

# Book review: Malinowski, J. (2021). The psychology of dreaming.

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**Summary.** The book of Josie Malinowski is a well-written and informative introduction into psychological dream research. After definitions and a brief review of the history of dreaming, the author integrates many of the current theories about dream function, e.g., processing of emotions, Social Simulation theory, or dreaming as playing. In addition, clinical aspects, e.g., dream sharing, are reviewed with the interesting idea that working with dreams in waking might enhance the function of dreams. Phenomena like lucid dreams, precognitive dreaming, posttraumatic dreams, and sleep paralysis which are currently discussed widely are presented in a very concise format, clearly demonstrating the author's knowledge that she has accumulated over more than 10 years of dream research. Lastly, the author emphasizes that dream researchers – like scientists in general – should also discuss the ethical implications of their findings, e.g., when influencing dream content with application of external stimuli.

**Keywords:** Dreaming, working with dreams, lucid dreams, Sci-fi dreaming

Josie Malinowski's book "*The psychology of dreaming*" is well-written, in non-scientific language and thus easy to understand but, nevertheless, ably reflects the status of current academic dream research. The author, an oneirologist (meaning dream researcher) herself for over 10 years, can draw on her own body of research as well as her personal dream life, presenting illustrative dream examples, e.g., the examination dream version of university teachers. Personally, I appreciate her presenting the viewpoint of academic psychology within the field, in addition to psychoanalysis and neuroscience. The "cautionary tale" presented in the introduction is also very helpful; highlighting the fact that academic psychology relies on WEIRD individuals (Western, Educated, from Industrialized countries, from relatively Rich and Democratic countries) as research participants. Especially in the field of dream research, this is important as different cultures conceptualize dreams very differently (Hoss et al., 2019).

The definition of dreaming presented in Chapter 1 is 'all conscious (or subjective) experiences during sleep'. That is, a dream doesn't have to be bizarre, weird, emotional and so on; every type of experience, e.g., thoughts, is included. This definition is especially important in the clinical context as dreams are often seen as activities of the unconscious mind or as some form of symbolic language. Here, the author is very clear: "They are also real" (as stated in her Introduction). After briefly introducing the definition of sleep, the author explains different dream types, differences between REM and NREM dreams, lucid dreams, nightmares, typical

dreams and so on, illustrating the variability of the dream experience.

As dreams are recalled subjective experiences that occur during sleep, they cannot be measured objectively (yet, see last chapter of the book on Sci-fi dreaming). Therefore, the different methods of collecting dreams have their pros and cons, e.g., waking participants up from REM sleep in the lab and asking directly via intercom about subjective experiences prior to the awakening yield a high rate of recall but such dreams tend to be affected by the lab setting; that is, the dreams may include references to the lab, to electrodes, and/or to the experimenter (Schredl, 2018). Dream diaries, interviews, asking for the most recent dream, or questionnaires are less invasive but more prone to biases, e.g., if individuals with very low dream recall report a dream that occurred some time ago many of the details might get lost. The author did not include the method of dream content analysis that is used to analyze the dream reports in the most objective way possible (for a brief introduction that is freely available in the internet see: Schredl, 2010). This chapter is helpful to the reader because it shows the kind of material researchers base their theories and findings.

In Chapter 2, the author provides a brief review regarding the history of dreams; despite its brevity, this chapter shows that humankind has had a long-standing interest in dreams. For an in-depth review of the history of dreams, I recommend Robert Van de Castle (1994) book '*Our dreaming mind*.' It is also very helpful that the author outlined the theories of Sigmund Freud and Carl Gustav Jung as these theories are still very important in clinical psychology and the understanding of dreams in the general population. These "old" theories are contrasted by modern approaches to dreaming, the cognitive theory of dreams and the continuity hypothesis of dreaming, with the groundbreaking work of Calvin S. Hall and his co-workers. Many researchers, especially academic psychologists (including the author of this review) focus their research efforts on a better understanding of the continuity between waking and dreams. This also includes the data showing that dreams in turn can affect waking life (e.g., Schredl, 2000). Domhoff (2001) proposes a

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neurocognitive theory of dreams that is presented within the book. Precursors of these line of thinking are the activation-synthesis hypothesis (Hobson & McCarley, 1977) and the AIM model (Hobson et al., 2000). Personally, I am skeptical, as dreaming is a subjective experience (consciousness while being asleep) and cannot be adequately conceptualized within a neuroscience framework. The idea that this conscious experience during sleep is related to neural activity in the brain seems obvious, and many studies focus on this very interesting question “What our brains are doing when they dream?”. The author cites a very sophisticated study by Francesca Siclari et al. (2017) showing how this research is carried out and the kind of findings that can be obtained.

The author addresses the most fundamental question, that is, “Why do we dream?” in Chapter 3. I like very much that the author did not focus on one particular theory but did a good job in integrating the theories that are currently out there (see Table 1). Even though dreams do not replay waking-life experiences exactly as they happened (e.g., Malinowski & Horton, 2014), dreaming seems to be related to sleep-dependent memory consolidation (Klepel & Schredl, 2019; Schoch et al., 2019; Wamsley & Stickgold, 2019; Wamsley et al., 2010); whether dreaming simply reflects the neuronal processes of sleep-dependent memory consolidation or plays an active role in consolidating memories is still an open question.

The next group of theories have focused on processing emotions, that is, calming the storm: Strong emotions related with the waking-life experience will become less intense within the dream – with the exception of nightmares, especially post-traumatic nightmares. The most elaborated body of work was provided by Milton Kramer (2007) – in addition to the work of Rosalind Cartwright that is cited by the author (Cartwright, 2010). Regarding the theories that dreams solve problems (Wright & Koulack, 1987), the author clearly states that dreams provide simple solutions very rarely. However, dreams are creative and, thus, might – in a broader sense – play a role in problem solving as “brain storming” (producing many ideas without evaluating their applicability to the problem in the first step) plays an important part in most concepts of the problem solving process. The Threat Simulation Theory (TST) and the Social Simulation Theory (SST) postulate that rehearsing threat coping strategies and/or social skills increased our probability to survive and reproduce (evolutionary aspect), that is, dreaming is useful in preparing us for the future. Personally, I like the idea “Dreaming as play” that the authors cites from an article published by Kelly Bulkeley (1993). Although playing is an important activity in children (and the offspring in animals) and clearly trains a large variety of skills, play is not goal-oriented in the first place. This would make sense in the context of dreams, especially bizarre dreams; the dreamer is playing with many options, has to cope with emotions and difficult tasks, but also experiences a lot of fun. Integrating these different theories (see Table 1) indicates that dreaming might be really important as it serves a variety of different purposes.

The author suggests two principles that are important to understand the connection between dreaming and waking and the relatedness of the sequences within the dream: metaphor and hyperassociation. The importance of metaphors can be easily observed in waking-life, e.g., “You are the sunshine of my life” describes the warm feeling for a loved one. That is, metaphors capture the experiential qual-

ity in a way that almost everyone can understand. The concept of hyperassociativity (conceptualized as distant associations) is not that instructive for me. The authors illustrates this dream-dream hyperassociations with a dream example of her own mixing work-related topics (supervising students) with her family (brother, cousin). The students were singing which is also not typical within academic day-to-day life. One could argue that the last statement “It was painful to listen to because they had awful singing voices.” is not hyperassociative but a relatively clear link to emotions that might reflect the author’s reactions to the students’ capabilities and the prospect how much work she has to invest to improve their skills. That is, if the dream associates according to emotions the associations might be very close and not distant. This viewpoint might be a very interesting topic for future research.

In Chapter 4, the author illustrates the possible value of dreams in the field of clinical psychology. Depressed patients have depressing dreams, i.e., dreams reflect waking-life psychopathology (Schredl & Engelhardt, 2001) and might even contribute to the depression – some form of vicious cycle. After experiencing a traumatic event, the function of dreams would be to weave in the memories and “soften” the emotional component, that is, help to work through the negative experience. But, this processing can go wrong and post-traumatic and other nightmares can occur years, even decades after the trauma, e.g., World War II experiences (Schredl & Piel, 2006). The author cites the work of Peretz Lavie and Hannah Kaminer who studied Holocaust survivors and claimed that the low dream recall of the well-adjusted survivors might have helped them to overcome their traumatic experiences (Lavie & Kaminer, 1991). However, taking a closer look (Kaminer & Lavie, 1991) showed that dream recall in the well-adjusted group (33.7% after REM awakenings) was significantly lower compared to healthy controls (80.0%) but did not differ significantly from the poorly-adjusted survivors (50.5%). The sample sizes – being a sleep lab study – were small (23 holocaust survivors, 10 control participants) and, thus, the authors’ claim about dream recall related to adjustment within the survivor group was not supported by the data. Clinical studies, however, as cited by the author of the present book, clearly indicate that the occurrence and frequency of post-traumatic nightmares contribute to the over-all severity of post-traumatic stress disorder. Interestingly, considering dreams as a marker of psychopathology can help clinicians to evaluate the progress of the patient in the course of their treatment. Moreover, working with nightmares using the Imagery Rehearsal Therapy (Krakow & Zadra, 2010) can be very helpful for these patients in reducing the number and intensity of nightmares and, as a consequence, improve sleep quality and waking-life well-being. The brief introduction provided in the book clearly shows that learning how to deal with dreams and nightmares properly should be part of psychotherapeutic training, especially in cognitive-behavioral therapy.

Personally, I would be very careful with statements like “We could conclude, therefore, that dreaming is psychosis.” Although there are parallels between psychotic experiences and dreaming, psychosis is mal-adaptive and occurs in the waking state whereas dreaming is – in most people – a healthy process. In my opinion, these links are based on a waking view of dreams, e.g., to see dreams as hallucinations. From a within-dream perspective, the world within the dream is not hallucinated, it is experienced as real, i.e.,

very different from a waking-life psychosis. The author also stresses the fact that some authors might be too hasty in linking dreaming with psychosis.

Chapter 5 is dedicated to a very interesting research area, i.e., studying the benefits of dreamwork like increasing insight and so on. I like the suggestion of switching from the term 'dream interpretation' (classical psychoanalytic view) to 'dream appreciation' (Ullman, 1996) or 'dream exploration', the expression preferred by the author and also by Robert Gongloff (2006). This change in terminology seems important to counteract the still popular view that an expert can provide the meaning of the dream; the new view is that the expert, or a fellow dreamer, can help the dreamer to explore his or her own dream and its relationship with waking life. The author reviews briefly a few approaches like Gestalt therapy or Gayle Delaney's, Montague Ullman and my approach ("Listening to the dreamer"). She also mentioned Clara Hill's work showing how helpful working with dreams can be and added several studies of her own (Blagrove et al., 2018; Blagrove et al., 2016; Edwards et al., 2015) to this topic. I very much like the idea that working with dreams in waking enhance the functions of dreaming (see Table 1) and, therefore, the benefit due to taking a closer look at dreams in waking life seems very plausible. I am also very empathetic with the author's encouragement to develop own methods to work with one's dreams, experimenting with existing approaches, evaluating them and so on is important to find out which approach works best for oneself.

Chapter 6 deals with three dream phenomena that are "hot", you can now find many articles about lucid dreaming, precognitive dreams, and sleep paralysis dreams in the internet. As webpages offer a large variety of viewpoints, it is very important that academic researchers tackle that topic in an easy-to-understand way (not in complex scientific language) to help the public. Lucid dreaming is fun and interesting for researchers (see for example: Hurd & Bulkeley, 2014). Although side effects like lucid nightmares can occur, especially in unskilled lucid dreamers (Schredl & Bulkeley, 2020; Stumbrys, 2018), lucid dreaming does not negatively affect sleep quality and the feeling of being refreshed in the morning (Schredl et al., 2020b): typically, lucid dreaming is associated with positive mood in the morning (Stocks et al., 2020). The author cautions against using drugs and substances that might stimulate lucid dreaming like galanthamine carelessly as these can have negative side-effects, e.g., nausea. Other methods like the Wake-up-Back-To-Bed method (WBTB) and MILD (mnemonic induction of lucid dreams) are safer and very effective (Stumbrys & Erlacher, 2014). The author herself was successful in her first try, even though the WBTB/MILD approach at home is not as successful as in the sleep lab (Schredl et al., 2020a).

Does it make sense for a "normal" academic psychologist to study precognitive dreaming? The author approves of that not in a sense that it is important to prove (if that's possible at all from Karl Popper's view of philosophy of science) but in the sense of how people deal with the phenomenon if they had the impression of having such a dream. In my clinical practice, I encountered a young man who had an exceptionally vivid dream of being shot. He developed severe anxieties because he was expecting the dream to become true soon. In addition, the book's author reports on the website accompanying the book ([oneirology.co.uk](http://oneirology.co.uk)) a personal experience with precognitive dreaming. Depending on the study design and sample characteristic, up to 50% of par-

ticipants reported that they had at least one precognitive dream in their lives (Schredl, 2009), i.e., the question as to whether this topic should be subsumed within the field of parapsychology is an open one.

The third topic the author addresses in this chapter is sleep paralysis. Basically, the brain stem which regulates the muscle atonia that is present during healthy REM sleep does not switch to the waking mode, even though the sleeper is waking up. This can last up to several minutes in which the dreamer is not able to move a single muscle, except the eyes. So far, it is a physiological phenomenon or – if sleep paralysis episodes occur very often – a topic within the field of sleep medicine, e.g., idiopathic sleep paralysis or as a symptom of narcolepsy (American Academy of Sleep Medicine, 2014). However, many persons living in different cultures all over the world report subjective experiences accompanying sleep paralysis; episodes like seeing shadowy figures or feeling pressure on the chest ("Alpdruck", a German expression). This indicates a strong link between physiology and subjective experience; another example is the impression of falling down stairs or something similar while experiencing sleep-onset jerks in the legs.

Within the last chapter (Chapter 7: Sci-fi dreaming), the author addresses a very important topic of modern research that is ethics. The special issue of the journal "Consciousness and Cognition" about dream engineering (Carr, Haar Horowitz, et al., 2020) shows that the issues surrounding externally controlling dreams, planting ideas into the dreamer's mind (e.g., the blockbuster film "Inception" by Christopher Nolan), manipulating sleep-dependent memory consolidation (e.g., "Eternal Sunshine of the Spotless Mind" by Michel Gondry), or recording dreams (e.g., "Bis ans Ende der Welt/Until the end of the world" by Wim Wenders) are not that far in the future. The author cites the study where the researchers were able to link the content of sleep-onset dreams to brain activation patterns; although the results were far from perfect, it is the first step toward "dream reading", that is, inferring dream content based on brain activation patterns. In waking, researchers can say, based on the images of an fMRI scanner, whether a person is focusing on solving math problems or thinking about this or that (mind wandering). In the movie "Bis ans Ende der Welt/Until the end of the world" the scientist played by William Hurt was able to construct an interface between the visual cortex and a computer; his aim was to help his blind mother to see again. In the film, the interface also allowed the recording of dreams, and interestingly, the two protagonists get addicted to watching their visual dream recordings during the day.

Another issue mentioned by the author is targeted memory reactivation (TMR). The principle is very simple: during the learning phase the participant receives an additional stimuli, e.g., an odor (Rasch et al., 2007), and this cue is presented during slow-wave sleep (the sleep stage for consolidating declarative memory) in order to enhance the reactivation by the association learned during the acquisition phase. In the Rasch et al. study this worked. Researchers also wanted to increase the number of slow waves and/or sleep spindles to improve sleep-dependent memory consolidation. Of course, one can think of ways to disrupt these processes occurring during sleep so that new memories might not be as properly consolidated as after undisturbed sleep, but whether long-term memories can be erased like in "Eternal Sunshine of the Spotless Mind" is still an open question and, hopefully, science fiction. In the film, the dreamer has

a conscious experience of this erasing process, indicating that dreaming might be related to sleep-dependent memory consolidation. Already in the late 19th century, Harvey de Saint-Denys (1982) was able to demonstrate that dreams can be affected using this idea: He purposely smelled a specific perfume while staying in the countryside several times a day; back in his city apartment, his valet put some of the perfume on his pillow (in the morning while he was still asleep), and, yes, after stimulation with the perfume, his dreams more often included references to the countryside. The association formed in waking life was re-activated during sleep. We were able to partially replicate his findings using modern technology like olfactometer and REM awakenings in the sleep lab with a randomized placebo-controlled design (Schredl et al., 2014). Pictures associated with a specific odor (learning was carried out prior to sleep) were more likely part of the dream if the odor was presented during REM sleep prior to awakening. Just for clarification: The design of the study implicated that the odor was presented 60 seconds prior to the awakening, so the participant did not know what odor was presented because the olfactometer used room air within this minute to clear the odor from the nostrils, that is, the participants were really blind to the stimulus condition – this was very likely not the case in the Harvey de Saint-Denys experiments.

Quite a lot of research has been done regarding the effect of external stimuli on dream content (Carr, Haar, et al., 2020; Schredl, 2018). The author cites a dream of her own in which an internal stimulus (stomach cramps) translated into a dream action of being shot in the stomach. We did a study using odor and were able to manipulate dream emotions: The positive odor (rose aroma) improved dream mood and the negative odor (smell of rotten eggs) was followed by more negatively toned dreams compared to the control condition (stimulation with air) (Schredl et al., 2009). One of our ideas was to use this method in nightmare therapy, but one might speculate that using negative odors during sleep might be a sophisticated method of torturing people. A recent study used non-invasive brain stimulation (tDCS) to affect dream content (Noreika et al., 2020). Although the effects in this pilot study were very subtle, it is not difficult to imagine that researchers can improve these stimulation techniques and, thus, are able to manipulate dream content in a marked way (against the will of the dreamer – this is the ethical issue).

The author raises also the question as to whether dreams can be shared – like in the movie “Inception”. Interestingly, researchers have been able to demonstrate two-way communication between dreamer and experimenter (Konkoly et al., 2021). For example, the dreamer is presented with a simple math problem, e. g., 7 minus 5, and then – if it is integrated in the dream – should respond with two left-right eye movements (correct answer) which is easy for skilled lucid dreamers. Or the lucid dreamer hears high and low pitched sounds and reacts only to one type of tone with specific eye movements (Appel & Pipa, 2017). The pilot studies carried out so far are promising. Remington Mallett (2020) took this approach a step further; he developed an interface detecting eye movement patterns using common EOG recording techniques. If a specific eye movement pattern was detected the computer was able to carry out a specific task. If you put those two ideas together, it might be possible that two lucid dreamers might communicate while being still in their respective dream worlds. I am curious –

like the author – how long it will take until such ideas are realized. On the other hand, ethical implications of this type of research should also be discussed openly.

To summarize, this introduction into modern psychological dream research is well-written, easy-to-understand and hopefully encourages researchers, especially young researchers, to study some of the many different topics addressed in the book, e.g., whether specific daytime experiences are expressed metaphorically in dreams.

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