Gender differences in dream content: Are they related to personality?

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Summary. Gender differences in dream content have been studied quite extensively. The present study focused on two dream characteristics, the ratio of male and female dream characters and the occurrence of weapons and clothes in dreams. A sample of 1612 diary dreams reported by 425 participants was analyzed using external ratings by a blind judge. Whereas the gender differences regarding the ratio of male and female dream characters was not significant, men reported more weapon dreams but dreams with references to clothing less often, which is in line with previous research. The explorative analyses indicated that some of the big five personality dimensions might be associated with these dream characteristics, e.g., extraverted men's dreams included more female characters compared to the dreams of introverted men. Research thus far, and this study, indicate that waking-life (preoccupation with clothes, media showing weapons, waking-life social contacts, etc...) strongly affects these dream characteristics but studies, explicitly measuring and correlating waking-life experiences and dream content, are still missing.

Keywords: Dream content, gender differences, personality, continuity hypothesis

1. Introduction

In his ground-breaking book The Interpretation of Dreams Sigmund Freud included 28 reports of his own dreams (Freud, 1987). A quantitative analysis by Hall and Domhoff (1968) showed that 72% of the dream characters in these dreams are male. This preponderance of male dream characters in dreams of men is in line with large-scale content-analytic findings (Hall & Van de Castle, 1966): in male dreams, 67% of the dream characters are male whereas in the dreams of women, the gender ratio of dream characters is mostly balanced (48% male characters). As this finding has been replicated in a large number of studies (Domhoff, 1996; Hall & Domhoff, 1963; Hall, Domhoff, Blick, & Weesner, 1982; Schredl, Sahin, & Schäfer, 1998), Hall (1984) supposed that the ratio of male and female dream characters had a ubiquitous regularity. As this phenomenon was observed in 11 different groups with different ethnical and social backgrounds, Hall (1984) suggested that this might be explained by oedipal conflicts in children aged 3 to 6 yrs. when boys begin to develop aggressions against their fathers, and girls have such aggressions to both sexes. Thus, in this theory, men are more important to men and show up more often in their dreams.

In the following, findings are reported that did not fit in with this notion of ubiquitous gender differences regarding the ratio of male and female dream characters. Grey and Kalsched (1971) reported that the percentage of male dream characters of Indian male participants was uncommonly high (71%) compared to the ratio of the American male participants (64%). They explained this cultural influence as an effect of the role men play in Indian families, i.e., Indian children have a different kind of Oedipus complex than children from western cultures. Furthermore, Urbina and Grey (1975) compared dream reports from American and Peruvian college students. The sex ratio in dreams of male Peruvians shows a balanced ratio of male and female characters. Urbina and Grey doubted the explanation by oedipal conflicts because in general Peruvians have more contacts with female persons and they thus postulated that the sex ratio of waking-life contacts has an influence to the sex ratio of dream characters. In addition, Yamanaka, Morita, and Matsumoto (1982) reported a much lower ratio of male dream characters (29%) for Japanese females compared to U. S. American females (48%); a finding that Domhoff (1996) attributed to the intensely gender-segregated world of Japan. These findings are in line with the continuity hypothesis of dreaming (Schredl, 2003). In its general form, the continuity hypothesis states that dream content reflect waking-life experiences of the dreamer, not as exact re-enactments but on a thematic level (Schredl, 2012).

Further evidence for a direct correlation between the waking-life social contacts and gender ratio of dream characters was provided by the diary studies of Schredl, Loßnitzer, and Vetter (1998) and Paul and Schredl (2012). Computing the ratio of the amount of contacts with men and women during the day was significantly related to the ratio of male and female dream characters. Schredl and Jacob (1998) investigated a dream series of 200 dream reports from a single individual. The first 100 dreams were recorded when the participant was in a mainly male-dominated environment (studying engineering at that time; about 90% of the students were male) and the other 100 dreams were recorded

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Table 1. Total dream sample (N = 1612).

Variable	Dreams of women (N=1394)	Dreams of men (N=218)	Effect size Statistical test	p value
Male dream characters	1906	201		
Female dream characters	1852	170		
Male percent	50.72%	54.18%	h = 0.069 z= 1.0	.1707
Weapons	3.30% (N = 46)	6.42% (N = 14)	h = -0.147 z= -2.0	.0218
Clothing	18.94% (N = 264)	9.17% (N = 20)	h = 0.285 z= 3.9	< .0001

Note. Figures in parentheses designate the number of dreams.

when he studied psychology; a mainly female-dominated environment (about 80% of the students are female). As expected, the percentage of male dream characters dropped from 63% (studying engineering) to 51% (studying psychology). The small but significant effect (d = 0.24) also supports the hypothesis that the percentage of male dream characters is determined by current waking life and not by oedipal issues. Similarly, Lortie-Lussier, Schwab, and De Koninck (1985) showed that the percentage of male characters in working women's dreams is higher compared to those who stay at home. This is in line with the continuity hypothesis (Schredl, 2003) because the working environment is usually dominated by men (Lortie-Lussier et al., 1985). Schredl (2001) reported another factor that affects the sex ratio of dream characters: relationship status. Whereas the gender difference with more male dream characters in men's dreams and balanced ratios in women's dreams was replicated in single students, the ratios were different in participants living in a stable relationship. The analysis indicated that the increased percentage of males in dreams of women with a partner is explained by the fact that their partner is a frequently occurring dream character (Schredl, 2001). In addition, Sullivan (1981), in his sample of female participants, found that gender role orientation could be a determinant to the sex ratio of dream characters, i.e., masculinity was correlated with higher ratios of male dream characters, suggesting again that socialization plays an important role.

To summarize, research has indicated that waking life social patterns strongly affect social patterns in dreams, e.g., the ratio of male and female dream characters, thus supporting the continuity hypothesis. The aim of the present study was to examine the influence of personality traits on the ratio of male and female dream-characters. In addition, two other well-documented gender differences in dreaming were included in the analysis: The higher incidence of weapons in men's dreams and the higher incidence of references to clothes in women's dreams (Schredl, 2007b). First, we expect to replicate the previously found gender differences. Secondly, as these factors have never been studied in relationship to these dream themes, the present analyses are exploratory in nature.

2. Method

2.1. Participants

Overall, 425 persons (64 men, 361 women) participated in the study. Most of the participants were psychology students from Heidelberg, Mannheim and Landau. Twenty-one persons were recruited from other studies carried out in the Central Institute of Mental Health. Mean age and standard deviation were 23.4 ± 5.4 years (16-61 years); two participants did not mention their age. The 425 participants reported 1612 dreams with a mean dream report length of 153.3 ± 130.1 words. 1394 dream reports were recorded by female participants and 218 dream reports by male participants.

2.2. Dream diary

All participants were asked to keep a dream diary over 14 days and, up to a maximum of five mornings, record all the dreams of the previous night. The dream reports were to be written in as much detail as possible. All the dreams of one night were defined as an analysis unit.

2.3. Personality measure

For measuring personality, the German version of the NEO-PI-R personality questionnaire (Ostendorf & Angleitner, 2004) was used. This questionnaire included 240 five-point

Table 2. Dream variables per participant (N = 425).

Variable	Women (N = 361)	Men (N = 64)	Tests	p value
Number of dream reports	3.86 ± 1.36	3.41 ± 1.34	t = 2.5	.0136
Dream length	154.01± 99.02	120.59± 93.98	t = 2.5	.0126
Male Percent	52.13% (N = 348)	55.08% (N = 57)	t = 0.8	.4285
Weapons	9.70%	20.31%	Chi^2 = 6.1	.0134
Clothing	48.48%	23.44%	Chi^2 = 13.8	.0002

Note. Figures in parentheses designate the number of participants

Table 3. Logistic regressions for gender differences controlled for number of dream reports and dream length.

	Weapons			Clothing		
Variables	**SE[1]**	**Wald χ^2**	**p -value**	**SE[1]**	**Wald χ^2**	**p -value**
Gender (1 = f, 0 = m)	-0.2454	10.4	.0013	0.1688	6.1	.0137
Number of dream reports	0.3013	9.0	.0027	0.3970	33.4	< .0001
Dream length	0.2091	7.7	.0056	0.4391	34.1	< .0001

Note. [1] SE = Standardized Estimates

items (coded from 0 to 4) to measure the big five personality dimensions: neuroticism (emotional instability), extraversion, openness to experience, conscientiousness, and agreeableness. Reliability of the NEO-PI-R factors is high (*r* = .89 to *r* = .92; Ostendorf & Angleitner, 1994).

2.4. Dream content analysis

The number of male and female dream characters in every dream was determined according to the rules given by Hall and Van de Castle (1966). The "male percent" is calculated out of the amount of male dream-characters divided by the amount of male and female dream-characters, according to Domhoff (1996). If in a dream report at least one weapon or at least one reference to clothing was mentioned, this was coded with "1", if not with "0". The interrater reliability of these scales has been high in previous studies (Schredl & Jacob, 1998; Schredl, Sahin, et al., 1998).

2.5. Procedure

The students were recruited on campus and received a small reimbursement for participation. The dream reports were typed, randomly sorted and read by a judge who determined the number of male and female dream characters and the appearance of weapons and clothing. A second judge rated 155 dream reports for training purposes because he was new to the field of dream research. After a discussion with the first judge regarding inconsistent ratings, he independently rated another 106 dream reports. These ratings were used to determine interrater reliability. The exact agreement between the two judges for clothes amounted to 95.3% and 100% for the occurrence of weapons. The Pearson correlations of the number of male dream characters between the two judges was r = .959 and, for the number of female dream characters, was r = .955.

The results were calculated with the SAS 9.2 for Windows statistical software. Normal and logistic regressions were applied and effect sizes for differences of percentages were computed by the formula given by Cohen (1988). For the gender differences, the statistical tests were one-tailed whereas for the relationship between personality and the dream variables the tests were two-tailed. As studying the relationship between personality and dream content was of exploratory nature, no alpha-level adjustment was carried out.

3. Results

Table 1 shows the sample that included 1394 dream reports of women and 218 dream reports of men. In women's dreams, 1906 male dream-characters and 1852 female dream characters were counted. In the dreams of the male participants, there were 201 male and 170 female dream characters, so the male percent (ratio of male dream characters compared to the sum of male and female dream characters) for male dreams was 54.18%, and for female dreams 50.72%. In other words, there was a small difference that did not reach statistical significance (see Table 1). Weapons do appear significantly more often in men's dreams than in women's dreams, despite the fact that the percentages for both sexes are relatively small (see Table 1). Regarding the amount of references to clothing,

Table 4. Effect of personality on the ratio of male and female dream characters (regression analysis).

	Men (N = 57)			Women (N = 348)		
Variables	**SE[1]**	**Wald χ^2**	**p -value**	**SE[1]**	**Wald χ^2**	**p -value**
Number of dream reports	-0.0741	-0.52	.6038	-0.0394	-0.73	.4641
Dream length	-0.0574	-0.38	.7035	-0.0366	-0.66	.5095
neuroticism	-0.1055	-0.64	.5262	-0.0388	-0.61	.5427
extraversion	-0.3427	-2.13	.0382	0.0884	1.40	.1637
openness to experience	0.2277	1.47	.1481	0.1241	2.15	.0326
agreeableness	-0.1732	-1.16	.2527	-0.0152	-0.28	.7781
conscientiousness	0.1616	1.07	.2908	0.0273	0.48	.6348

Note. [1] SE = Standardized Estimates

Table 5. Effect of personality on weapons in dreams (logistic regressions).

	Men (N = 64)			Women (N = 361)		
Variables	**SE[1]**	**Wald χ^2**	**p -value**	**SE[1]**	**Wald χ^2**	**p -value**
Number of dream reports	0.4692	2.7	.0976	0.3363	7.1	.0056
Dream length	0.2505	1.2	.2845	0.2645	7.8	.0052
neuroticism	-0.4100	1.5	.2148	0.1983	2.7	.1013
extraversion	-0.2910	1.2	.2679	0.1702	1.9	.1703
openness to experience	-0.0182	0.0	.9488	-0.2764	5.9	.0155
agreeableness	-0.3395	1.8	.1753	0.0606	0.3	.5557
conscientiousness	-0.9000	6.9	.0085	-0.1245	1.4	.2428

Note. [1] SE = Standardized Estimates

there is also a gender difference: references to clothing were found in 18.94% of women's dreams compared to 9.17% in men's dreams; a highly significant finding (see Table 1).

In Table 2, the dream parameters of the participants have been aggregated in order to obtain measures for each individual dreamer. On average, women recorded significantly more and longer dream reports than men (see Table 2). The difference between the sexes regarding the percentages of male dream characters was not significant (see Table 2). The percentage of male participants reporting at least one dream with weapons was significantly higher than the corresponding percentage of women (see Table 2). Furthermore, nearly every second female participant reported at least one dream with references to clothing whereas the percentage for men with at least one clothing dream was much lower; a highly significant difference (see Table 2). In order to control for possible effects of the number of reported dreams and dream report length, logistic regressions were computed: the sex differences regarding weapons and clothing remained significant (see Table 3). As expected, the two variables: number of dream reports (*standardized estimate* = –.044; t = –.09; p = .38) and dream length (*standardized estimate* = –.243; t = –.05; p = .63) did not affect the male percent and the gender differences remained non-significant (*standardized estimate* = –.420; t = –.08; p = .4045) if the number of dream reports and dream length was statistically controlled for.

Table 4 depicts the findings of the regression analyses with the ratio of male and female dream-characters as a dependent variable and the big five personality factors as independent variables, (adding the number of dream reports and dream length as possible confounders), for each gender separately. Dreams of men who are more extraverted include significantly more female characters than are found in the dreams of less extraverted men (see Table 4). And, in dreams of female participants who had a higher openness to experience, more male characters appeared in their dreams compared to the scores of women with a lower openness to experience (see Table 4). All other personality dimensions did not show significant effects.

Table 5 shows how the Big Five personality traits predict the occurrence of weapons in dream reports. For male participants, the dream reports of more conscientious participants include significantly fewer weapons than those of less conscientious participants (see Table 5). Female participants who were open for experiences had significantly fewer weapons than women who were less open (see Table 5). All other personality dimensions did not show any significant relationships.

The relationships of the Big Five personality traits to the occurrence of clothing in dream reports are presented in Table 6. Male participants with lower agreeableness men-

Table 6. Effect of personality on clothing in dreams (logistic regressions).

	Men (N = 64)			Women (N = 361)		
Variables	**SE[1]**	**Wald χ^2**	**p -value**	**SE[1]**	**Wald χ^2**	**p -value**
Number of dream reports	0.0595	0.1	.7699	0.4241	31.4	< .0001
Dream length	0.5885	6.6	.0105	0.4533	28.3	< .0001
neuroticism	0.3943	2.3	.1260	0.0848	1.2	.2810
extraversion	0.3575	1.7	.1922	0.0501	0.4	.5278
openness to experience	-0.1266	0.3	.5978	0.0155	0.1	.0657
agreeableness	-0.5363	5.1	.0234	-0.0857	1.6	.2128
conscientiousness	0.1615	0.4	.5025	-0.0144	0.0	.8384

Note. [1] SE = Standardized Estimates

tioned parts of clothing in their dream reports significantly more often compared to men with higher agreeableness (see Table 6). Female participants with higher openness to experience scores also tended to include parts of clothing in their dreams more often than the scores of women with lower openness to experience, (a marginally significant finding; see Table 6). No other significant effects were found.

4. Discussion

The results of this study indicate that the gender difference regarding the ratio of male and female dream characters is very small and not significant, again challenging the notion of the "ubiquitousness" of this gender difference (Hall, 1984). The significant gender differences regarding weapons and clothing in dream reports are in line with previous research. The exploratory analysis regarding the effect of personality on dream content showed promising findings: e.g., low conscientiousness is associated with a higher number of weapon dreams in males.

From the methodological viewpoint, it is important to keep in mind that the number of dream reports per person ranged from 1 to 5. For obtaining an adequate reliability and to correlate dream characteristics with trait measures, (here: personality dimensions), 20 dream reports per participant are needed in order to obtain stable indices and valid correlation coefficients, (Schredl, 1998). However, from a practical view point, this number of dream reports is not easily obtained in a larger sample since the average diary dream recall in students is about 2 mornings per week with dream recall (Schredl, 2007a). The present data set represents a compromise between these two aspects. Furthermore, the causality of the relationships reported in the present study is not clear as they are of correlational and cross-sectional nature. From a theoretical viewpoint, however, one would expect that stable traits like personality characteristics affect dream content and not vice versa. But it should be kept in mind that this effect might be modulated by waking-life experiences, e.g., an extraverted persons has more social contacts in waking life and, therefore, dream more often about people compared to an introverted person. As the nature of studying the relationship between personality and the gender-specific dream contents was exploratory (with no explicit hypotheses), we did not apply alpha-level adjustments. Even though the sample size was large, we expected small effect sizes – as personality is only one of many factors that affect dream content – and, therefore, alpha-level adjustments would increase the ß error, i.e., assuming no significant difference even though there is one.

The ratio of male and female dream characters showed a small, but not statistically significant, gender difference. Compared with previous studies, this small difference is due to the low male percentage in the dreams of the male participants (54.18%) compared to 66.7% figure reported by Hall and Van de Castle (1966). The male percentage for female participants (50.72%) matches the previously reported figures. This might be explained by the environment where the participants live; most of them are studying psychology, which is a very female-dominated environment, (about 80% of the students are female). As reported above, Schredl and Jacob (1998) reported that 63% of dream characters were male while the participant studied engineering, but this dropped to 51% when he studied psychology. Therefore, the small gender difference found in the present study cannot be generalized but again does not support the idea that this gender difference is ubiquitous. Future studies should also include students of other faculties and compare their ratio of male and female dream characters. An alternative explanation that has to be considered is that variables like gender-segregation has changed over the years, but research findings (Hall et al., 1982; Schredl, Sahin, et al., 1998) indicate that this gender difference in male and female dream characters is stable over time – similar to other gender differences in dream content (Schredl & Piel, 2005).

Furthermore, Schredl (2001) showed that there was a similar drop in male percent from single male students (61.7%) to male students in a stable romantic relationship (48.7%), i.e., the previously reported gender difference regarding the ratio of male and female dream characters was only found for singles. Unfortunately, relationship status was not elicited in the present study but should be measured in future studies.

Weapons were mentioned significantly more often in male participant's dreams, a finding which is in line with previous research (Hall et al., 1982; Hall & Van de Castle, 1966). It seems implausible that this is a direct reflection of waking-life experience since male psychology students in Germany do not usually have access to and use weapons. A more likely explanation is media consumption. In films weapons are used very often by men and this might be reflected in male dreams. In addition, first-person shooter games are more often played by males (Desai, Krishnan-Sarin, Cavallo, & Potenza, 2010). Another possibility for explaining this result is military service which was still obligatory for men in Germany in the time period when the study was conducted. However, it was not measured whether the male participants served in the army (9 months to about a year) or served alternatively in civilian service. It would be very interesting to study dreams of soldiers to test whether the amount of time spent with weapons during the day is related to the percentage of weapon in dreams.

As expected, female participants reported dreams with significantly more references to clothing than the male participants. This might also be in line with the continuity hypothesis since we hypothesize that women spend more time shopping for clothes, think about what to wear, etc... Unfortunately, we were not able to locate a scientifically sound survey about this presumed gender difference regarding the waking-life preoccupation with clothing; only a small unpublished pilot study of our research group support this notion. Again, it would be interesting to study how much time the person (male or female) spends shopping for clothes, or thinking about them, and correlate this amount of time with the percentage of clothing dreams; for example, the way Schredl and Hofmann (2003) did for driving and reading..

The explorative analyses for the influence of personality on the studied dream characteristics revealed some interesting findings, even though the effects are small and have to be replicated in future studies. Dreams of extraverted men included more female dream characters than the dreams of introverted men. This might be explained by the continuity hypothesis as extraverted participants might have more social contacts with other (mostly female) students or are more preoccupied by thinking about the opposite gender. For studying this effect, the study should also include measures of social behaviors and preoccupations in waking-life (see: Paul & Schredl, 2012).

The finding that male participants with low conscientious-

ness report dreams about weapons more often might also be explained by the continuity hypothesis as they might be more prone to think or act out aggression more often than persons with high conscientiousness scores. One step to follow up this line of thinking will be an analysis of the exact context of weapons within the dream, e.g., whether the dreamer uses it himself or is threatened by weapons and so on. This context variable might also explain why there was no difference to the females of the sample in respect to conscientiousness. Why the female participants, with lower openness scores, dream more often about weapons is not easy to explain. The reverse, that women with high scores of 'openness to experience', dream more often about topics related to male role-behavior, would be more plausible.

The finding that men who were less agreeable had more references to clothing in their dreams than men with high agreeableness might also fit in the continuity hypothesis. Men with lower agreeableness scores might not be that strongly oriented to social norms, i.e., are more unconventional and might want to stand out by wearing different clothes. For women, high agreeableness was not related to clothing dreams, possibly because they already spend much more time with clothing in waking-life. High 'openness to experience' in women had an influence on the occurrence of clothing in dreams; women with high score of 'openness to experience' are interested in all kind of things and, thus, might also be more interested in clothes. In future studies, it would be advisable to include some measures of waking-life activities around clothes.

In conclusion, the explorative analysis has shown that personality traits can have an influence on the studied dream characteristics, (sex ratio of dream characters and the occurrence of weapon and clothes). In order to investigate sex differences in dream content, e.g., weapons or clothing, it would be necessary to include measures of how intensively the participants are concerned with these themes in waking life, e.g., frequency of media consumption and/or thoughts during the waking life about these topics. These studies will contribute to expanding our knowledge about the continuity between waking life and dreaming.

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