Elder relatives in waking life correlated with both elder relatives in dreams and animals in dreams

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Article

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Abstract

There are dream metaphors that express waking-life experiences indirectly. Animals in dreams has been speculated to be related to dream metaphors. Here we explored if there was correlation between daily diaries related to elder relatives and animals in dreams.

Methods: for one day, 270 participants recorded waking-life experiences in daily diaries before sleeping, and recorded their dreams upon waking. Two external judges rated if there were any content related to elder relatives in both daily diaries and dreams, and rated if both daily diaries and dreams contained content related to animals.

Results: the frequency for daily diaries related to elder relatives was 19.6%; the frequency for daily diaries related to animals was 2.6%; the frequency for animals in dreams was 13.7%; the frequency for elder relatives in dreams was 21.5%. The most two frequency animals in dreams were dogs and cats. Recording daily diaries related to elder relatives was correlated with both dreaming about elder relatives and dreaming about animals. In addition, recording daily diaries related to animals was correlated with dreaming about animals.

Conclusion: Results supported the continuity hypothesis. In addition, some animals in dreams represented elder relatives in waking life metaphorically.

1. Introduction

1.1. The continuity hypothesis of dreaming

Dreaming is the subjective experience during sleep. The continuity hypothesis of dreaming suggests that there is continuity, of some form, between waking and dreaming ([1-5]). At the phenomenon level, the continuity hypothesis emphasizes potential correspondences between waking-life experiences and dreams.

According to Domhoff ([5]), the frequency of dream elements (such as characters, activities etc.) is correlated with the intensity of personal concern during waking time. From the perspective of time, as typically waking-life experiences happens before dreams, the above correlation between dreams and waking concerns may be seen as the effect of waking concerns on dreams. So the intensity of waking concern may affect the possibility of dreaming about content related to the concern. This idea is similar to the proposal that dreams may preferentially reflect content related to current concerns ([6]), which is supported by some evidence showing that presleep focusing on thoughts related to current concerns enhanced the possibility of dreaming of the thoughts ([7-9]).

1.2. Dream metaphors and hyper-association during sleep

It has long been argued that dreams contain metaphors that express waking-life experiences in an indirect way ([10-12]). The existence of dream metaphors preclude studying the continuity between
waking-life experiences and dreams, because it is difficult to decode dream metaphors. For example, a person may dream about one snake which is not seen or thought about during waking life, so it is hard to associate the snake dream with waking life. Yet the snake may be a dream metaphor, because the dreamer may meet a waking event which caused a similar emotional feeling as seeing the snake in the dream. So there may be a emotional continuity between waking and dreaming ([3, 12]). Yet this idea is still needed to be explored, because so far it is not known if this kind of discontinuity between waking and dreaming is because of dream metaphors ([13]).

Sleep has been found to strengthen weakly semantic associations, which is known as the hyper-association ([14]). As dreams may reflect memory consolidation during sleep ([14]), dream metaphors may be related to reflect the process that newly waking-life experiences were assimilated into existed memory networks.

1.3. Animal dreams

Sometimes there are animals in dreams ([15-19]). The percentage of animal dreams was not high. For example, Van de Castle ([19]) found that for adults the frequency of dream animals was 7.5%, and for children the percentage was more than 20%, and for adolescents the percentage was 13.7%.

A recent study explored more than two thousands dreams ([17]). It found that the most frequent animals in animal dreams were dogs, cats, and horses. According to the authors, these results supported the continuity hypothesis because most of these animals were pets in waking life, and this situation enhanced the possibility for people to think about them, which in turn increased the possibility of dreaming of the animals. Yet the study also found that around 30% animal dreams had some bizarre features (e.g., bigger than waking life, or the animal talks). The authors pointed out that although this situation contradicted the idea of a thematic continuity between waking and dreaming ([3]), this situation may be in line with the idea that there is emotional continuity between waking and dreaming ([3, 12]). The idea of emotional continuity between waking and dreaming may imply that some animals in dreams may be metaphorical expression for waking-life experiences. In this study, we explored this topic.

1.4. Carl Jung's idea about animal dreams and aim of the study

From the perspective of psychodynamic, according to Jung ([20], para.261), the image of animals in dreams may represent instinct having been suppressed in waking life. In addition, Jung ([20], para.263) argues that as children may be mainly affected by parents, most of children's instinct is related to their parents. Thus the instinct of the image of animals and the instinct of parents may be mixed together. As a result, sometimes during dreaming the image of parents is represented by the image of animals.

The above idea of Jung ([20]) for animal dreams may be explained by the following: Firstly, there are some correlations between parents and memories of animals. For example, children may watch animal cartoons with their parents, or children may go to zoo with their parents. Secondly, dreams may reflect memory consolidation for newly waking-life experiences during sleep ([11]). During the process of offline
memory consolidation, the newly waking-life experiences may be incorporated into existed long-term networks, via the hyper-association. This kind of process may activate animal memories of childhood, which may be related to parents at that time. Thus sometimes the image of animals in dreams may be related to newly waking events about parents. In this study we explored the implication.

1.5. Aims and hypothesis

According to the continuity hypothesis of dreaming, waking events about parents may lead to dreaming about characters similar to parents. In this study, we used elder relatives (e.g., parents, grandparents, aunt and uncles etc.) to represent characters similar to parents. We hypothesized that there would be a correlation between waking events about elder relatives and dreams with elder relatives.

In addition, as dreams may reflect the offline memory consolidation during sleep (see above), we hypothesized that there would be a correlation between waking events about elder relatives and animal dreams.

2. Methods

2.1. Participants

Van de Castle ([19]) found that for adults the frequency of animals in dreams was 7.5%, while the frequency of animals in dreams was 13.5% in Schredl et al. ([17]). Here we made a rough estimation that about 300 participants may provide 30 dreams with animals.

The sample included 270 participants (21 males; 249 females) with the mean age [SD, range] of 20.86 [2.26, 18-31] years. Most of the participants were college students in Guangzhou, China. They were self-reported to be sufficient with the following criteria: recall at least three dreams per week; sleep at least 6 hours per night; take no more than 30 min to fall asleep; have no neurological or psychiatric history; non-smokers. Also, participants were asked not to take recreational drugs and alcohol during the experiment period. As the study concerned human beings, all methods were performed in accordance with the relevant guidelines and regulations. All subjects gave written informed consent before the study, and the Research Ethics Committee of the South China Normal University approved the study.

2.2. Material

2.2.1. Night task

The night task instructed participants to record a daily diary before falling asleep, via an online web. The daily diary was taken from Fosse et al. ([21]), and adapted by van Rijn et al. ([22]). Here we followed the version of van Rijn et al. ([22]): 1. Major Daily Activities (MDAs): activities that took up most of the participants' time during the day, e.g., going to work or university, meals, and shopping. 2. Personally Significant Experiences (PSEs): important daily events that may or may not have taken up much time, e.g., emotional events. 3. Major Concerns (MCs): concerns or thoughts that participants had on their mind.
during the day that may not have taken up much time, but were still considered important to them, e.g., money problems, examination stress.

Up to three items could be recorded in each category, and participants were also instructed to rate the emotionality of each item in each category on a five-point Likert scale (1 = not at all intense, 5 = extreme intense).

2.2.2. Morning task

The morning task instructed participants to write down their dreams immediately upon (morning) awakening as accurately and truthfully as possible, by the following instruction: Describe everything in your dreams, with as much detail as possible: what happened, in what time frame, with whom, etc. Describe the cognitions, emotions, and behaviors you experienced in your dream, as well as the cognitions, emotions, and behaviors of all other parties included in your dream (if evident to you). If it was a lucid dream, state so.

2.3. Procedure

Participants firstly signed up the research via an online questionnaire which contains questions for the eligibility criteria (see section 2.1.). If they met the criteria and agreed to take part this experiment, they would receive the informed consent via email. If they gave written informed consent, participants would receive further links containing the instruction for the research.

On a day of their choice in the coming week, participants were instructed to finish the night task before falling asleep, and to complete the morning task after waking up (see section 2.2.1. and 2.2.2.). After participants finished their recordings for the two tasks, two external judges who were blind to participants' information and the purpose of this research rated the content related to elder relatives (e.g., parents, grandparents, aunt and uncles etc.) in each participant's daily diary, and the content related to animals in each participant's dream, as well as the content related to elder relatives in each participant's dream (detail see section 2.4.). The Cronbach's consistencies coefficient (α) among the two judges was from 0.88 (the variable ‘elder relatives in dreams’) to 0.98 (the variable ‘animals in dreams’). All statistical analyses were done by SPSS.

2.4. Content analysis for both daily diaries and dreams for external judges

This task required judges to rate if there were any characters related to elder relatives, in waking-life experiences and dreams separately.

The definition for elder relatives was the following: the elder relative refers to a person who is the previous relative generation of the dreamer, such as father, mother, stepmother, foster father, grandmother, grandfather, uncle, and aunt etc. Note that in the rating process, all ratings were formed from direct literal meaning of the recordings.
3. Results

Participants reported 318 dreams in total, with an average length of 171.16 (SD = 169.75; range from 10 to 1211) words. The mean emotionality of MDAs was 3.37 (SD = .70), and the mean emotionality of PSEs was 4.00 (SD = .77), and the mean emotionality of MCs was 4.05 (SD = .78).

The external-rating found that 37 of the 270 participants (13.7%) reported dreaming about animals, and 58 of the 270 participants (21.5%) reported dreaming about elder relatives, and 53 of the 270 participants (19.6%) recorded daily diaries related to elder relatives, and 7 of the 270 (2.6%) participants recorded daily diaries related to animals. The frequent animal species are depicted in Table 1.

Phicoefficient tests showed that there was a significant correlation between recording daily diaries related to elder relatives and dreaming about animals (phi = .24, \( p < .001 \)). Similarly, there was a significant correlation between recording daily diaries related to elder relatives and dreaming about elder relatives (phi = .20, \( p = .001 \)).

In addition, there was a significant correlation between recording daily diaries related to dreams and dreaming about animals (phi = .14, \( p = .023 \)). By contrast, recording daily diaries related to dreams did not relate to the possibility of dreaming about elder relatives (phi = .09, \( p = .16 \)).

Table 1. Frequent Animal Species in the Dream Sample (N = 270 participants).
4. Discussion

Dreaming has been argued to reflect the memory consolidation during sleep ([14]). If so, there may be some correlations between newly waking-life experiences and dreaming about long-term memories, because the memory consolidation involves a process to assimilate the waking events into existed memory network. The long-term memories related to dreams may not only recent memories but also memories from childhood. As there may be correlations between memories of parents and memories of animals during childhood years, some image of animal dreams may be related to the process of memory consolidation related to events with parents. In this study, we explored the topic.

We found that about 13.7% (N = 37) participants reported dreams related to animals. This frequency is in the range of results in Van de Castle ([19]) which found that the frequency of animals in dreams was from 7.5% (Adult) to 20% (Child). In addition, the frequency was similar to Schrel et al. ([17]) which indicated that the frequency of animals in dreams 13.5%. Moreover, the most two frequent animals that appear in dreams were dogs, cats. These results were similar to previous research ([17]).

We confirmed our hypothesis based on the continuity hypothesis ([3, 5]), by a significant correlation between waking events with elder relatives and dreaming about elder relatives. According to Schredl ([3]),

<table>
<thead>
<tr>
<th>Species</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dog</td>
<td>7</td>
</tr>
<tr>
<td>Cat</td>
<td>5</td>
</tr>
<tr>
<td>Snake</td>
<td>4</td>
</tr>
<tr>
<td>Fish</td>
<td>4</td>
</tr>
<tr>
<td>Bird (not otherwise categorized)</td>
<td>4</td>
</tr>
<tr>
<td>Insect</td>
<td>3</td>
</tr>
<tr>
<td>Bear</td>
<td>2</td>
</tr>
<tr>
<td>Bee</td>
<td>1</td>
</tr>
<tr>
<td>Monkey</td>
<td>1</td>
</tr>
<tr>
<td>Rat</td>
<td>1</td>
</tr>
<tr>
<td>Dinosaur</td>
<td>1</td>
</tr>
<tr>
<td>Fox</td>
<td>1</td>
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<td>Rabbit</td>
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<td>Goat</td>
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<td>Horse</td>
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</table>
the intensity of waking concern may affect the possibility of dreaming about content related to the concern. During waking time, participants may concern about their elder relatives, which in turn affected their dreams. Thus recording daily diaries related to elder relatives was correlated with the image of elder relatives in dreams. In addition, we found that recording daily diaries related to animals was correlated with dreaming about animals. This result may also support the continuity hypothesis of dreaming, because participants may concern about animals in waking life, and then they dreamed about the animals. Yet as the frequency of waking events with animals was only 2.6% (N = 7), this result may not be stable. Future study can use more samples to test this idea, although it will cost a lot of labor.

Consistent with our hypothesis, we found that there was a correlation between dreaming about animals and recording daily diaries related to elder relatives. From the perspective of memory consolidation during sleep, there was a process that assimilated newly waking events into existed long-term memory networks, and dreams may reflect this process ([14]). As stated above, during childhood years memories of parents and memories of animals may mix together. So when a newly waking event related to parents was incorporated into a person's dream, the process may also activate the dreamer's animal memories related to the parents during childhood time. As a result, the correlation between waking events with elder relatives and the image of animals in dreams was found.

In addition, the above result may indicate that some animals in dreams represented elder relatives in waking life metaphorically. According to Jung ([20]), there may be a correlation between memories of animals and memories of parents. If Jung ([20])'s idea is right, there may be some weakly semantic association between the image of animals and the image of parents. In this study, the elder relatives were characters similar to parents, so the image of elder relatives may have some relationships with the image of animals. Horton et al. ([14]) argued that during dreaming there may be a effect of hyper-association, which enhanced the connections across weakly semantic associative memories. Thus elder relatives may be represented by the image of animals in dreams. This situation suggested that sometimes dreams may represent waking-life experiences indirectly. The situation was similar to the finding that the COVID-19 was correlated with enhanced threatening events in dreams, rather than direct disease themes in dreams ([23]).

4.1. Limitations

One limitation of the study was the sex of participants, because most of participants were female. According to Schredl et al. ([17]), the sex of participants may affect potential kinds of animals in dreams. For example ([17], p.10), “dogs and horses were more often found in female dreams whereas fantasy/prehistoric animals were more prominent in male dreams.” So the unbalanced sex may affect the frequency of animals appeared in dreams.

Another limitation of the study was that in this study, we speculated that there may be a correlation between memories of animals and memories of parents. That meant we did not make direct measurement for the topic. A main problem was that our main purpose was to find the hypothesized correspondences between waking and dreaming, and the above correlation of long-term memories was
not our purpose. Nevertheless, future studies can explore if the correlation between memories of animals and memories of parents was existed.

Finally, the study also had a limitation that the study was correlational in nature, rather than causal research. Future study that directly manipulated the intensity of target thoughts about parents were welcomed, because this kind of study can show directly that the effect of waking events about parents on dreaming about animals.

4.2. Conclusion

The finding of the study suggested that recording daily diaries related to elder relatives was correlated with dreaming about elder relatives. In addition, recording daily diaries related to animals was correlated with dreaming about animals. These results supported the continuity hypothesis of dreaming. Moreover, there was a correlation between recording daily diaries related to elder relatives and dreaming about animals, which may suggest that some animals in dreams represented elder relatives in waking life metaphorically.

Declarations

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On behalf of the authors of this paper, we declare that there are no conflicts of interests.

Author Contribution

Design: JW Data collection: JW and XF Data analysis: JW and XF

Manuscript: JW Edit: JW

Data availability

The datasets generated and/or analysed during the current study are available from the corresponding author on reasonable request.

References

