For future research, it would be informative to include measures of waking-life aggression, frequency of social contacts and leisure time activities in order to provide evidence for direct links between waking and dreaming. As waking life undergoes major changes during childhood and adolescence studying large dream samples in different age groups would be helpful to understand the continuity between waking and dreaming in children and adolescents.

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Table 1: Gender Differences in dream content variables

	Boys (N = 670)	Girls (N = 1325)	Effect size	Gender			Dream	
				SE	χ^2 or t	p	SE	
Bizarreness	2.73 ± 0.90	2.69 ± 0.90	-0.226	-.1113	22.4[1]	<.0001	.4148	2
Positive emotions	0.36 ± 0.66	0.47 ± 0.76	0.106	.0622	5.0[1]	.0256	.0634	
Negative emotions	1.11 ± 0.97	1.13 ± 0.94	0.068	-.0322	2.0[1]	.1626	.2159	
Persons	1.22 ± 1.43	1.98 ± 1.97	0.204	.0789	4.3[2]	<.0001	.5670	
Male characters	0.51 ± 0.92	0.63 ± 0.97	0.043	-.0191	-0.9[2]	.3683	.3823	
Female characters	0.26 ± 0.64	0.73 ± 1.17	0.308	.1331	6.5[2]	<.0001	.3918	

[1] Logistic regression, [2] Parametric regression, SE = Standardized Estimate, Effect sizes are based on the χ^2 or t value of the reg

Table 2: Dream content analysis regarding indoor and outdoor settings and physical and verbal aggression

	Boys (N = 670)	Girls (N = 1325)	Effect size	Gender			
				SE	χ^2	p	SE
Outdoor settings	44.39%	48.38%	-0.042	-.0228	0.8	.3817	.3429
Indoor settings	39.40%	52.15%	0.125	.0691	6.9	.0088	.1853
Verbal aggression (expressing)	0.45%	1.28%	0.056	.1961	1.4	.2384	.2730
Verbal aggression (receiving)	1.19%	3.62%	0.112	.2402	5.6	.0182	.2134
Physical aggression (expressing)	11.79%	4.68%	-0.309	-.3129	41.6	<.0001	.1914
Physical aggression (receiving)	20.45%	13.36%	-0.224	-.1587	22.1	<.0001	.1104
Aggression verbal (total)	1.49%	4.45%	0.118	.2285	6.2	.0125	.2450
Aggression physical (total)	28.21%	16.45%	-0.385	-.2148	48.7	<.0001	.1448
Aggression (total)	29.25%	19.55%	-0.288	-.1793	36.2	<.0001	.1697
Animal aggressors	12.09%	9.21%	-0.119	-.1024	6.3	.0119	.1004
Aggressors (fantasy figures)	12.09%	10.34%	-0.075	-.0632	2.5	.1122	.0779
Human Aggressors	17.46%	18.49%	-0.021	-.0141	0.2	.6707	.1424

SE = Standardized Estimate, Effect sizes are based on the χ^2 of the regression analyses

Table 3: Dream content analysis regarding familiarity and gender of human dream aggressors

	All (N = 233)	Boys (N = 72)	Girls (N = 161)	Effect size	Gender			Drear
					SE	χ^2	p	SE
Men unknown	67.81%	77.78%	63.35%	-0.281	-.1689	3.9	.0470	-.0555
Men known	15.45%	15.28%	15.53%	0.000	.0030	0.0	.9763	.0090
Women unknown	11.59%	8.33%	13.04%	0.141	.1256	1.0	.3201	.0108
Women known	12.02%	5.56%	14.91%	0.246	.2490	3.0	.0852	.1487
Men (total)	82.40%	90.28%	78.88%	0.270	-.2184	3.6	.0561	-.0683
Women (total)	22.32%	12.50%	26.71%	0.309	.2235	4.7	.0302	.0777

SE = Standardized Estimate, Effect sizes are based on the χ^2 of the regression analyses