Measure of dream recall frequency: Comparing retrospective and logbook evaluations

Nicolas Ribeiro, Yannick Gounden, and Véronique Quaglino

Université de Picardie Jules Verne, Amiens, France

Summary. Dream recall frequency (DRF) is the main indicator for evaluating dream. In home-setting, DRF can be established using two major methods: the retrospective estimation (RE) and the logbook estimation (LE). No research to date has compared DRF obtained with these two methods on the same period and using an online logbook that does not allow rereading of previous reports. We aim at investigating on these two methods by evaluating their influence on the recall frequency of dream (DRF). In the present study, the protocol consisted of online questionnaires in order to prevent rereading: an initial RE, a LE for a 21-day period, and a final RE. Both RE were based on an open-ended question about DRF on the last 21 days. Thus, the score of DRF assessed with the LE and the post-logbook RE were established on the same period. In line with the literature, our results revealed that the score of DRF with the pre-logbook RE was significantly inferior to the score of DRF obtained with the LE. However, the score of DRF with post-logbook RE was not different to the score obtained with LE. Our preliminary results are discussed by suggesting that disparities existing between Pre-logbook RE and LE might be undermined by other factors than methods influence on DRF. We recommend that further methodological comparisons should cares about effects of period investigated and influence of rereading on memory.

Keywords: Dream recall frequency, retrospective measures, prospective measure (logbooks)

1. Introduction

Two main methods are usually used to assess dream recall frequency (DRF) in a home setting (Aspy, Delfabbro, & Proeve, 2015): the logbook estimation and the retrospective estimation. With the logbook estimation (LE), one records his/her dream each morning in a logbook (or diary) during a specific number of days. With the retrospective estimation (RE), one retrospectively provides estimation of his/her DRF in general or during a specific period. Typically, an open-ended question and/or a frequency scale are used (Schredl, 2004). We aim to investigate these two methods to measure their influence on the scores reported on dream recall frequency (DRF). Studies using both methods in the same protocol have been conducted with various objectives, for instance: investigating dream content in specifics populations (Schredl and Engelhart, 2001), studying links between social contact and dreams content (Schredl, 2001) or investigating on links between personality factors and DRF (Schredl et al., 2003). For long, these two widely-used methods were posited to be equivalent, and the comparison of both methods to investigate for possible methodology effect was not considered.

Aspy and collaborators have highlighted the diversity of methods used in the aforementioned studies (Aspy, 2016; Aspy et al., 2015). First, LE was typically conducted using a paper/pencil logbook. Considering that participants could consult the logbook by going through previous reports, it

may be uncertain whether any possible difference that exist between these two methods are due to the dream recalling or to the effect on memory of uncontrolled subsequent consultation of reports. Indeed, the memory that a participant can have of an event can be influenced by various factors such as the possibility of reviewing previous information. However beside refreshing the mind, the action of reviewing previous reports can also increase the risk of memory distortions, errors, and reconstructions of souvenirs due to interferences of past events on more recent ones (Schacter, Guerin, & St. Jacques, 2011). The effect of repetition on memory is well documented (Greene, 1992 cited by Karpicke & Roediger, 2007) but, to our knowledge, this factor has never been taken into consideration in dream research comparing LE reports and RE questionnaire. More precisely, we suggest that the effect of uncontrolled rereading of LE reports and recalling of previous information while completing the RE questionnaire have never been explicitly addressed in previous research. Second, the different methods used to investigate on DRF generally do not take as reference the same period when collecting data. Indeed, evaluation of DRF using RE is typically assessed on a period occurring before the LE.

The possible differences that exist between RE and LE were already investigated in a literature review conducted by Aspy and collaborators (2015). They showed that, LE was more likely to give a greater DRF than RE. They termed the differences between RE and LE as the retrospective-logbook disparity (RLD). Aspy and collaborators (2015) proposed two hypotheses to account for the RLD. The retrospective underestimation posits that DRF tends to be underestimated by RE, while the logbook enhancement suggests that LE tends to enhance DRF over time. In continuity of this review, Aspy (2016) addressed empirically the RLD and demonstrated that RE underestimate DRF and LE tends to enhance it. This study was conducted with an online pre-logbook RE (we use the term pre-logbook to signify that the

Corresponding address:
Nicolas Ribeiro, CRP-CPO, EA 7273, Université de Picardie Jules Verne, Amiens, France.
Email: ribeiro.nicolas@live.fr

RE occurs before the logbook) and a one-week LE. In accordance with Zunker et al. (2015), Aspy (2016) suggested that a post-logbook RE (i.e administered after the logbook), established on the same period of the logbook, could reveal the extent to which RE underestimates DRF. Aspy (2016) also warned that with such post-logbook RE, participant might directly reread his/her written dream reports from the logbook to perform the post-logbook RE. We propose in the present study a logbook that prevent this possibility. Moreover, we aim to compare the scores of DRF in pre-logbook RE, post-logbook RE, and LE.

Objective and hypothesis

The purpose of the present study was to address experimentally the retrospective-logbook disparity with online journal and questionnaire that prevent rereading. In line with Aspy (2016), we postulated that the retrospective-logbook disparity between a pre-logbook RE and a LE with regard to DRF may be addressed by using the same RE questionnaire at post-logbook period (after the logbook instead of before). The post-logbook RE would thus investigate exactly the same period as the LE. For the RE and the LE we proposed an online version in order to prevent the reviewing of previous information about dream. By proposing a pre and post RE, before and after the LE, we posit that such procedure would allow to make the DRF comparison upon the same period and determine whether one is able or not to directly assess retrospectively his/her DRF with accuracy.

2. Method

2.1. Participants

Eighty-one undergraduate psychology students were enrolled (mean age: 20.34; age range: 18 to 25 years old). The sample was 85.6% feminine. Recruitment process and the administration of the protocol were performed in conformity with the legislation of our country. All participants filled in a consent form and a medical survey included exploratory questions about motivation for participating, perceived time to fall asleep, oneiric consciousness, sleep quality, anxiety, or depression. Participants who have mentioned sleep pathology or mental disorders were excluded. An identification number corresponding to each participant guaranteed the confidentiality and anonymity of personal data.

2.2. Materials

The online questionnaire assessed DRF with open-ended questions. Participants were asked to estimate the number of morning with dream recall during the last 21 days concerning two periods: before and after the logbook. The wordings in French could be translated as follows "During the last 21 days, how many mornings did you wake up while being able to recall one dream or more?" The questionnaire was constructed and diffused using google form online software. Pre-logbook RE responses were not accessible to avoid comparison with the second completion of the RE questionnaire proposed post-logbook.

The logbook software was completed online on awakening every morning during 21 days. It addressed DRF by questioning on the number of dreams occurring during the night that one could remember and recalled (narrative report). The color-tone was desaturated and developed in dark shades

to limit at most the emission of blue-light. A built-in Messaging was used to notify the end of the logbook period to the participants. To avoid re-reading during the logbook period, dream reports were automatically deleted from the participant device once they were written. In this way, the dreams were only reported once and not read the ulterior days.

2.3. Procedure

Participants were first given oral instructions on how to complete the questionnaire and the logbook. After ensuring that the procedure was clear for all, they were proposed to sign a consent form and filled in the medical survey. Then, using their smart phones or tablets, they had to connect to a webpage containing the pre-logbook questionnaire and received an identifier which ensured the anonymity of data.

After the first completion of the pre-logbook questionnaire, participants had to connect to the logbook application with their identifier using their smart phones or tablets. Then, each day, they had to indicate the time that they were going to sleep. When wakening the following day, each participant completed the logbook (to gather information for DRF). This procedure was repeated for 21 consecutive days. After this period, participants were asked to complete the RE questionnaire again. The post-logbook RE was proposed following the same procedure as the pre-logbook RE questionnaire.

3. Results

Out of 81 participants, 13 did not started the logbook at all, while 29 did not completed it for at least 14 days and not at all the post-logbook questionnaire. Overall, 39 participants assiduously followed the protocol instructions.

A repeated measures ANOVA was conducted on the three measures of DRF (pre-logbook, logbook and post-logbook). As the Mauchly's Test of Sphericity indicated that the assumption of sphericity had been violated (W = 0.50, p < .001), the ANOVA was conducted with a Greenhouse-Geisser correction. Results showed that mean DRF differed significantly between time points [F (1.33, 50.45)= 4.126,

Figure 1. Mean DRF obtained in the pre-logbook RE, in LE and in post-logbook RE. Each error bar denotes one standard error around the mean
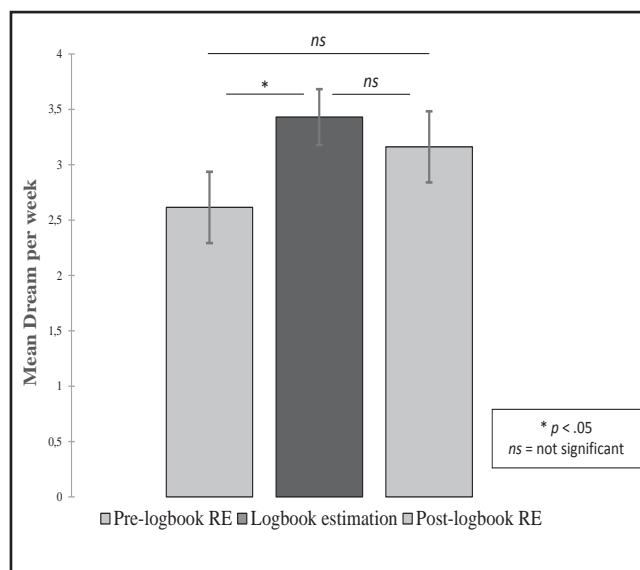
p < 0.05]. Post hoc tests using the Bonferroni correction revealed that mean DRF between the Pre-logbook DRF (2.62 ±2.12) and the Logbook DRF (3.43 ±1.56) was different (p < 0.05). The other pair-wise comparison concerning the logbook and the post-logbook (3.16 ±2.01) was not significant. The comparison between pre-logbook and post-logbook was not significant either.

Finally, the pre-logbook RE for participants who left the protocol before the end (N = 42) was not significantly different from those who stayed (N = 39).

4. Discussion

This study compared two methods employed for dream recall frequency (DRF) evaluation. The originality of the research was firstly to propose online versions of RE and LE that unable rereading of previous dream report. Secondly, we ensured that the methodological comparison was based on the same period. We used a pre and post-logbook RE and we worded to specifically refer to a same period-length for RE and LE. Thus, the post-logbook RE was based on the same period (the same 21-days) like the logbook estimation (LE). As expected, retrospective-logbook disparities (RLD) was present between the pre-logbook RE and LE. This result is consistent with previous research on RLD (Aspy, 2016; Aspy et al., 2015). However, RLD difference between LE and post-logbook RE referring to the same period was not significant. Additionally, proposing a post-logbook RE has allowed us to compare RE of DRF before and after LE. However, no difference was significant.

Our 21 days protocol was particularly demanding and engaging. For instance, logbook duration was seven days in Aspy (2016). We opted for a 3-week logbook as Schredl and Fulda (2005) have demonstrated that DRF over a period of 2 weeks or more allows reliable DRF evaluation. Aspy et al. (2015) suggested that enhancement decreases along the logbook period. It would be interesting to investigate when the disparity is most prominent within the logbook period.

Our results suggest that both method widely used in dream research to investigate DRF can refer with accuracy to actual DRF when a logbook precedes this evaluation. It also interrogates the possible influence of the period investigated and rereading effect. Aspy and collaborators (2015) proposed that a possible effect of a logbook is to encourage people to pay attention to their dreams. Manipulating re-consultations might be one way to enhance this attention. An online logbook, as one described in this paper, could be adapted to propose protocol with re-consultation, possible, mandatory or forbidden, to evaluate its influences on DRF. In the present study, it is possible that RLD mechanisms (underestimation and enhancement) compensate themselves and underlie the retrospective evaluation of DRF. Thus, it would be interesting to explore in which way RLD (gathered with post-logbook RE) can be related to indicators proposed by Aspy (2016) such as time dedicated to report dream, motivation and subjective change. Aspy (2016) advised the use of quantity logbook, it thus would be interesting to investigate if the logbook type influences post-logbook RLD.

5. Conclusion

In line with previous research, the disparity was observed for a pre-logbook questionnaire and a following logbook period (Aspy, 2016; Aspy et al., 2015). However, the RLD was not significantly present when DRF was evaluated upon the same period as the logbook. The present study was conducted to introduce a new methodology and therefore results should be interpreted as preliminary. As a reminder, the key feature of the present study is to test a new methodology and procedure that allow the investigation of RLD on the same period while also limiting possibilities of rereading dream reports. Although results are interesting and to some extent in line with previous literature, they should be interpreted as preliminary. For future research comparing RE and LE on a larger sample, we encourage the use of a post-logbook retrospective evaluation of DRF. We also recommend using a logbook that unable re-consultation of previous reports and a 2-weeks or more period. We believe that the principal strength of this study was to investigate RLD by adding a post-logbook RE. This was made possible by a new polyvalent method that prevented rereading along the logbook period.

References

Aspy, D. J. (2016). Is dream recall underestimated by retrospective measures and enhanced by keeping a logbook? An empirical investigation. Consciousness and Cognition, 42, 181–203. http://doi.org/10.1016/j.concog.2016.03.015

Aspy, D. J., Delfabbro, P., & Proeve, M. (2015). Is dream recall underestimated by retrospective measures and enhanced by keeping a logbook? A review. Consciousness and Cognition, 33, 364–374. http://doi.org/10.1016/j.concog.2015.02.005

Greene, R. L. (1992). Repetition paradigms. Human Memory: Paradigms and Paradoxes, 132–152.

Karpicke, J. D., & Roediger, H. L. (2007). Repeated retrieval during learning is the key to long-term retention. Journal of Memory and Language, 57(2), 151–162.

Schacter, D. L., Guerin, S. A., & St. Jacques, P. L. (2011). Memory distortion: An adaptive perspective. Trends in Cognitive Sciences, 15(10), 467–474. http://doi.org/10.1016/j.tics.2011.08.004

Schredl, M. (2004). Reliability and stability of a dream recall frequency scale. Perceptual and Motor Skills, 98(3_suppl), 1422–1426.

Schredl, M., & Fulda, S. (2005). Reliability and Stability of Dream Recall Frequency. Dreaming, 15(4), 240–244. http://doi.org/10.1037/1053-0797.15.4.240

Zunker, M., Althoff, H. K., Apel, J., Lässig, H. S., Schültke, L., & Schredl, M. (2015). Comparing questionnaire and diary measures for eliciting nightmare frequency. International Journal of Dream Research, 8(2), 129–134.