

The effects of dream socialization in childhood on dream recall frequency and the attitude towards dreams in adulthood: A retrospective study

Joachim Bachner, Peter Raffetseder, Benedikt Walz and Michael Schredl

Central Institute of Mental Health, Mannheim, Germany

Summary. A recent meta-analysis showed that there is a considerable gender effect, i.e., women tend to recall their dreams more often than men. Since this difference was not found for children below the age of ten, the question is whether “dream socialization” (being asked about dreaming, hearing dreams of another person) in childhood might affect dream recall in adolescence and adulthood. This hypothesis was tested in a retrospective study of 54 students. To validate the students’ estimates, the parents were also asked about the dream socialization of their children. According to the children’s as well as the parents’ estimates, mother’s asking about the children’s dreams and hearing of the mother’s dreams have a significant positive effect on the dream recall frequency of the students in adulthood. In addition, the mother’s asking about their children’s dreams has a significant, positive effect on the children’s attitude towards dreams in adulthood. To establish a clear-cut causal relationship, one should conduct a longitudinal study with dream socialization being measured in the relevant period of time and a follow-up-test measuring dream recall frequency in adulthood.

Keywords: Dream socialization; dream recall; interest in dreams

1. Introduction

Dreaming is defined as mental activity during sleep (Schredl, 2008b). While it is believed that one always dreams during sleep (Wittmann & Schredl, 2004), there are large differences between and within subjects with regard to dream recall frequency (Schredl, 2007). For instance, a recent meta-analysis (Schredl & Reinhard, 2008) showed a considerable gender effect, i.e., women tend to recall their dreams more often than men. Since this difference was not found for children below the age of ten (Schredl & Reinhard, 2008), the question is whether “dream socialization” in childhood might affect dream recall in adolescence and adulthood and, thus, might explain gender differences in dream recall frequency (DRF) after the age of ten.

A variable being closely related to DRF is the personal interest in dreams (Schredl, 2007). The high correlation between the attitude towards dreams and the DRF resulted from scales consisting of items directly related to the person’s DRF, like “I think about my dreams during the day”, including categories like seldom, often or very often (Bartnicki, 1997). Persons who rarely remember their dreams will indicate low values on these items and, thus, these results in a high correlation between attitude towards dreams and DRF. If attitude towards dreams is measured with scales that do not rely on items with direct relation to frequency (e.g., I would like to know more about dreams.), the correlation between the attitude towards dreams and the DRF is considerably smaller ($r = .158$; Schredl, Wittmann, Ciric, & Götz,

2003). However, the causal direction is not clear in this case: On the one hand, only persons remembering their dreams can develop some interest in dreams. On the other hand, it has been shown that interest in dreams can augment DRF. Cohen (1969) and Schredl (1991) found out that participation in a diary study already caused a significant enhancement of the DRF. An additional encouragement to remember one’s dreams led to a further increase of DRF (Redfering & Keller, 1974). I.e., persons with high dream recall might get interested in their dreams and persons with high interest might increase their dream recall by paying dreaming more attention and, thus, the causality in the correlation between dream recall and interest in dreams cannot be specified.

Socialization of dreams – e.g., by telling one’s own dreams to other people, by getting asked about one’s own dreams or by getting told the dreams of others – implies an engagement in dreams and, thus, DRF as well as the attitude towards dreams should be affected by dream socialization processes. In a study by Schredl and Sartorius (2006), a positive correlation ($r = .19$) between the DRF of the mothers and their children was found. Genetic causes are rather unlikely to explain this finding because no significant differences in concordance rates between monozygotic and dizygotic twins concerning DRF were found (Cohen, 1973; Gedda & Brenci, 1979).. In addition, twins living apart from each other exhibit larger differences in DRF than twins living together (Cohen, 1973). Therefore, socialization might play a role in explaining the correlation in dream recall frequency between mothers and their children. In addition, mothers’ DRFs showed higher correlations with their children’s DRFs than the fathers’ DRFs did (Schredl, Barthold, & Zimmer, 2006); a finding which again supports the notion that socialization effects might be of importance. This hypothesis is supported by the fact that mothers are the primary caregiver and, thus, ask their children about their dreams more often or tell their own dreams within the family more often than the fathers do and, therefore, higher correlations concerning DRF with their children compared to that from the fathers

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: March 2012

Accepted for publication: April 2012

can be easily understood. This would indicate once more the importance of dream socialization.

To examine a possible socialization effect on DRF in adulthood, the present retrospective study investigated whether more intense dream socialization (being asked about dreams and being told dreams by other family members or peers) in childhood enhances the DRF and the attitude towards dreams in adulthood. As gender differences in dream recall were found above the age of ten, retrospective estimates of dream variables of the time period around this age were elicited.

2. Method

2.1. Participants

The sample consisted of 54 university students (43 female) aged 19 to 27 ($m = 20.9$; $SD = 1.3$) with 44 participants studying psychology. Other studies mentioned were sociology and languages. Fifty-two of their parents (49 mothers, 3 fathers), aged 44 to 66 ($m = 50.3$; $SD = 3.1$) were contacted and provided data for the study.

2.2. Measurement instruments

The questionnaire presented to the students consisted of three parts: In the first part, age and sex were indicated. In addition, a seven-point rating scale (0 = never, 1 = less than once a month, 2 = about once a month, 3 = twice or three times a month, 4 = about once a week, 5 = several times a week and 6 = almost every morning) measuring the DRF of the previous months was included. The retest reliability of this scale for an average interval of 55 days is $r = 0.85$ ($n = 198$; Schredl, 2004). In order to obtain units of mornings per week, the scale was recoded using the class means (0 → 0, 1 → 0.125, 2 → 0.25, 3 → 0.625, 4 → 1.0, 5 → 3.5, 6 → 6.5).

In the second part of the questionnaire, the attitude towards dreams was measured by ten five-point rating items (Schredl, Brenner, & Faul, 2002). A sum score was computed from the ten items. The items used in the scale had no relation to frequency. The scale showed an internal consistency of $r = .850$ in this study, comparable to the value of the original study ($r = .905$; Schredl et al., 2002).

In the third part, the students estimated retrospectively the extent of the dream socialization in the ages between eight and twelve years. First, they indicated if the following persons lived in the same household with them in this period of time: father, mother, stepfather, stepmother and siblings (for which the number was indicated). Every student lived with his biological mother in the same household in this period of time. The father was indicated by 47 students and four students lived with their stepfather in the same household. Forty-four students lived together with at least one sibling in this period. Moreover, the students were asked if there was another person relevant in this time period, like grandfather/grandmother, professional caregiver, au-pair or neighbor, with whom a lot of time was spent. In the case of an affirmative answer, the respective person was named. Twenty students named at least one other person (multiple answers were permitted). The grandfather was named five times, the grandmother and grandparents seven times, each, and the father was mentioned two times. In addition, the pro-

fessional caregiver was named once, the au-pair twice, the best friend three times, and the friend living next door was named once.

Subsequently the students estimated regarding mother, father, siblings, peers – and, if named above, significant other persons – how often they told their own dreams to them, how often they were asked about their own dreams by this person and how often the respective person told their dreams to them. The categories “mother” and “father” stood for the parents with whom the students grew up – biological parents or step-parents. For the three questions measuring the extent of the dream socialization in the relevant time period, an eight-point rating scale was used (0 = never, 1 = less than once a year, 2 = about once a year, 3 = twice till four times a year, 4 = about once a month, 5 = twice or three times a month, 6 = about once a week and 7 = several times a week). In order to obtain units of times per month, the scale was recoded using the class means (0 → 0, 1 → 0.042, 2 → 0.083, 3 → 0.25, 4 → 1.0, 5 → 2.5, 6 → 4.0, 7 → 18.0). In this way the answer “About once a year” was transformed into 0.083 times a month. The same scale was used to measure how often the students came in contact with media concerning the subject of dreams like children’s books or movies.

Afterward, the relationship quality to the different persons was assessed more exactly for the same time period. It was indicated whether one had an open relationship with the respective person, whether one enjoyed talking to them and whether one could talk to them about every problem. These items were coded by means of a seven-point Likert scale (1 = completely disagree to 7 = completely agree).

In order to validate the ratings of the students, the parent that spent the most time with the child in the relevant period of time was asked to complete a short version of the questionnaire. First, it was indicated whether the (step-)mother or the (step-)father completed the questionnaire and the age of the infilling person. Subsequently the current DRF of the parent was measured (same format as the DRF scale for the students). In addition, the extent of the dream socialization in this time period from the parent’s view was elicited. The parent estimated how often the child told his or her dreams, how often one asked the child about his or her dreams and how often one told his own dreams to the child. These ratings were measured with the same scales used for the rating of the dream socialization from the child’s point of view and subsequently were recoded into units of times per month.

2.3. Procedure

After completing their questionnaire, the students were to send the short questionnaire in an enclosed envelope to their parents by mail. After the parent who spent most of the time with the child in the time period from 8 to 12 years had completed the questionnaire (without contacting the child), the questionnaire was to return directly to the Central Institute of Mental Health in Mannheim.

Since the DRF variable was measured on an ordinal level, non-parametric statistical tests were computed using SAS for Windows 9.2; the Sign-Rank test and Spearman-Rank correlations. Several statistical tests were one-tailed because of the directed hypotheses regarding the effects of dream socialization.

Table 1: Experiences with dreams per month in childhood (students' retrospective estimates)

Person	Child has told own dreams to person (X ± SD)	Child was asked about own dreams by the person (X ± SD)	Child was told the dreams of the person (X ± SD)
Mother	2.86 ± 5.06	1.64 ± 3.47	1.89 ± 4.14
Father	1.61 ± 4.28	0.81 ± 2.68	0.90 ± 2.68
Siblings	1.27 ± 2.84	0.40 ± 0.97	1.27 ± 2.87
Friends	1.89 ± 4.12	0.55 ± 0.97	1.70 ± 3.46
Other person	0.56 ± 1.15	0.13 ± 0.31	0.38 ± 0.81

3. Results

3.1. Dream recall frequency and attitude towards dreams

The students of the sample remembered on average 2.49 dreams a week (SD = 2.09; n = 54). The parents of the students remembered on average 2.17 dreams a week (SD = 2.07; n = 52). The means of children and parents concerning DRF differed marginally significantly (S = 116.5; p = .086). The correlation between the DRF of the children and that of their parents approached significance as well (r = .193; p = .085, 1-tailed).

The attitude towards dreams of the students averaged to a mean sum score of 31.28 (SD = 7.19; n = 53). The attitude towards dreams and DRF correlated marginally significantly (r = .203; p = .073, 1-tailed).

3.2. Engagement in dreams during childhood

Table 1 shows the students' retrospective estimates regarding their childhood experiences with dreams within the family and within their peer group. As it can be seen the frequencies ranged from very low values (asked about dream by other persons) to about three times per month on average (telling dreams to the mother).

According to the retrospective estimates the students came in contact with media concerning the subject of dreams less than once a month (0.89 ± 1.21 per month).

The disclosure of dreams correlated significantly with the quality of the relationship. This applied for each person as well as for all three requested aspects regarding the quality of the relationship. The mean value of the 15 correlations (five persons x three items) was r = .465.

3.3. Comparison of the estimates of parents and children regarding engagement in dreams during childhood

In Table 2, the estimates of the parents and their children concerning the dream socialization in childhood are contrasted. For this purpose, the estimates of the students regarding the dream socialization with their mothers and fathers were included in the calculation and averaged.

The subsequent differences in means and correlations of the estimates of parents and children concerning dream socialization are depicted in Table 3.

3.4. Effect of engagement in dreams in childhood on dream experience in adulthood

The children's estimates of hearing the dreams of their mother in childhood correlated significantly with their current DRF. Accordingly, the parent's estimates of how often they told their dreams to their children correlated significantly with the children's current DRF (Table 4).

In addition, the children's estimates with regard to getting asked about own dreams by the mother correlated significantly with the current DRF and their attitude towards dreams. The parent's estimates of how often they asked their children about their dreams correlated significantly with the current DRF of the children (Table 5).

4. Discussion

4.1. Dream recall frequency and attitude towards dreams

The correlation between the children's DRF and the parents' DRF approaches significance, with the children – by their own account – remembering their dreams on average more frequently. This means that children whose parents show high DRF remembered their dreams slightly more often than students with parents stating low DRF, though on an overall higher level compared to their parents. The correlation between the parents' and the children's DRF is comparable to the correlation between mothers and their children found by Schredl and Sartorius (2006). The lower DRF of the par-

Table 2: Estimates of parents and children regarding experiences with dreams in childhood (Means ± Standard deviations)

Variables	Parents' estimate ¹	Child's estimate ¹
Child has told own dreams to parents	4.38 ± 1.81	3.98 ± 1.88
Child was asked about own dreams by parents	3.94 ± 2.15	2.83 ± 2.24
Child was told the dreams of the parents	3.56 ± 1.79	3.15 ± 2.11

¹ original scale values (N = 52)

Table 3: Difference in means and correlations of estimates of parents and children

Variables	Test statistics ¹ of the mean difference	P-value (2-tailed)	Correlation	P-value (1-tailed)
Child has told own dreams to parents	S = 95.5	.212	.355	< .01
Child was asked about own dreams by parents	S = 281	< .01	.432	<.001
Child was told the dreams of the parents	S = 113.5	.106	.664	<.0001

¹ Sign-Rank test

ents compared to the one of their children is consistent with several studies (e.g. Giambra, Jung, & Grodsky, 1996), that exhibited a decrease in DRF with increasing age.

The scale used to measure the attitude towards dreams showed a very good internal consistency ($r = .850$) and thus was in line with previous studies ($r = .905$; Schredl et al., 2002), emphasizing that the reliability of the scale is high. The averaged sum score of the attitude towards dreams scale was for the students in a medium range of the scale, lower than the average of the previous study (Mean: 37.8, SD: 7.2; Schredl et al., 2002). One has to keep in mind that almost all participants were psychology students who had higher interest in dreams and higher DRF (Schredl, 2008a). In addition, there was a marginally significant correlation between the attitude towards dreams and DRF ($r = .203$), which was comparable to the respective correlations found in previous studies ($r = .158$; Schredl et al., 2003 and $r = .161$; Schredl et al., 2002). The correlation is relatively small because the items of the scale did not have any relation to frequency. As well as in previous studies, the causal direction of the correlation – whether the attitude towards dreams influences DRF or whether persons, who remember their dreams more frequently have a more positive attitude towards dreams – remained unexplained.

4.2. Engagement in dreams during childhood

With regard to dreams, the mothers seemed to be the most important person for the children. In their childhoods, the

students told their dreams most frequently to their mothers. In addition, they are also the most active concerning dream socialization. According to the students' retrospective estimates, mothers asked the children about their dreams about twice as often (1.64/month) as their fathers and told their own dreams twice as frequently (1.89/month) compared to the fathers. That mothers tell their dreams more often than fathers fits in with the gender differences in dream sharing (Schredl & Schawinski, 2010); i.e., even if DRF is controlled, women tend to tell their dreams more often.

The absolute quantity of dream socialization was relatively small. The children told the different persons their own dreams about one to three times a month; they were asked about their dreams at most twice a month and were told dreams one to two times per month by the different persons. However, there are relatively large standard deviations concerning these estimates, i.e., some children were engaged in dreams quite a lot whereas others didn't talk about or listen to dreams on a regular basis. This range implies that there might be an effect of dream socialization on DRF in adulthood.

Additionally, significant correlations between telling dreams to different caregivers and the quality of the relationship to these persons were found. A possible assumption following this finding would be that dreams – which certainly belong to personal topics – are rather told to other people, if the relationship to these persons is close and based on trust. Consistently, the quality of the children's relationship

Table 4: Correlations of hearing the dreams of the different persons in childhood with the DRF and attitude towards dreams in adulthood

Person whose dreams the child has heard	Current DRF ¹	P-value (1-tailed)	Current Attitude towards dreams	P-value (1-tailed)
Mother	.286	< .05	.119	.204
Father	.148	.157	.117	.218
Siblings	.244	.058	.085	.297
Friends	.064	.327	-.086	.277
Other person	.190	.218	-.084	.370
Media	.045	.376	.093	.257
Parents (estimates of the parents)	.313	< .05	.198	.082

¹ Dream recall frequency

Table 5: Correlations of being asked about own dreams by the different persons in childhood with DRF and attitude towards dreams in adulthood

Person who has asked about the child's dreams	Current DRF ¹	P-value (1-tailed)	Current Attitude towards dreams	P-value (1-tailed)
Mother	.242	< .05	.271	< .05
Father	.127	.189	.204	.080
Siblings	.237	.060	.083	.299
Friends	.024	.431	.072	.304
Other person	.287	.117	.250	.159
Parents (estimates of the parents)	.249	.038	.151	.146

¹ Dream recall frequency

with the mother in the relevant period of time was rated slightly higher than the quality of the relationship with the father. Accordingly, it was found that telling dreams to other persons is more likely if feelings of closeness, trust and understanding already exist in the relationship and that telling dreams enhances closeness to the other person. (Ijams & Miller, 2000)

4.3. Methodological issues of the study

The correlations between the independent estimates of children and parents regarding the three aspects of dream socialization were highly significant. This is noteworthy because the students' estimates are therefore validated by the parents' estimates and, thus, a potential bias due to over- or underestimate dream socialization in childhood due to a current high or low DRF is minimized.

However, there still might be a bias in the estimates of children and parents due to both being retrospective. In order to completely avoid this bias and establish a clear-cut causal relationship, one should conduct a longitudinal study with dream socialization being measured over the relevant period of time and a follow-up-test measuring DRF in adulthood. In addition, the sample consisted mainly of psychology students who are more interested in dreams and had higher dream recall compared, for example, to sport students (Erlacher & Schredl, 2004). As the present study is a pilot study – due to its retrospective approach – in future studies, unselected samples would be desirable for testing the effects of dream socialization on adult DRF and interest in dreams.

The finding that the parents rated the dream socialization in all three aspects slightly more frequently than the children plays an inferior role regarding validity concerns. The difference between the parents' and the children's estimate in terms of the parents asking the children about their dreams is significant. Why the parents' estimates on this variable are higher compared to the children's estimates might reflect an overestimation of care behavior made retrospectively by the parents.

Gender effects have not been tested due to the small sample size. It would be very interesting to study whether gender differences in dream socialization in childhood are

reflected in gender differences in adult DRF or interest in dreams.

4.4. Effect of engagement in dreams in childhood on dream experience in adulthood

According to the children's as well as the parents' estimates, the mother's asking about the children's dreams and the hearing the mother's dreams have a significant positive effect on students' DRF in adulthood. This is in line with the studies showing that engagement in dreams increase dream recall (Schredl, 2007). In addition, mother's asking about the children's dreams has a significant positive effect on the children's attitude towards dreams in adulthood.

The effect regarding DRF in adulthood caused by dream socialization with siblings is smaller but still comparable to the effect caused by dream socialization with the mother. Dream socialization with peers in comparison with dream socialization with family members has considerably less influence on DRF in adulthood. The question is why dream socialization with the mother and the siblings has an especially positive influence on DRF whereas interaction with peers in childhood seems to be without any influence on adult DRF.

One possibility is that the extent of dream socialization with the mother is above a certain threshold that has to be exceeded in order to achieve a long-term increase in DRF. According to the students' estimates, with regard to asking the children about their dreams as well as telling own dreams, the mothers attained higher values than the other persons.

Another assumption is that the effect of dream socialization with another person on DRF in adulthood is moderated by the quality of the relationship with the respective person. The quality of the students' relationship with their mothers in the relevant period of time indeed was estimated better than the relationship to other persons. However, the difference was not of a size that would be necessary to explain why mothers seem to have a larger influence on the children's DRF than other persons.

Another alternative explanation could be the general role of the mother within the family. Still today, the mother is the most important person in the development of the children

(Hurrelmann & Bründel, 2003). She interacts in most families more frequently and longer with the children than the father (Lohaus, Vierhaus, & Maass, 2010) and often has a privileged position towards her children emotionally compared to the father (Claes, 1998). So one could argue that each interaction of the child with her/his mother is of greater importance than any interaction with other persons. The following assumption is that dream socialization with the mother not only took place more frequently but that dream socialization with the mother with regard to long-term effects on children's DRF in adulthood is of more importance than socialization with the father, for instance.

Other possibilities must be discussed regarding the comparable influence of dream socialization with siblings on the DRF. Neither the extent of dream socialization with siblings in the present sample was larger than the extent of dream socialization with other persons nor was the quality of the students' relationship to the siblings rated better than that to other persons.

However, the time spent with siblings could play an important role. In many families children spend even more time with their siblings than with their parents (McHale & Crouter, 1995) while with the beginning of adolescence the peers often become more important (Claes, 1998). This could explain why dream socialization with friends in the age between eight and twelve years is rather irrelevant for DRF in adulthood because peers in comparison to family members do not yet play an important role in the children's everyday life in that time period.

Possibly one could argue that the long-term influence of different persons on the DRF in adulthood neither depends on the respective extent of the dream socialization nor depends on the quality of the relationship to the respective persons. Instead, the time spent with the person in the relevant period of time and the general role that the person played in the life of the child seem to moderate the influence of dream socialization in childhood on DRF in adulthood.

5. Conclusions

To summarize, dream socialization in childhood seems to have an effect on DRF in adulthood. Further studies should concentrate on explaining why family members have greater influence than peers on long-term DRF. The retrospective estimates of the students have been validated by the estimates of their parents. Nevertheless, a longitudinal study measuring children's and parents' estimates of dream socialization independently in the relevant period of time and measuring DRF in a follow-up test would be necessary to exclude a retrospective bias and can corroborate the present findings.

References

- Bartnicki, K. J. (1997). An exploration of life experiences, personality traits and sleep habits in relation to dream recall and dream content. Sacramento, California State University: Master Thesis.
- Claes, M. (1998). Adolescents' closeness with parents, siblings, and friends in three countries: Canada, Belgium, and Italy. *Journal of Youth and Adolescence*, 27, 165-184. doi: 10.1023/a:1021611728880
- Cohen, D. B. (1969). Frequency of dream recall estimated by three methods and related to defense preference and anxiety. *Journal of Consulting and Clinical Psychology*, 33, 661-667.
- Cohen, D. B. (1973). A comparison of genetic and social contributions to dream recall frequency. *Journal of Abnormal Psychology*, 82, 368-371.
- Erlacher, D., & Schredl, M. (2004). Dreams reflecting waking sport activities: a comparison of sport and psychology students. *International Journal of Sport Psychology*, 35, 301-308.
- Gedda, L., & Brenci, G. (1979). Sleep and dream characteristics in twins. *Acta Geneticae Medicae et Gemellologiae*, 28, 237-239.
- Giambra, L. M., Jung, R. E., & Grodsky, A. (1996). Age changes in dream recall in adulthood. *Dreaming*, 6, 17-31.
- Hurrelmann, K., & Bründel, H. (2003). Einführung in the Kindheitsforschung. Weinheim: Beltz.
- Ijams, K., & Miller, L. D. (2000). Perceptions of dream-disclosure: an exploratory study. *Communication Studies*, 51, 135-148.
- Lohaus, A., Vierhaus, M., & Maass, A. (2010). *Entwicklungspsychologie des Kindes- und Jugendalters*. Berlin: Springer.
- McHale, S. M., & Crouter, A. C. (1995). Congruence between Mothers' and Fathers' Differential Treatment of Siblings: Links with Family Relations and Children's Well-Being. *Child Development*, 66, 116-128.
- Redfering, D. L., & Keller, J. N. (1974). Influence of differential instruction on the frequency of dream recall. *Journal of Clinical Psychology*, 30, 268-271.
- Schredl, M. (1991). *Traumerinnerungshäufigkeit und Trauminhalt bei Schlafgestörten, psychiatrischen Patienten und Gesunden*. Universität Mannheim: Unveröffentlichte Diplomarbeit.
- Schredl, M. (2004). Reliability and stability of a dream recall frequency scale. *Perceptual and Motor Skills*, 98, 1422-1426.
- Schredl, M. (2007). Dream recall: models and empirical data. In D. Barrett & P. McNamara (Eds.), *The new science of dreaming - Volume 2: Content, recall, and personality correlates* (pp. 79-114). Westport: Praeger.
- Schredl, M. (2008a). Dream recall frequency in a representative German sample. *Perceptual and Motor Skills*, 106, 699-702.
- Schredl, M. (2008b). *Traum*. München: Reinhardt/UTB.
- Schredl, M., Barthold, C., & Zimmer, J. (2006). Dream recall and nightmare frequency: a family study. *Perceptual and Motor Skills*, 102, 878-880.
- Schredl, M., Brenner, C., & Faul, C. (2002). Positive attitude toward dreams: reliability and stability of a ten-item scale. *North American Journal of Psychology*, 4, 343-346.
- Schredl, M., & Reinhard, I. (2008). Gender differences in dream recall: a meta-analysis. *Journal of Sleep Research*, 17, 125-131.
- Schredl, M., & Sartorius, H. (2006). Frequency of dream recall by children and their mothers. *Perceptual and Motor Skills*, 103, 657-658.
- Schredl, M., & Schawinski, J. A. (2010). Frequency of dream sharing: The effects of gender and personality. *American Journal of Psychology*, 123, 93-101.
- Schredl, M., Wittmann, L., Ciric, P., & Götz, S. (2003). Factors of home dream recall: a structural equation model. *Journal of Sleep Research*, 12, 133-141.
- Wittmann, L., & Schredl, M. (2004). Does the mind sleep? An answer to "What is a dream generator?". *Sleep and Hypnosis*, 6, 177-178.