Gender, Sex Role Orientation, and Dreaming

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Despite the large number of studies addressing gender differences in dream recall and other dream-related variables, research regarding whether these differences might be affected by sex role orientation is rather scarce. The findings of the present online study clearly indicate that sex role orientation, femininity/expressivity, and masculinity/instrumentality affects dream variables such as dream recall frequency, nightmare frequency, dream tone, and emotional intensity as well as attitude toward dreaming. Expressivity was strongly correlated with the emotional intensity of dreams whereas instrumentality was associated with more positively toned dreams; a finding which supports the continuity hypothesis of dreaming. The analyses provided support for the idea that attitude toward dreams might moderate the effect of sex role orientation (femininity/expressivity) and biological sex on dream recall frequency. As sex role orientation did not completely explain the gender differences, it will be fruitful to study other variables like the processing of emotional information in the brain or gender-specific dream socialization in order to understand the gender differences in dreaming more fully.

Keywords: dream recall, nightmares, attitude toward dreams, emotions, sex role orientation

Gender differences with regard to different aspects of dreaming have been well documented in the literature (overview: Schredl, 2007). The meta-analysis of Schredl and Reinhard (2008) demonstrated that women tend to recall their dreams more often than men (small-to-medium overall effect size). Women also reported nightmares more frequently (Schredl & Reinhard, 2011). In addition, medium-to-large effect sizes with regard to the gender difference were observed for a positive attitude toward dreams (Schredl, Nürnberg, & Weiler, 1996), the frequency of dream sharing (Curci & Rime, 2008; Schredl, 2009; Schredl & Schawinski, 2010), reading articles about dreams (Schredl, 2010c, 2011), and interest in dream

interpretation (Schredl & Piel, 2008). Regarding dream content, Hall and Van de Castle (1966) found that men dream more often than women about sex and physical aggression and less often about clothes and household items. These gender differences have been replicated by many subsequent studies (for an overview, see Schredl, 2007).

Despite the large number of studies looking at gender differences in relation to dreams, research addressing possible explanatory factors is rather scarce. Three studies (Schredl, 2000, 2002–2003, 2010a) were able to demonstrate that attitude toward dreams or related concepts partly explained the gender difference in dream recall frequency. Another likely candidate for explaining gender differences in dreaming is sex role orientation, that is, femininity should be correlated positively with dream recall frequency, for example, whereas masculinity should show reversed patterns. Regarding dream content, the findings are complex: Some characteristics are related more closely to sex role orientation than biological gender—dream themes of assertiveness and communion (Cohen, 1973), for example—whereas for aggression the gender difference was not affected by sex role orientation (Waterman, de Jong, & Magdeliyns, 1988). Sullivan (1981) and Schredl, Paul, Lahl, and Göritz (2010–2011) reported that the number of male dream characters was related to biological sex and sex role orientation, that is, men had more males within their dreams and masculinity was positively related to the number of male dream characters. In view of the scarce empirical data, the question as to whether dream content parameters showing gender differences are also influenced by sex role orientation is still unanswered. For dream recall frequency, a regression analysis (Schredl, Lahl, & Göritz, 2010a) indicated that biological gender and expressivity (femininity) were related in the expected way—even though all variables were entered simultaneously into the regression (instrumentality/masculinity was not related to dream recall frequency). A similar analysis for nightmare frequency (Schredl, Lahl, & Göritz, 2010b) showed that all three variables showed significant associations; that is, expressivity was positively related, and instrumentality was negatively related and, in addition, the effect of biological sex was still significant—indicating that sex role orientation does not fully explain the gender differences in dream recall frequency and nightmare frequency. The finding that instrumentality was related to more positive and less negative dream emotions (Schredl et al., 2010–2011) fits in with the nightmare finding (Schredl et al., 2010b). To summarize, the studies carried out so far have demonstrated that sex role orientation is related to different aspects of dreaming.

In addition to replicate the previous findings on the effect of sex role orientation on dream recall frequency and nightmare frequency, the present study was designed to investigate whether similar effects of sex role orientation on other dream variables such as general estimates of dream emotionality, interest in dreams, and attitude toward dreams can be demonstrated. Because previous studies demonstrated that gender differences in attitude toward dreams moderate the gender difference in dream recall frequency (Schredl, 2000, 2002–2003, 2010a), the moderating effect of attitude toward dreams on the relationship between dream recall frequency, biological sex and gender was studied. It was predicted that the effects of sex role orientation and biological sex were no longer significant if the analysis regarding dream recall frequency is controlled for attitude toward dreams.

METHOD

Research Instruments

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. High retest reliability has been shown for this scale ($r = .85$; Schredl, 2004). To obtain units of mornings per week, the scale was recoded using the class means ($0 \rightarrow 0$, $1 \rightarrow 0.125$, $2 \rightarrow 0.25$, $3 \rightarrow 0.625$, $4 \rightarrow 1.0$, $5 \rightarrow 3.5$, $6 \rightarrow 6.5$). A 9-point scale was used for measuring nightmare frequency (0 = *never*, 1 = *less than once a year*, 2 = *about once a year*, 3 = *about 2 to 4 times a year*, 4 = *about once a month*, 5 = *about 2 to 3 times a month*, 6 = *about once a week*, 7 = *several times a week*, 8 = *almost every morning*). To obtain units of nightmares per month, the scale was recoded using the class means of the nine categories ($0 \rightarrow 0$, $1 \rightarrow 0.042$, $2 \rightarrow 0.083$, $3 \rightarrow 0.25$, $4 \rightarrow 1.0$, $5 \rightarrow 2.5$, $6 \rightarrow 4.0$, $7 \rightarrow 12.0$, $8 \rightarrow 25.0$). General emotional dream intensity was measured by a 5-point Likert scale ("How emotionally intense are your dreams?") ranging from 1 = *not intense* to 5 = *very intense*. A 5-point Likert scale was also used for measuring the emotional tone of dreams (-2 = very negative to 2 = very positive).

For the item with the wording "Are you interested in dreams?" five categories were provided (1 = *not all* to 5 = *very much*). Attitude toward dreams were measured by 10 items (Schredl, Brenner, & Faul, 2002); the scale showed high internal consistency ($r = .905$) and high retest reliability ($r = .73$). An example item is: "A person who reflects about her/his dreams learns a lot about himself/herself." Whereas the interest in dreams item elicited a very specific aspect regarding dreaming, the attitude toward dreams scale was designed to measure the general attitude toward dreams, for example, whether dreams are helpful and so forth.

In addition to eliciting age and gender, the participants were asked to complete the "Skalen zur Erfassung der Geschlechtstypizität" (Scales measuring gender stereotypes; GTS+), a questionnaire based mainly on the items of the Bem Sex Role Inventory (Bem, 1974) and sex role orientation was measured along two dimensions: expressivity/femininity and instrumentality/masculinity (Altstötter-Gleich, 2004). For each dimension, eight 4-point items with the answering categories *rarely*, *sometimes*, *often*, and *almost always* were presented. Examples for the expressivity/femininity scale are: "Typically I am empathic." or "Typically I am sensitive." Items for the instrumentality/masculinity scale are: "Typically I am assertive." or "Typically I am self-confident." The eight items—coded from 1 = *rarely* to 4 = *almost always*—were averaged for each scale. Reliability of the scales are high (Cronbach's alpha = .79 [expressivity] and Cronbach's alpha = .83 [instrumentality]) and construct validity have demonstrated by confirmatory factor analyses (Altstötter-Gleich, 2004).

Procedure and Participants

Overall, 1,808 persons (1,110 women, 698 men) completed the online survey between April 5, 2013 and April 14, 2013. The mean age of the sample was 45.64 ±

15.33 years (range: 14 to 91 years). The women's mean age (42.98 ± 14.10 years) differ significantly from the average age of the male participants (49.88 ± 16.24 years, $t = -9.3$, $p < .0001$), so age was entered into the analysis in order to control for this difference. The link for the study was posted on the online panel www.wisopanel.net. Within this panel persons with 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 9.2 software package for Windows. For the regression analyses, gender, expressivity and instrumentality were used as variables predicting the criterion variables (dream variables). Ordinal regressions were used for dream recall frequency, nightmare frequency, emotional intensity, emotional tone, and interest in dreams. As mentioned above, age was also included in the analyses as there was a significant age difference between women and men.

RESULTS

The means and standard deviations of the GTS+ scales depicted in Table 1 were comparable with those reported by the test author (Altstötter-Gleich, 2004) and the previous study (Schredl et al., 2010a). As expected women tend to have higher scores on expressivity (Standardized estimate: .2186, $t = 9.3$, $p < .0001$) than men; age was also included into the regression equation to control for confounding effects (Standardized estimate: .0727, $t = 3.1$, $p = .0022$). In a similar analysis women showed lower scores on instrumentality (Standardized estimate: $-.0823$, $t = -3.5$, $p = .0006$) in comparison with men. In addition, the effect of age on instrumentality was also significant (Standardized estimate: .1312, $t = 5.5$, $p < .0001$). The internal consistencies of the two scales were high (femininity/expressivity: $r = .832$; masculinity/instrumentality: $r = .853$). The internal consistency of the 10-item scale measuring positive attitude toward dreams was also high ($r = .912$). The correlation between the interest in dreams item and the attitude toward dreams scale was also high ($r = .693$, $p < .0001$).

The mean dream recall frequency (recoded scale) for the total sample was 1.94 ± 2.04 mornings per week; the nightmare frequency average was 1.60 ± 3.59 per month. The ordinal regression with age, biological sex, and the two GTS+ scales are depicted in Table 2. As expected, women tend to report higher dream

Table 1. Means and Standard Deviations of the Sex Role Orientation Questionnaire GTS+ and Dream Variables

Variable	Women ($N = 1,110$)	Men ($N = 698$)	Effect size
Expressivity/femininity	2.87 ± 0.52	2.64 ± 0.53	0.438
Instrumentality/masculinity	2.51 ± 0.57	2.64 ± 0.58	-0.226
Dream recall frequency	3.64 ± 1.71	3.31 ± 1.80	0.188
Nightmare frequency	3.06 ± 2.09	2.59 ± 2.15	0.222
Emotional intensity of dreams	2.65 ± 0.99	2.20 ± 1.04	0.443
Emotional tone of dreams	0.04 ± 0.76	0.15 ± 0.76	-0.148
Interest in dreams	2.56 ± 1.07	2.04 ± 1.22	0.453
Attitude towards dreams	3.67 ± 0.80	3.38 ± 0.87	0.347

Table 2. Regression Analyses of Dream Variables

Variable	Age			Biological sex (1 = f, 0 = m)			Expressivity			Instrumentality		
	SE	χ^2	p value	SE	χ^2	p value	SE	χ^2	p value	SE	χ^2	p value
Dream recall frequency[1]	-.1010	18.1	<.0001	.0443	3.4	.0333[3]	.1079	20.6	<.0001	.0055	0.1	.8132
Nightmare frequency[1]	-.2025	71.4	<.0001	.0443	3.4	.0325[3]	.0849	13.0	.0003	-.0762	10.7	.0011
Emotional intensity of dreams[1]	-.1067	18.7	<.0001	.1410	31.6	<.0001	.2412	93.0	<.0001	-.0203	0.7	.4013
Emotional tone of dreams[1]	.0062	0.1	.8128	-.0605	5.1	.0244	.0489	3.5	.0620	.2163	66.8	<.0001
Interest in dreams[1]	-.0982	16.4	<.0001	.1417	32.6	<.0001	.2955	139.5	<.0001	-.0111	0.2	.6444
Attitude towards dreams[2]	-.0918	-4.0	<.0001	.0958	4.1	<.0001	.2518	10.9	<.0001	-.0083	-0.4	.7188

Note. *SE* = Standardized estimates.

[1] Logistic regression. [2] Regression analysis (instead of χ^2 *t*-values are depicted). [3] one-tailed.

recall and more nightmares than men—even if sex role orientation (and age) is statistically controlled. In addition, women reported more intense and negatively toned dreams (see Table 2). The means scores in the interest items and the attitude scale were also higher for women compared with men—again controlled for sex role orientation. Femininity/Expressivity was positively associated with all dream variables, except for the emotionally toned dreams (only marginally significant). Masculinity/Instrumentality was most strongly related to emotional tone (masculinity was associated with more positively toned dreams) and, congruent with this finding, negatively associated with nightmare frequency.

In Table 3, the ordinal regression for dream recall frequency is depicted in which the attitude scale has been added. The attitude scale were strongly associated with dream recall frequency, the uncorrected correlation between the two variables is $r = .266$ ($p < .0001$). The effect of age was still significant but biological sex and expressivity did not affect dream recall frequency in a significant way any longer when compared with the analysis without the attitude scale (see Table 2).

DISCUSSION

Overall, the findings clearly indicate that sex role orientation (femininity/expressivity and masculinity/instrumentality) are related to dream variables like dream recall, nightmare frequency, and attitude toward dreams. As biological sex was still significant in the most analyses, sex role orientation does not fully explain the gender differences in the dream variables. The statistical analyses provided support for the idea that attitude toward dreams might moderate the effect of sex role orientation (femininity/expressivity) and biological sex on dream recall frequency.

Mean dream recall frequency and nightmare frequency in the present sample were higher compared with representative samples (Schredl, 2008, 2010b) indicating that high dream recallers are overrepresented in this online sample. On the other hand, the effect sizes of the gender differences of these two variables in this sample are comparable with the effect sizes reported by meta-analyses (Schredl & Reinhard, 2008, 2011) supporting the validity of this online study. The overrepresentation of high dream recallers is, of course, not a problem particular to an online survey but for every dream study not based on random sampling strategies. As this might have reduced the variance in dream recall frequency, the present findings might be even more pronounced if representative samples had been analyzed. Another argument for the validity of this online study is the fact that the means of

Table 3. Ordinal Regression for Dream Recall Frequency

Variable	SE	χ^2	p value
Age	−.0822	11.8	.0006
Biological sex (1 = f, 0 = m)	.0196	0.6	.2105[1]
Expressivity/femininity	.0415	2.9	.0902
Instrumentality/masculinity	.0055	0.1	.8169
Attitude towards dreams	.2707	119.6	<.0001

[1] one-tailed.

the expressivity and instrumentality scales of the GTS+ are comparable with the figures of the validation sample of the test author who used paper questionnaires.

Regarding dream recall frequency, the previous finding (Schredl et al., 2010a) was replicated: expressivity but not instrumentality was related to dream recall frequency but this did not fully explain the gender difference in dream recall because biological sex was still significant. The hypothesis that attitude toward dreams might moderate the relationship was supported by the data. The idea is that expressivity is related to a more positive attitude toward dreaming (see also higher standardized estimates regarding the effect in Table 2) and, therefore, dream recall is higher. This causal path is very plausible as many studies (Halliday, 1992; Redfering & Keller, 1974; Schredl, 2002) have shown that focusing on dreams increases dream recall frequency. An alternative explanation, however, might also be possible: High dream recall might stimulate the interest in dreams and a positive attitude toward dreams. It would be very interesting to carry out experimental studies in children and adolescents stimulating their attitude toward dreams by showing interest in their dreams and study the effects on dream recall. A retrospective study (Bachner, Raffetseder, Walz, & Schredl, 2012) has shown that dream socialization (talking about dreams within the family during childhood/adolescence) is, indeed, related to dream recall frequency in young adulthood.

The present findings also confirmed the previous findings about nightmare frequency (Schredl et al., 2010b): Expressivity is positively related to nightmare frequency whereas instrumentality is negatively related. Instrumentality is also correlated with more positively toned dreams in this study. Interestingly, this fits very well into the framework of imagery rehearsal therapy (Krakow & Zadra, 2006) which is a very effective treatment strategy for nightmares because the instrumentality scale is composed of traits like assertiveness and self-confidence (imagery rehearsal therapy focuses on imagining successful coping strategies in waking for unpleasant situations occurred in the nightmare). It would be very interesting to study whether sex role orientation (expressivity and instrumentality) does in fact affect the outcome of this nightmare treatment strategy. One might speculate that persons with high instrumentality might benefit more from imagery rehearsal therapy than persons with low instrumentality.

The findings regarding the emotional intensity and emotional tone of dreams are also in line with the findings obtained from analyzing the most recent dreams (Schredl et al., 2010–2011): Expressivity is related to more intense dreams whereas instrumentality is related to more positively toned dreams. As expressivity is composed of traits like tender-heartedness, sensitivity, romance, and emotionality, the strong relationship to the emotional intensity of dreams would fit in the continuity hypothesis of dreaming (Schredl, 2003) which states that waking life experience is reflected relatively directly in dreams. As pointed out above, the relationship between instrumentality and the emotional tone of dreams also makes sense with regard to the continuity of waking and dreaming because being assertive and self-confident within the dream is likely to be associated with more positive dream emotions. However, it has to be kept in mind that expressivity did not fully explain the gender difference in emotional intensity because biological sex was still highly significant. Levin and Nielsen (2007) speculated that differences in nightmare frequency might be explained by other factors such as gender-specific processing of emotional information in the brain. In order to test this

hypothesis, it would be necessary to correlate emotional reactivity, measured within an fMRI paradigm during wakefulness (cf. Whittle, Yücel, Yap, & Allen, 2011), for example, with the emotional intensity of dreams. Studies showing high correlations between emotions during the day and within dreams (Schredl & Reinhard, 2009–2010) support this line of thinking.

Lastly, the study showed very strong effects of expressivity on interest in dreams and the attitude toward dreams (the effects expressed via the standardized estimates in the regression analyses are considerable higher compared with dream recall frequency). This new finding and the fact that attitudes toward dreams moderates the relationship between biological sex and sex role orientation and dream recall strongly emphasize that it is important to include this kind of measures in future studies. Specific interest in dreams and general attitude were highly interrelated in the present study but several methodological issues, for example, not using frequency scales for measuring interest in dreams or attitude toward dreams (strong confounding with dream recall frequency), have to be considered in constructed this type of scales (cf. Schredl, Ciric, Götz, & Wittmann, 2003). In the present study, specific interest in dreams was strongly related to the general attitude toward dreams but as sex role orientation develops during childhood and adolescence (Altstötter-Gleich, 2004), it would be very interesting to study whether the gender differences in interest in dreams and attitude toward dreams increase with age, especially from childhood to adolescence and young adulthood. The meta-analysis of dream recall frequency studies (Schredl & Reinhard, 2008), for instance, showed that the gender effect was minimal for children younger than 10 years but very pronounced for adolescents and young adults.

To summarize, the findings of the study clearly indicate that sex role orientation, femininity/expressivity, and masculinity/instrumentality affects dream variables like dream recall frequency, nightmare frequency, dream emotional intensity and tone, and the attitude toward dreaming and, thus support the hypothesis of gender-specific dream socialization (Bachner et al., 2012). However, sex role orientation did not completely explain the gender differences, so it will be fruitful to study other variables like the processing of emotional information in the brain (Whittle et al., 2011) or gender-specific dream socialization in childhood in order to understand the gender differences in dreaming more fully.

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Correction to Hoffman (2013)

In the article "Research articles in *Dreaming*: A review of the first 20 years" by Curtiss Hoffman (*Dreaming*, 2013, Vol. 23, No. 3, pp. 216–231. doi:10.1037/a0032905), the column in Figure 11 labeled "Confidence Interval" should have read "*p* Value". The "Result" column should have been omitted.

In addition, the sentence beginning "As shown in Figure 11, . . . " on page 227 should have read "As shown in Figure 11, in two of the 14 cases, there was a strong correlation with RQ1, and in six additional cases it could not be definitely rejected."