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A Suggestion for a New Interpretation of Dreams: Dreaming Is the Inverse of Anxious Mind-Wandering. Instead of Imagined Situations Encouraging Avoidant Action (Anxious Mind-Wandering), Dream Situations Call for Un-Avoidant Behaviour, Highlighting Overly Avoidant Behaviours & Emotions Present When Awake. 14 Examples of Interpretation & Dream Content Prediction.

Abstract

Mind-wandering is associated with the simultaneous activation of a network of different brain regions known formally as the default mode network. Forward looking anxious mind-wandering (or worry) occurs when activity in this network is coupled with a biological fear response in the brain. The fear response constrains the content of anxious mind-wandering, with imagined catastrophised scenarios pushing the mind-wanderer towards avoidant behaviours. There is an established relationship between dreaming and mind-wandering. During rapid eye movement (REM) sleep, where dreams most commonly occur, many of the brain regions within the default mode network are activated. This paper presents a novel argument that during REM sleep the brain is in a biologically relaxed state, and that this state acts as a constraint to the content of dreams, which in turn presents a possible function of dreaming. In direct contrast to anxious mind-wandering, dreams present imagined situations which demand confrontational, or un-avoidant, behaviours. Though the situations in dreams call for un-avoidant behaviour, dreamers act with avoidance. This difference between the in-dream behaviour (avoidant) and the behaviour the in-dream situation demands (un-avoidant) highlights an anxiety present in the dreamer which can then be used to direct the focus of therapeutic treatment. Fourteen examples of dreams are presented, including seven examples of interpretation, three examples of successful dream content prediction (a first for an interpretive theory of dreams), and four examples of dreams which demonstrate how in-dream behaviour changes during successful therapy, three of which are my own. Dreams focusing on anxieties developed during infancy as well as in adult moments of trauma (such as post-traumatic stress disorder) are discussed, with a focus on the former.

Theoretical Overview

Discovered by chance when brain activity in task-focused fMRI imaging trials was recorded between tasks (Raichle et al., 2001), the waking mind-wandering network, also known as the default mode network, is a network of different brain regions which simultaneously activates when the mind is not focused on an activity (Raichle, 2015). As well as being activated during aimless mind-wandering (or daydreaming), it was also found to be active when individuals thought about the future or the past (Rose, Wong, & Schacter, 2007). It is therefore viewed as the “imagination network” (Domhoff, 2017, p. 168). Default network activity is present if the mind-wandering about the future or past is positive in its outlook or anxious, such as in the cases of anxious rumination or obsessive thought (Fox et al., 2018). Though dreaming can take place throughout the sleep cycle, when it comes to the neurological study of dreaming, the default period of sleep studied has been rapid-eye-movement (REM) sleep because of the prevalence of dream reports on waking (~80%) when compared to other stages of sleep (10 to 40%; Fox & Girm, 2017). The network in the brain responsible for REM sleep displays a great deal of overlap with the default mode network, with slight but striking differences: when compared to waking baselines, there are increases in activity in the areas of the default network responsible for the experience of emotion (regarding the self, relationships with others and long-term episodic memory). There is also a total elimination of activity, except for the case of lucid dreamers, in the executive functions of the default network (used for goal-orientated thought and working memory; Domhoff, 2017). It is well established that dreaming and mind-wandering are in some way related (Fox et al., 2018).

Different forms of mind-wandering can be defined in relation to the biological and mental processes which accompany activation of the default mode network. These accompanying processes act as constraints to the content of mind wandering. In Fox et al.'s (2018) recent review of all forms of mind-wandering, which the authors term self-generated thought, they argue thought can have deliberate constraints, referring to what we decide to focus on (e.g., “What present should I buy for my nephew?”), and automatic constraints, referring to what the biological fear process forces the mind to focus on (e.g., “Where has that wasp gone!?!”). Fox et al. use these ideas to visualise self-generated thought on a chart (Figure 1). Anxious mind-wandering (rumination and obsessive thought) is high on the automatic constraints (vertical) axis.

Figure 1. Reproduced with permission from *Affective Neuroscience of Self-Generated Thought* (Fox et al., 2018). A visual representation of different forms of self-generated thought segmented by automatic and deliberate constraints. Rumination and obsessive thought are high in automatic constraints because they are constrained by the biological fear processes.

In their article, Fox et al. (2018) view dreaming as “unconstrained” (p.26), however, assimilating neurological research on REM sleep suggests this might not be the case, and that dreaming may have equally strong bottom-up constraints. The constraints during REM sleep differ in direction from those of rumination and obsessive thought, as the mind is in a distinctly *relaxed* biological state, rather than a fearful one. In order for a comparison to be made, the neurological constraints and the aim of anxious, particularly forward-looking, mind-wandering need to be understood.

Forward-looking anxious mind-wandering, or worry, is a mental function encouraging us to “avoid future aversive events” (Borkovec, 1994, p. 28). This is done through the creation of extreme imagined future scenarios or current experiences, using both verbal and visual thoughts, which make it difficult for the worried individual to not take avoidant (anxious) action (Borkovec, 1994). For example, an individual with obsessive compulsive disorder may visualise that they are contaminated (imagined experience) and therefore must wash their hands (the

avoidant action; McGuire et al., 1994). Alternatively, an individual with social anxiety disorder might imagine being in a conversation and having nothing to talk about (imagined future scenario) and therefore will avoid entering a conversation (avoidant action; Richards, 2013).

Figure 2. If taking or considering unanxious/un-avoidant behaviour in a situation which triggers an anxiety (a), anxious mind-wandering, containing imagined exaggerated negative consequences of un-avoidant behaviour, enters our thoughts (b) creating a pressure to take avoidant, or anxious, behaviour (c). Anxious mind-wandering is visualised above using the red striped area, indicating that the imagined situation is dangerous, therefore avoidant behaviour is required.

The automatic constraint which drives this avoidant ‘direction’ is the the activation of the biological fear processes in the brain coupled with activity in the default network (Fox et al., 2018). This fear process includes a substantial rise in the ‘fight-or-flight’ neurotransmitter, norepinephrine (Onur et al., 2009) and increased activity in the amygdala (Shin & Liberzon, 2009). These processes can be seen in Figure 3 where the ‘Emotional Functions’ and ‘Executive Functions’ highlighted represent the different core functionalities within the default network, as discussed earlier.

Norepinephrine increase

Emotional, executive & amygdala activity

Figure 3. The neurological processes driving anxious mind-wandering: an increase in norepinephrine, an active amygdala and complete default network activation.

In REM sleep there is a drastic reversal in the ‘driving’ neurological processes: the brain is relaxed. Norepinephrine falls by 85% below the *base* waking level (Egottesmann, 2011), with reduced levels shown to result in unanxious behaviour in rats (Selden, Robbins, & Everitt, 1990) and the amygdala is entirely inactive (Domhoff, 2017). It is worth noting that the experience of feeling fearful does not involve the amygdala; the amygdala’s fear functionality is primarily biological preparedness for situations containing a threat (Feinstein et al., 2013), explaining why it is possible to experience the feeling of fear in dreams without the amygdala’s participation. Executive functions are also inactive (Domhoff, 2017); the potential relevance of this shall be discussed later.

Norepinephrine reduction

Emotional activity only, no amygdala activation

Figure 4. The neurological processes occurring in REM sleep: a reduction in norepinephrine, an inactive amygdala and partial activation of the default network.

Therefore, it is possible that dreaming during REM sleep has unanxious automatic constraints. In accordance with these, the examples in the next section indicate that dreaming results in the mental generation of situations where we *should behave unanxiously*, or without avoidance; a reversal of anxious mind-wandering, where situations are generated in which we *should behave anxiously*, or with avoidance. Furthermore, the examples display that, though the dream situations demand unanxious behaviour, in the dream we typically act in an obviously anxious, or avoidant, manner (to be clear, I am referring to the behaviour of the dream-character-version-of-ourselves). It is well known that it is possible for individuals to have learned fear responses which do not correspond accurately to external events, resulting in maladaptive avoidant behaviours while awake (van Meurs, Wiggert, Wicker, & Lissek, 2014). Such a stark difference between the un-avoidant behaviour the dream situation warrants and the avoidant in-dream behaviour we take highlights an erroneous fear response. Therefore, I am suggesting that the function of dreams is to highlight erroneous fear responses (initially outlined in the lecture *A New Interpretation of Dreams: The Theory of Maladaptive Belief Awareness*, Eichler-Summers, 2018). Interestingly, the retrosplenial cortex, an area of the brain thought to be responsible for learned episodic fears (Katche, Dorman, Slipczuk, Cammarota, & Medina, 2013), is more active during REM sleep than waking (Koike et al., 2017).

Figure 5. Dreaming repositioned in line with increased automatic constraints.

The function of dreams to highlight unnecessary anxious beliefs and/or behaviour is further supported by the inactivity of executive functions during REM sleep (mentioned above), as it is not possible for the dreamer to conceal maladaptive anxious behaviour when in a dream by ‘thinking’. This is very different from waking life where it is possible for those with obviously maladaptive learned fear responses to attempt to conceal their avoidant behaviour; for example, individuals with anorexia may pretend to eat by hiding food at the dinner table instead of openly expressing their anxiety (*NICE Clinical Guidelines, No. 9: Core Interventions in the Treatment and Management of Anorexia Nervosa, Bulimia Nervosa and Related Eating Disorders*, 2004). This type of considered action would not be possible in dreams, meaning the ability to diagnose an anxiety through the observation of behaviour is improved.

The anxieties that dreams highlight follow the structure set out by Steimer (2002) which argues that ‘fears’ are directly useful given the situation an individual is in (e.g., fearing an alligator if one is in your bathroom), whereas ‘anxieties’ are not, with the biological fear response being triggered in situations which do not call for it. Dreams do not highlight useful fears (e.g., innate fears of snakes, fire, etc.); instead, they highlight anxious patterns of thinking. ‘Anxious’ is a complex term to define, and that is because it has many origins and therefore

many resulting forms. In line with ideas on attachment (Main & Solomon, 1990), a child who is sometimes neglected may develop a compulsion to exaggerate their emotional responses; a child who is smothered or abused may develop a compulsion to conceal theirs; a child whose caregiver becomes aggressive any time they show weakness may develop a compulsion to conceal that specific emotion; a child whose caregiver becomes aggressive any time they display anger may conceal that one instead. The individual is forced into the inhibition or exaggeration of emotion because they are scared of the consequences of not doing so. Perhaps all the above were useful adjustments when the infant was dependent on a caregiver with his or her particular nuances, but they become anxieties if the fear response related to the expression (or lack thereof) of certain emotions persists when independence is reached. Then there is post-traumatic stress disorder (PTSD), where the origin of the anxiety is not tied to a caregivers overreaction or neglect, but typically from an experience (e.g., warfare; Sareen, 2014, or sexual assault; Chivers-Wilson, 2006) which results in an anxiety that the *environment* is unsafe, so instead of the anxious individual's (non)expression of emotions triggering for the fear response, it is certain environmental factors that do (e.g., the backfiring of a car or being in a similar situation to where the original attack took place). These alterations in the perception of environmental threat can also be seen as anxious, as the fear response is triggered when it is not useful. There is a common theme here: anxieties are the overgeneralisation of the fear response, stemming from a real fear memory, resulting in unnecessarily avoidant behaviour. These are what dreams bring attention to.

Figure 6. Dreaming as inverse anxious mind-wandering: in-dream situations demand unanxious behaviour, but the in-dream behaviour is avoidant. This highlights a maladaptive (or no longer adaptive) learned fear response. Dreaming is presented as a green striped area, indicating the situation calls for un-avoidant behaviour. The un-avoidant demands of the situation mean avoidant behaviour is notably out of place.

A function highlighting erroneous fear responses is useful: It is possible to dampen the impact of erroneous fear memories through exposure. If un-avoidant action is taken during a period of fear memory activation which does not require an avoidant response (i.e., a triggering event which does not warrant a trigger), projections from the medial prefrontal cortex onto the amygdala suppress its activity, causing a new and less anxious memory to associate with the triggering situation (McNally, 2007). Though cognitive awareness that the triggering of fear is illogical makes no difference to the exposure driven extinction effect (Hofmann, 2008), knowing precisely what excessive fears we have means we know what to expose ourselves too.

The most established view in modern psychology is that dream content is meaningless (Domhoff, 2017). Below are seven examples of dreams which suggest this not the case. Additionally, traditional theories of dream interpretation have also suffered from an inability to make precise predictions, making experimentally-driven psychology impossible (e.g., if a dream contains a tidal wave, a therapist may relate this to feelings of being overwhelmed by life, but no experiment can be designed to prove or disprove this relationship; Domhoff, 2017). The theory outlined above breaks this cycle. Often a dreamer will explain only what has happened to them and not

what behaviour they took in response to it. When this is the case it is possible to use the theory outlined above to predict their behaviour; *what would the anxious response to the situation be?* The dreamer can then be asked about their in-dream behaviour and it's possible to see if the prediction was successful. Three examples of successful prediction are presented. Furthermore, in my own therapy, where I started to use the interpretive structure set out above to identify which fear I needed to expose myself to next, I found that, as one dampens the highlighted fear in real life, in-dream behaviour becomes increasingly un-avoidant (i.e., in line with what the situation demands). For example, a dream before any exposure may contain a stark difference between what behaviour the situation calls for and the behaviour the dreamer takes, whereas, in a dream taking place after some exposure of the highlighted fear, in-dream behaviour will be more in line with the demands of the dream situation. This process continues until the fear is no longer present, at which point dreams highlighting this anxiety no longer occur (in the same way that we do not continue to anxiously mind-wander about things which no longer cause us fear). These changes could be in accordance with the reconsolidation of the highlighted fear memory in the retrosplenial cortex¹. This would also explain why individuals who experience less fear have more positive dream content, such as those with non-functioning amygdalas (Domhoff, 2017), individuals with greater wellbeing (Sikka, Pesonen, & Revonsuo, 2018), and even the Dalai Lama (Mehrotra & Lama, 2005). Two series of dreams, one of which is from my own therapy, marked by an evolution of in-dream behaviour, are also presented below.

It will be apparent that the anxieties highlighted by dreams are not the same as the anxieties that maladaptive waking behaviour highlights. For example, (waking) social anxiety draws our attention towards social situations and therapy typically focuses on disproving the maladaptive beliefs held by the sufferer in these situations (e.g., challenging the belief that the patient is not liked by finding evidence that they are; Ledley et al., 2009). The anxieties that dreams highlight are at a lower level of avoidance. For example, two of the dream reports below are from individuals with clinical levels of social anxiety. Both of these dreams contain situations which call for the expression of aggression/confrontation, but this behaviour is avoided by the dreamer. In line with the view that avoidant behaviours can be excessive (Beckers & Craske, 2017), I am suggesting that the typically diagnosed symptoms of social anxiety (e.g., avoidance of social situations, low self-esteem) are all sensible anxieties to hold in order to avoid potential conflict situations; avoiding interactions eliminates the risk of upsetting others and having low self-esteem results in a default conflict-avoiding position of appeasing others. I suggest that

¹ Though experiments are beyond the scope of this paper, the suggestion that in-dream behaviour changes during exposure to the highlighted anxiety should be taken into account in future ones. For predictions of anxious in-dream behaviour to be made, the dreamer should not be in targeted therapy or have gone through a recent exposure event. An experiment tracking changes in in-dream behaviour during targeted exposure therapy could also be made.

these dreams propose a route out of social anxiety which focuses on becoming comfortable upsetting others for the benefit of the self, rather than disproving seemingly relevant maladaptive beliefs (e.g., people don't like me). I found that this was the mechanism responsible for the reduction my own social anxiety.

Except for my own dreams, the case studies of dreams below are those told to me by friends and family members on an ad hoc basis. The names of the dreamers have been changed to protect their anonymity.

Examples of Dream Interpretation

Example 1. Victoria is in a room with a homeless man who is extremely dirty. He tells her that he is sad, and he would like her to accompany him to bed because of this. In the room is a double bed, but not a normal double bed. The bed, in Victoria's words, is a "health and safety hazard". It is a dangerous contraption with springs shooting out of it and may jolt severely at any time, causing anyone on it to fly into the air and be injured. The proposition does not appeal to Victoria, but she feels she must help. Victoria gets into the bed with the man. She feels extremely uncomfortable in the bed.

To give structure to the interpretive framework, a table of four columns will split up:

1. **The situation:** An isolated description of the situation
2. **The demand(s):** A subjective rationalisation of what behavioural response the situation demands. In the same way that anxious mind-wandering makes it obvious that we should take avoidant action (e.g., in regards to the OCD example used earlier, if it *were* the case that you were contaminated, it *would* make sense to wash your hands), in-dream situations present quite clear demands of what un-avoidant behaviour is required, so, though this element of interpretation must be subjective, hopefully it will not be contentious.
3. **The demanded response:** What behaviour and emotional response the situation demands
4. **The in-dream response:** What the actual in-dream behaviour and emotional response was

The table will be followed by a statement discussing the erroneous fear response that the difference between the demanded behavioural response and the actual in-dream behavioural response highlights.

The situation	The demand(s)	The demanded response	The in-dream response
Victoria is asked to comfort a dirty man she does not know in a dangerous bed.	This is not a pleasant request, in fact it would be hard to design one which is more unpleasant. She should say no. She should not feel obliged.	No feeling of obligation and saying no.	A feeling of obligation and getting into bed.

The situation presented is one that demands a no, but such an answer is not forthcoming. Based on the proposal for dream interpretation put forward in this paper, the dream suggests that Victoria has an anxiety about standing up to herself (the expression of a particular type of emotion), and exposure to this (i.e., actively choosing to stand up for herself when the situation next arose) would begin to reduce the fear associated with it. This anxiety was present in Victoria's waking life.

Example 2. Adam knows he has an STD. He knows he shouldn't, but he has intercourse with a girl who is then sick. Adam then has to drive to the airport pick someone up. Again, he knows he shouldn't, but gets drunk and crashes the car (mildly) on the way. He feels a pressure to "live it up" throughout the dream.

The situation	The demand(s)	The demanded response	The in-dream response
Adam has responsibilities: an STD and a driving task to complete.	These responsibilities require sensible actions. Respecting them does not demand much from Adam. He needs to avoid spreading the STD and stay in a state that is suitable for driving.	Not spreading the STD and staying in a state where he is able to drive. There is nothing about the situation which demands a "live it up" attitude.	Adam feels like he must live it up. Adam takes actions which cause himself and others harm: he has intercourse despite his STD and gets drunk before driving.

The situation demands sensible actions, but Adam's feeling that he needs to live it up results in obviously excessive actions. This highlights an anxiety of not being noticed (an anxiety of not expressing a certain emotion / behaviour). These excessive behaviours could relate to a fear of abandonment (Main & Solomon, 1990). Given what was going on it would have been much more adaptive for Adam to be boring. Adam could reduce this anxiety by exposing himself to being sensible/ordinary in front of others and noticing that they still like/do not abandon him. Again, the diagnosis suggested by the dream was present in Adam's waking life. Interestingly, prior to the dream, Adam thought he was simply unluckier than others and the dream generated an awareness that made him focus on his role in the unfortunate events which frequented his life.

Example 3. Curtly is in a shopping mall. A young child comes up to Curtly and demands his wallet and phone. Curtly does not want to hand over his possessions, but he does. The young child stands near Curtly with Curtly's belongings in front of him (accessible to Curtly should he decide to try and take them back). Curtly does nothing.

The situation	The demand(s)	The demanded response	The in-dream response
A child asks to take Curtly's possessions. When the child has them, he stands in front of Curtly with the possessions on show.	This is an injustice that should be fought. The individual demanding Curtly's items is a child (non-threatening to the extreme), meaning it is a safe time to fight back. The situation demands a rejection of the request and/or an attempt to take the items back.	Curtly should say no. Curtly should take the items back when they have been handed over.	Curtly hands over the items without making a fuss. Curtly does not attempt to take the items back.

Much like Victoria's dream, this situation demands a rejection of the request, and potentially a subsequent act of aggression (taking the items back when they have been lost). Again, this is not forthcoming. This suggests that Curtly has an anxiety around standing up for himself and/or the expression of aggression (an anxiety related to

the expression of a particular emotion). Exposure to this (i.e., taking more confrontational actions when relevant situations occur or actively worrying less about upsetting others and putting himself first) would reduce the associated fear response.

Examples 4 and 5 are from the same dreamer. These have been chosen to show another similarity between anxious mind-wandering and dreaming. During anxious mind-wandering multiple imagined future scenarios are generated which all have the central pillar of encouraging avoidant behaviour. For example, an individual with social anxiety may imagine they will be constantly watched and judged if they leave the house, that their voice will sound terrible if they speak and that they will be boring if they take part in a conversation (Richards, 2013). Though they are all different, all three of these extreme scenarios pushes the individual towards the same avoidant behaviour (avoid social situations). This is a pattern which repeats in dreaming, where the content of a dream is different but the structure, in terms of the un-avoidant behaviour that the situations demand, is consistent. This may explain recurring dreams, which, like the multitude of scenarios above, are not *identical* (Domhoff, 1993), and also explain why there is an association between recurring dreams and impoverished psychological well-being (Gauchat, Zadra, Tremblay, Zelazo, & Séguin, 2009), (i.e., the structure of the dream is repeated because it is trying to highlight an anxiety which needs to be removed through exposure, and the anxiety is the impoverished wellbeing).

Example 4. Tim's neighbour, an elderly man who is a barrister, is tattooing a large tattoo on Tim's back. Tim does not want to get a tattoo! He is not happy about what is going on. However, he says nothing and lets the tattooing continue.

Example 5. Tim's father gives him a large volume of prescription drugs which he knows could kill him if he takes them all. Tim's father wants him to swallow all the pills at once. Tim does not want to! However, he swallows the pills without protest.

The situation	The demand(s)	The demanded response	The in-dream response
Example 4. An individual with authority is tattooing Tim's back without his permission. Tim is not happy about it.	This is a situation is an obvious violation. He has every right to demand a stop to the experience.	Tim should tell the person to stop.	Tim is passive in the face of this obvious violation.
Example 5. Tim's father (also an individual with authority) wants him to take a dangerous amount of drugs. Tim is not happy about it.	Though different, this situation is also an obvious violation. He has every right to reject the request.	Tim should bring a stop to this experience by saying no to his father.	Tim is passive in the face of this obvious violation.

It is clear these dreams suggest Tim has an anxiety around standing up for himself. The analysis of these dreams resulted in an awareness of how a lack of boundaries played a large role in an anxious pressure he felt to be extremely successful. Tim has been very active in terms of exposing himself to this fear. By becoming increasingly comfortable defining boundaries through exposure, he was able to take greater control of his life and reduce this feeling (with established boundaries he can now be a success on his *own* terms).

Example 6 is another demonstration of different forms dream content highlighting the same anxiety. In this case the differing situations took place within the same dream. The different situations have been labelled as Part A and Part B.

Example 6

Part A: Naomi on a summer camp and is staying in a boarding house with young girls. She is aware that a paedophile regularly visits the house. When he visits, she feels very guilty and anxious, but also

that she is not allowed to tell anyone. She worries that if she did, she might make things worse. Instead of telling anyone, when he visits, she leaves the house to allow him to do what he wants with the girls and returns when he has left. She is plagued by images of what he might be doing when she has left him at the house.

Part B: Naomi's therapist orders her to kill her father. She is unsure that this is a good idea, but feels the therapist is the boss. The dream flashes forward and Naomi is aware that she has killed her father to satisfy her therapist's request. When she confesses to a friend, she is devastated about what she has done.

The situation	The demand(s)	The demanded response	The in-dream response
Example 6. Part A: Naomi is aware a paedophile is abusing children.	This is obviously an intolerable situation. Naomi should confront the situation and try to stop this from happening.	Naomi should act to halt this injustice. She should try to protect the children by remaining at the house or informing someone.	Naomi allows the paedophile to do what he wants. She does not tell anyone, nor does she stay at the house.
Example 6. Part B: Naomi's therapist orders her to kill her father.	This is an intolerable request. Naomi does not want to kill her father. She should confront the therapist and reject the request.	Naomi should confront the therapist, and certainly not carry out the act in order to avoid this confrontation.	Naomi kills her father. She does not confront the therapist.

Both Part A and Part B present two obvious injustices (of which Naomi is aware) which require confrontation, and in both situations, Naomi avoids this confrontation, allowing something terrible to happen instead. This dream highlights Naomi's anxiety around confrontation. Again, we see that, though the content of the different parts of the dream is different, the structure, in terms of the anxiety the situations highlight, is consistent.

Examples of Dream Content Prediction

When someone describes what happened to them in a dream, but not what they did, as the theory suggests that behaviour should be consistently anxious, it should be possible to predict their in-dream behaviour. This can be

done by working out what an anxious response to the situation would be, then discovering if that is how the dreamer behaved. Below are three examples of successful prediction.

Example 7. Andrew has been doing some painting at an art class. He has his easel set up, he has his paints out, a cloth on the floor and he has found a spot with the right lighting. Andrew comes back to this situation expecting to find it how he left it, however all his stuff has been moved to the side and the class have moved a table into the room and are having lunch.

In the standard table format, I have included the predicted in-dream response and the rationale behind it in the ‘in-dream response’ column.

The situation	The demand(s)	The demanded response	The in-dream response
Andrew’s carefully constructed painting setup has been moved without his permission.	This is obviously frustrating. An uninhibited response to frustration is expressing it.	Andrew should express his frustration as that is what he is feeling.	Prediction. <i>Andrew will not express his frustration.</i> This situation seems to call for the expression of an emotion, so an anxious response to it will be inhibited.

When asking Andrew what he did in the dream he confirmed the prediction. Non-guiding open-ended questions were used to ensure that predictions did not risk an alteration in dream content (e.g., “how did you react?”). This dream suggests that Andrew has an anxiety around the expression of frustration or anger.

Example 8. Nicole’s sister has died. Her sister was young and healthy, and the death was not expected. Her close family are with her in a room. No one is talking about the death! Everyone is going on as if nothing has happened.

The situation	The demand(s)	The demanded response	The in-dream response
A very disturbing event has taken place. Nicole is with people who should be as affected as she is, however they appear not to be.	The lack of concern about her sister's death is very odd and unpleasant. The situation demands that something be said or done about it.	Nicole should bring up her sister's death to the group or ask them why they are not talking about it.	Prediction. <i>Though Nicole will feel uncomfortable, she will not bring up anything with the group, she will be quiet and go along with what is happening. As with Andrew, this situation seems to call for expression, so an anxious response will be inhibited.</i>

Nicole confirmed this prediction. The dream highlights an exaggerated fear of upsetting others.

Example 9. Laura has been asked to attend a meeting on a high floor of an office building. She arrives on time and gets in the lift. She discovers that the lift has no buttons and will not move.

The situation	The demand(s)	The demanded response	The in-dream response
Laura has followed the instructions given to her but cannot get to the meeting for reasons outside of her control. She did not choose to locate the meeting on a high floor of a building with an impossible lift.	Laura is not at fault for the lift not functioning, and she has done everything in her power to get to the meeting on time. It is not particularly clear what she should do, but it is clear she should not blame herself.	Laura should remain calm and perhaps feel some anger and frustration. She should not feel that she is at fault.	Prediction. <i>Laura will feel that she is at fault and have a panic/stress response. Though it is not her fault, in this situation she is going to let people down. I believe an anxious response would be to feel that she was responsible in some way which would make Laura stressed.</i>

Laura confirmed that she became extremely panicked in her dream and felt that she would be blamed for not being able to attend the meeting. This dream highlights an anxiety that Laura feels she is going to be blamed for negative events which she does not cause.

Evolution of In-Dream Behaviour During Targeted Therapy

Examples 10, 11 and 12 are a series of my own dreams where my in-dream behaviour became increasingly un-avoidant as I actively exposed myself to the anxiety the initial dream highlighted. The dreams are presented in order (i.e., 10 occurred before 11, etc.). During therapy I emailed nearly every dream I had to myself, so two of the dreams below have an exact date.

Example 10. I start this dream flying towards a beach. I am flying of my own accord (as if it is a super-hero power). I witness a robbery take place. I am distant enough from the robbery that I can hide should I wish to, or run should I wish too. I am consumed by a feeling of guilt having witnessed the robbery and an underlying feeling that I deserve punishment. This feeling is like a magnet that pulls me towards them. They notice me and I then expose myself fully - guilty as charged of watching them. I walk towards them, feeling dread, knowing something terrible will happen to me, but I don't feel able

to stop it. As I expect, the robber pulls a gun on me. TERROR (my feeling inside). He shoots me in the stomach.

Example 11 (Jan 1st, 2014). I go to place to play football with a friend of mine. I hang our bags on a low fence. I see someone who looks dodgy by our bags. I feel he is clearly weighing up if he should take our bags or not. He grabs them. I shout, “DROP THE BAG”. He laughs and waits to see if I am serious. What am I going to do to make him drop the bags? I grab him but he is not phased. He does not see me as a serious threat. He is going to pull out a ‘scary weapon’ from his bag. It is an oversized Pritt Stick (a type of children’s glue in a plastic tube). He acts like I should be scared and I do feel it. We fight a little more, though I am tentative during the combat.

Example 12 (Jan 12th, 2014). I am with my mother in Germany during World War II. (It is a known fact about the world that if things touch the pavement on the side of the road they burn.) We are prisoners in a camp and know we are going to be killed soon. So far, we have been following the camp rules blindly. We are walking in the streets as part of a prison line and I spot a guard that looks like he is different from the others (he is autistic and kind). I sense he does not like what is happening. We go over to him, he leaves the main streets I follow him. I grab my mum, so she comes too. We come across an evil Nazi on horseback. He spits on us. We go over to him. I calmly explain why he is wrong and push him to the ground where he burns.

In all three of these dreams I am subject to an injustice, but my reaction to this injustice changes across the dreams. In the first dream I am passive to the point of being sacrificial, in the second dream I am combative, but unsure of myself, and in the final dream I confidently fight for myself. I had no idea of the theory of dream interpretation set out in this document when these dreams occurred. By chance, during this period my therapist and I were focusing on my ability to stand up for myself (the anxiety highlighted in the first dream). In real life, I began to experiment with more assertive behaviours and became increasingly comfortable with them. As my fear response to this type of confrontation dwindled, my in-dream behaviour evolved. Later in therapy, when dreams became the guide, this pattern of increasingly un-avoidant in-dream behaviour across a series of dreams repeated itself again and again. I also found dream content changed relating to my broader progress in therapy. When I found comfort with a particular situationally triggered anxiety highlighted by a dream, I no longer dreamt of situations which highlighted it. Instead, a new and subtler anxiety was presented. In no particular or-

der, anxieties presented in my dreams have focused on compulsions to conceal feelings of weakness, to avoid upsetting friends by letting them know I was uncomfortable, of feeling like I must perform for others for them to like me and of feeling that I am not wanted when, in fact, I am. In the same way that we do not continue to anxiously mind-wander around an issue that we are no longer scared of, we do not have dreams which highlight anxieties we no longer have.

Example 13 is a follow on from Tim's dream series above relating to boundary setting (*Example 4: Tim vs. the tattooing barrister*, and *Example 5: Tim vs. his father and prescription drugs*) and is another example of in-dream behaviour becoming more in line with the demands of the situation, or un-avoidant, after targeted exposure therapy. Examples 4 and 5 took place around the month of September in 2018. Since then Tim has put in considerable personal effort to define boundaries when he has felt uncomfortable, and, as mentioned above, has become more comfortable with this. Just before publication of this article, Tim had a dream in which he not only comfortably defined a boundary, but did so *explicitly*.

Example 13 (Feb 5th, 2019). Tim is at home with his father. Also, at Tim's home is a man who treated Tim in various extremely unpleasant ways when Tim was younger. This man is lying about and has made himself comfortable. Tim told his father that this made him uncomfortable and they agreed that it was time to "set boundaries". Tim then took the man out of his house.

PTSD Dreams

I have not personally worked with PTSD dreams, so the suggestions in this section are tentative. Nightmares which replay the traumatic experience are a recognised symptom of PTSD (Wittmann, Schredl, & Kramer, 2007). Firstly, that dream content should change at all after a fear event suggests that there is some relationship between learned fears and dreams. Interestingly, PTSD memories form with similar properties to memories formed in infancy – without being processed by the verbal elements of the brain (Diener, Flor, & Wessa, 2010) – where supporters of attachment theory would suggest the emotional expression-related anxieties we have examined so far originate; I believe this can be seen as another clue that dreams highlight anxieties which would typically be unconscious. When it comes to interpretation, it is the repeating of the traumatic experience in the dream which is noteworthy. I have used an example of a dream from an online dream database for researchers (dream #0002 from the dream series Vietnam Vet: 1970-2008 available at www.dreambank.net) as an example:

Example 14. The enemy is above, in the sky. We are not soldiers but school children. A voice from everywhere begins to warn us, "Things are dropping." Seeds begin to fall. Then I hear the faint echo of the tubes popping. There is an underground bunker; most of us run for the school bus. The mortars are dropping close by, within twenty yards. The fear of realizing death is pacing through my mind. We are all crowded in, scared of a hit. I shield my face with two paperback books. All at once there is a sharp explosion. I am hit, though I scream for only a moment. It is such a helpless feeling. The concussion has shattered the teeth in my mouth and I am going into shock.

As discussed earlier, a sufferer of PTSD develops an anxiety about the *environment*, instead of the consequences of their own behaviours (as seen in examples 1 to 13). In the non-PTSD dreams above, it is the consequences of the dreamer's behaviour which drives anxiety and the dreamer's in-dream behaviour which is out of place, for the PTSD dreamer it is their environment. From my limited experience reading about PTSD dreams, it appears that rather than the dreamer's behaviour being odd, it is the environment which is overly aggressive, highlighting excessive fears about the environment (for example, from the dream above, that there will be planes bombing you when, typically, there are not).

Theoretical Implications

A lot of work needs to be done to develop this theory, however my own experiences with it, which greatly outnumber the fourteen dream examples used in this paper, have been promising and consistent. One possible implication of this theory concerns the typical symptoms of psychopathologies. Firstly, this theory suggests that at an incredibly deep, effectively biological, level we wish to heal our psychopathologies (become aware of them so that we can dampen their effects through exposure). It is also true that at this same deep and biological level we know we are social beings (just look between your legs – we are built with others in mind), and when it comes to dreaming our social nature can be seen too: you have told people your dreams and other people have told you theirs. I think this suggests that as a species, on an unconscious level, we wish to make *other people* aware of our psychopathologies. This makes sense: as someone who once suffered from poor mental health, I know how difficult it is to find the pathway out of the maze all by yourself; I tried but could not. Just as other species groom each other, perhaps therapy (the process of anxiety diagnosis and subsequent exposure) is fundamental to ours. Right now, we are not using dreams in the way put forward here. We tend not to listen to mental health until it screams at us: I AM TOO ANXIOUS TO GET OUT OF BED; I AM NOT EATING FOOD; I

AM SELF HARMING; I AM HEARING VOICES etc. If it is the case that an urge to spread awareness of our anxieties to others is present at the biological level (i.e., that this *is* the function of dreaming), I think we need ask ourselves if the extreme symptoms of psychopathology are not designed to be *communications* of psychopathology. If we listen when things are subtler, which I argue that the content of dreams helps us with immensely, then maybe those with anxieties will not have to devastate themselves in order to communicate that they need some help.

Another potential implication has come from my own experience of working with dreams. My own dream series used above (examples 10-12) took place in 2014. I have maintained the use of dreams as a guide to my own anxiety exposure since then, and, as discussed earlier, I have found that the anxieties highlighted in them have evolved and become subtler as I have gained comfort with whatever anxiety is presented to me. As opposed to not having bad mental health, I now have good mental health. I still dream, and anxieties are still presented for me to work on, but I wonder where the path leads or what it implies. I have noticed that as I have become less anxious, I have become less selfish and materialistic (I used to want to own a cruise-ship-sized yacht and more supercars than I had fingers) and more caring of others and the environment. My feelings seem to follow the logic that *if I am fine as I am, why would I need to have so much or pay as much attention to myself?* Just as I do not blame myself for being anxious in the past, I take no pride in the feelings I have now, but I do think the change is interesting. Perhaps it is in us to be pushed towards a place of extremely low anxiety and perhaps that is good for the sustainability of the delicate planet on which we rely.

Conclusion

This paper should not be viewed as an attempt to prove beyond doubt that the function of dreams is to highlight anxieties, but to provide food for thought for future research. There is a neurological basis for the argument put forward and using dreams in this way has been beneficial in my own therapy and in directing my guidance of others. Please play with your own dreams and those of your friends using the methods of interpretation and prediction outlined above and, if you are in the position to do so, consider testing the ideas presented using established research methods. If we do have an inbuilt method of anxiety diagnosis, which means we are not forced into taking such drastic maladaptive actions while awake in order to communicate our anxieties to others, then a great deal of mental pain may be able to be avoided.

Appendix: Further Support for the Theory?

The Developmental Aspect of Dreaming

During infancy the human species faces a delicate situation; the infant child is mentally and physically weak, and, because of this, it is forced to be dependent on caregivers. Quality of one's caregiver is not a constant: it is possible for caregivers to be unstable, overreactive or prone to abandonment. The infant cannot swap caregivers and its weak cognitive capacity means it cannot out-think them, although it must keep them attending to its needs. Humans use fear and memory to generate behavioural and emotional change to maximise the probability of this happening. Infants become stressed and form memories when their caregivers do not care for them in a loving way (Haley, Cordick, Mackrell, Antony, & Ryan-Harrison, 2011). These memories are enduring neural structures which define the infant's behaviour and emotional regulation (Amini et al., 1996), (for example, if a parent cannot tolerate the expression of anger, the baby will learn to fear this and conceal anger; if a parent does not pay attention to the child unless it is acting up, it will develop a compulsion to do so). These eventually maladaptive alterations to expression are useful during this period. Therefore, if the function of dreams is to remove them, it should be the case that dreams are not functional (as defined above) when the child is dependent on its caregivers. This is exactly the case: the content of dreams does not fall in line with adult dreaming content until a child reaches the ages of 11 to 13 years (Domhoff, 2017), an age range where many theorists argue cognitive maturity is reached (e.g., Inhelder & Piaget, 1958). This could support an idea that the function of dreaming is to 'untwist', using the dream-driven-awareness followed by exposure framework set out above, the emotional suppressions or exaggerations which we cannot avoid developing as infants in order to mould ourselves to the requirements of our caregiving environment.

Self-reported dream content peaks during the years that immediately follow caregiver independence (Figure 7; Domhoff, 2017). This coincides with the peak period for neuroplasticity in terms of grey vs. white matter (Figure 8), with grey matter being considered to be more flexible than white matter; white matter means the neurons have undergone a process of myelination, almost a 'cementing' in place, of established neural pathways to improve efficiency; grey matter is the state before this has happened (Lebel & Beaulieu, 2011). Perhaps this suggests, in line with the argument made in this paper, that dreaming is related in some way to changes in cognition (reductions in anxiety) which should take place after independence has been established from caregivers.

Figure 7. Reproduced with permission from *The Emergence of Dreaming: Mind-Wandering, Embodied Simulation, and the Default Network* (Domhoff, 2017). Self-reported dreams peak during the years that immediately follow caregiver independence.

Figure 8. The peak period of post caregiver dependent neuroplasticity in terms of grey vs. white matter (Lebel & Beaulieu, 2011).

The Relationship Between REM Sleep and Dependency on Caregivers at Birth

For dream researchers, REM sleep is the default period of study. There is strong correlational relationship between a species' dependency on caregivers and the amount of time it spends in REM sleep over its lifetime, with Siegel (1999, p. 91) stating that “immaturity at birth is the single best predictor of REM sleep time throughout life”. As addressed earlier, it is our need to rely on caregivers during infancy which forces the alterations to our emotional expression which I suggest dreams address, so this correlation between this experience and REM sleep is worth highlighting.

Stages of Sleep

There are five stages of sleep: stages 1 to 4 and REM sleep. Stages 1 and 2 are transitional periods of sleep where we move from being (almost) awake to deeper stages of sleep and vice versa (Carskadon & Dement, 2011). Stages 3 and 4 are deeper stages of sleep thought to have important neurological cleansing functions (Horne, 1992). REM sleep has been outlined in this article already. During a typical night's sleep, we move between different these different stages with a consistent pattern; cycle we spend roughly four hours in deep sleep and the remaining hours moving in and out of increasingly lengthy periods of REM sleep.

Figure 9. A typical sleep cycle (RazerM, 2011). Reproduced under the creative commons licence.

This pattern suggests that on any given night, REM sleep is a less important function than deep sleep. The function of dreaming outlined above is not essential for functioning. Using dreams in the way set out above is also best done in an environment of relative stability and it is reasonable to assume that there is a relationship between length of sleep and environmental stability. Perhaps growing periods of REM sleep throughout the night increase the likelihood of waking with a dream to work with, implying a relationship between environmental stability and therapeutic dream work. It may be the case that the function of dreaming outlined in this article makes sense of the currently unexplained pattern of sleep stage transition depicted in Figure 9.

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