

Dream sharing and the enhancement of empathy:

Theoretical and applied implications

Mark Blagrove<sup>1\*</sup>, Julia Lockheart<sup>2,3</sup>, Michelle Carr<sup>4</sup>,  
Shanice Basra<sup>1</sup>, Harriet Graham<sup>1</sup>, Hannah Lewis<sup>1</sup>, Emily Murphy<sup>1</sup>,  
Ausrine Sakalauskaite<sup>1</sup>, Caitlin Trotman<sup>1</sup>, and Katja Valli<sup>5,6</sup>

<sup>1</sup> Department of Psychology, Swansea University, UK

<sup>2</sup> University of Wales Trinity St David, UK

<sup>3</sup> Goldsmiths, University of London, UK

<sup>4</sup> Sleep & Neurophysiology Research Laboratory, Department of Psychiatry,  
University of Rochester Medical Center, Rochester, NY, USA

<sup>5</sup> Department of Psychology, University of Turku, Finland

<sup>6</sup> Department of Cognitive Neuroscience and Philosophy, University of Skövde,  
Sweden

\* Corresponding author

Professor Mark Blagrove, PhD, FBPsS,

Department of Psychology,

Swansea University,

SA2 0LY,

UK.

Email: [m.t.blagrove@swansea.ac.uk](mailto:m.t.blagrove@swansea.ac.uk), tel: +44-7976136193

### Abstract

This study replicated and extended a previous finding that the discussion of dreams increases the level of empathy toward the dreamer from those with whom the dream is discussed. The study addressed mediating variables for the empathy effect. Participants were recruited in dyads who already knew each other and were assigned dream-sharer and discussor roles. Each dyad used the Ullman dream appreciation technique to explore the relationship of the sharer's dreams to recent experiences in the sharer's life, with a maximum of four dream discussions per dyad (mean length of dreams = 140.15 words, mean discussion length = 23.72 minutes). The empathy of each member of a dyad toward the other was assessed using a 12-item state empathy questionnaire. Forty-four participants (females = 26, males = 18, mean age = 26.70) provided empathy scores at baseline and after each dream discussion. For below median baseline empathy scorers, empathy of discussors toward their dream-sharer increased significantly as a result of the dream discussions, with medium effect size,  $\eta^2 = 0.39$ . Dream-sharers had a non-significant increase in empathy toward their discussor. Change in empathy was not linear across successive discussions, and was not related to length of dream reports, nor length of discussions. These findings of post-sleep, social effects of dreaming, with possibly a group bonding function, go beyond theories of dreaming that have a within-sleep emotional or memory processing function for the individual.

Keywords: empathy; dream; dreaming; self-disclosure; dream sharing.

There has been extensive research showing that individuals benefit from considering their dreams as part of individual therapy or group therapy (Blechner, 2001; Ellis, 2020; Fonagy et al., 2018; Hill, 2004). This research has been extended to findings of insight gains in group sessions that use the Ullman (1996) dream appreciation technique to discuss dreams and relate them to the dream-sharers' recent waking life. Using this technique, Edwards et al. (2013) showed that dream-sharers have high post-discussion scores on the exploration-insight subscale of the Gains from Dream Interpretation questionnaire (Heaton et al., 1998). Scores were also found to be higher after the discussion of dreams than after discussing a recent personally significant event (Edwards et al., 2015) or a daydream (Blagrove, Edwards et al., 2019), where all dream, event and daydream reports were discussed and explored using the Ullman technique.

Whereas the above research addressed effects on the person telling a dream, Schrage-Früh (2016) and Blagrove, Hale et al. (2019) reviewed reasons to hypothesize that the sharing of dreams would result in increased empathy toward the person sharing the dream from those with whom the dream is discussed. The hypothesis followed from the extensive literature showing correlational and causal relationships between the reading or watching of fiction and empathy (Mar & Oatley, 2008; Matthijs Bal et al., 2013; Oatley, 2011, 2016). Blagrove, Hale et al. (2019) suggested that dream reports can act as a piece of fiction in this regard (Nielsen et al., 2001; Pace-Schott, 2013; States, 1993), in that dreams in general are novel but realistic simulations of waking social life (Domhoff & Schneider, 2018; Revonsuo et al., 2016; Windt, 2015), very rarely replicating waking life events (Fosse et al., 2003), and with a mixture of characters, motivations, scenarios, and positive and negative emotions. Both dreams and literary fiction are thus simulations of social experiences and social reality, and the exploration of these would enhance empathy toward the characters and experiences portrayed in these narratives, and, for dreams, toward the person telling the dream in regard to their life

circumstances from which the dream arose, given the relationship of dream content to the recent waking life emotional events and concerns of the dreamer (Eichenlaub et al., 2018, 2019; Malinowski & Horton, 2014; Schredl, 2006).

This hypothesis that dream-sharing is related to or can enhance empathy was tested in two studies by Blagrove, Hale et al. (2019). In Study 1 they found that trait empathy was significantly associated with the frequency of listening to the dreams of others, and the frequency of telling one's own dreams to others. In Study 2 they found that, for 27 dyads of dream-sharers and discussers following the Ullman (1996) dream appreciation technique, state empathy of discussers toward their dream-sharer increased significantly as a result of the dream discussions, with a medium effect size, whereas the dream-sharers had a small non-significant decrease in empathy toward their discusser. Previous studies had shown that dream sharing brings individuals closer together emotionally (Schredl & Schawinski, 2010; Vann & Alperstein, 2010), and enhances feelings of intimacy and trust within established relationships (Duffey et al., 2004; Ijams & Miller, 2000; Olsen et al., 2013). However, the relationship of dream sharing specifically to empathy had not been addressed empirically before the two Blagrove, Hale et al. (2019) studies.

Due to the need for untrained participants to quickly learn and apply a dream exploration method, Study 2 of Blagrove, Hale et al. (2019) and the present study used the technique devised by psychiatrist and psychoanalyst Montague Ullman (1996) specifically for lay persons in a group to explore and appreciate dream content. This technique was formulated by Ullman to be performed for personal exploration, rather than for therapeutic reasons, although therapeutic effects could no doubt occur. The method has two guiding principles: safety, to ensure that the dreamer is happy or content in all that they are disclosing, and curiosity, in which the group members gently and sensitively ask questions about the dream and about the dreamer's waking life. The technique is structured so that

information about the dream and about the dreamer's waking life are elicited separately, so that these two areas are explored as fully as possible before they are compared and matched in the 'orchestration' stage (stage 5, described below). The theoretical basis for the method is that unresolved areas of recent emotional waking life, and especially from the day and evening before the dream, are the most likely to provide the content and motive force for the dream.

Given the theoretical and practical consequences of the finding of empathic effects of dream sharing, it is important that a replication of Blagrove, Hale et al.'s (2019) Study 2 is undertaken. There were some uncontrolled aspects of that study, in that length of dream reports and length of dream discussions were not recorded, although discussion length was specified in instructions to participants as needing to be from 15 to 30 minutes. The current study follows the procedure and methods used in Blagrove, Hale et al.'s (2019) Study 2, but with the new aims of assessing whether there is a linear increase in empathy with each dream that is discussed, and whether the change in empathy between-subjects is positively related to the word length of dream reports, and to the length of dream discussions. The current study examines also the possible interaction with the nature of the prior relationship between the dream-sharer and discussor.

### **Hypotheses**

We hypothesized that, after dream discussions, the discussor will have increased empathy toward the dream-sharer, compared to their baseline empathy measure. We also hypothesized that the dream-sharer will not have increased empathy toward their discussor. We aimed to have four dream discussions per dyad, and to measure length of each dream report in words (following Antrobus, 1983), and length of each dream discussion, and length of each Ullman procedure stage in each discussion, so as to assess whether longer dream reports and longer discussions are associated with greater increases in empathy. The

association of the relationship status of the dyad with baseline empathy and empathy change was also assessed.

## **Method**

### **Participants**

Twenty-three dyads were recruited from the University population and from their family and friends. Each dyad applied to take part together, self-identified as either family members, in a relationship, or friends/housemates/other, knowing that one would be sharing dreams and that the other would discuss those dreams with them. Dyads were screened so that at least one of the members of each dyad reported a home dream recall frequency of at least eight dreams per month. Baseline and post-discussion empathy data were not returned by two participants (one dream-sharer and one discussor, in different dyads), resulting in a total sample of 44 (females = 26, males = 18; mean age = 26.70 years,  $SD=13.79$ , range = 18 - 73). All participants gave written informed consent online in accordance with the Declaration of Helsinki. The protocol was approved by the Research Ethics Committee, Department of Psychology, Swansea University.

### **Procedure**

At the start of the study each participant completed online an adapted version of the 12-item Shen (2010) state empathy scale (see Materials below), regarding their empathy toward the other member of the dyad. This produced a baseline empathy score for each participant. Dyads were then asked to have four dream discussions over approximately two weeks. The sharer was specified as the member of the dyad with highest retrospective dream recall frequency. Upon having a dream, the dream-sharer arranged to meet the discussor as soon as possible so as to discuss the dream with them. The sharer was asked to have the dream report typed out beforehand in as much detail as possible, either on paper or on a

phone or laptop, and also to email the dream report to the experimenters. The discussion followed the stages of the Ullman (1996) dream appreciation technique, with a total recommended time of 25 minutes for each discussion (see instructions in Materials below).

During each discussion the dyad completed an online questionnaire to show the time at the start of each of the Ullman stages, and the time at the end of the discussion, so that overall discussion length, and length of each of the stages, could be calculated. After each dream discussion, both participants separately completed the state empathy scale. During the study 17 dyads had four discussions with empathy scores returned after each, two dyads had three discussions, one dyad had two discussions, and three dyads had one discussion.

### **Materials**

The adapted Shen (2010) state empathy scale has the following 12 items:

1. My friend's / partner's emotions are genuine;
2. I experience the same emotions as my friend / partner;
3. I have a similar mood to my friend / partner;
4. I can feel my friend's / partner's emotions;
5. I can see my friend's / partner's point of view;
6. I recognize my friend's / partner's situation;
7. I can understand what my friend / partner goes through;
8. My friend's / partner's reactions are understandable;
9. When I talk to my friend / partner, I am fully absorbed;
10. I can relate to what my friend / partner goes through;
11. I can identify with the situations my friend / partner describes to me;
12. I can identify with my friend / partner.

Each item is scored on a 0 – 10 scale, where 0 = not at all and 10 = completely.

Scores on the scale range from 0 to 120.

Instructions for the Ullman technique, given to dream-sharers and discussers at the start of the study, with recommended duration of each stage of the technique:

1. The dream-sharer tells the dream report as fully as possible, reading from the typed report. The discussor asks clarifying questions, so as to make sure that the report is complete. Please ensure to describe what emotions were felt while the dream was happening, and to describe in as much detail as can be remembered the places, people and actions in the dream. 5 minutes
2. The discussor should give his or her views of the dream report and of how it would feel and what it would mean if the discussor had had the dream. This provides a pool of ideas that the dream-sharer might not have thought of in trying to make sense of the dream. 2 minutes
3. The dream-sharer responds to anything that he or she wants to regarding what the discussor said at step 2. The dream-sharer then talks about what was on his or her mind in the days before the dream. The dream-sharer can talk about conversations, events, concerns, things he or she saw or experienced, on the day before the dream and on the days before that, and in particular before falling to sleep. It may help for the discussor to ask, for example, "When you consider the dream and the feelings in the dream, and you think back on what was on your mind the previous day, is there anything you'd like to say about that?" 5 minutes
4. Reading aloud the dream-sharer's written dream report. The discussor reads back the dream report to the dream-sharer in the second person (e.g., "You're at a dance. You walk to the center of the room."). Please stop frequently to allow the dream-sharer to add any new details either about the dream or about what has been happening to the dream-sharer in waking life in the days before the dream. 3 minutes



5. The dream-sharer and discusser should discuss any connections they can make between the dream report and the waking life background and recent events and concerns of the dream-sharer. Please note that you can only discuss or comment on the dream report and anything the dream-sharer has said during the previous steps, unless new ideas come to mind for the dream-sharer. The purpose of this step is to discover any connections between the dream and the dream-sharer's recent waking life and emotions. 5 minutes
6. The dream-sharer can talk about any way in which he or she would change what happened in the dream report, or would make any changes in his or her life. 2 minutes

## Results

Across the dyads, mean dream length was 140.15 words ( $SD=126.66$ ) and mean discussion length 23.72 minutes ( $SD=9.54$ ). Mean total length of dreams discussed by each dyad was 555.39 words ( $SD=510.70$ ) and mean total discussion time 86.96 minutes ( $SD=38.41$ ). The mean baseline empathy score for the participants in the current study ( $N=44$ ) was 88.20 ( $SD=13.44$ ). This is higher than on the original version of the state empathy scale in Shen (2010), which had mean scores equivalent to 59.30 and 69.63 on the current study's 0 – 10 rating scale. The mean baseline empathy score for the current study was also significantly higher than the mean baseline empathy score of 82.04 ( $SD=15.21$ ) for the 53 participants in Blagrove, Hale et al. (2019) ( $t(95)=2.094, p=.039$ ). To avoid a ceiling effect in analyses the current sample was thus split around the median score for baseline empathy. With median score being 90, this resulted in samples of  $n=21$  below and  $n=20$  above the median, three participants were on the median and hence were excluded. This procedure resulted in a low empathy group ( $n=21$ ) whose baseline empathy ( $M = 77.29$ ,

$SD=10.54$ ) did not differ significantly from the Blagrove, Hale et al. (2019) sample ( $t(72)=1.310, p=.194$ ), and a high empathy group ( $n=20$ ) whose baseline empathy ( $M = 99.4, SD=5.27$ ) was significantly higher than for the Blagrove, Hale et al. (2019) sample ( $t(70.75)=7.240, p<.001$ ). The low empathy group comprised 13 females and 8 males, the high empathy group comprised 11 females and 9 males; the groups did not differ significantly on sex of members ( $\chi^2(1) = 0.201, p=.654$ ). Overall, males and females did not differ on baseline empathy (males:  $M=99.56, SD=13.97, n=18$ ; females:  $M=100.65, SD=13.33, n=26$ ;  $t(42)=0.264, p=.793$ ).

To test the main hypotheses, the mean of the empathy scores following the dream discussions was used as the post-intervention measure, and compared within-subjects to the empathy score measured at baseline. The Wilcoxon matched-sample test was used due to change scores being non-normally distributed. Table 1 shows that, for the low empathy group, discussers had a significant increase in empathy toward their dream-sharer from baseline as a result of the dream discussions. Dream-sharers in the low empathy group had a non-significant increase in empathy toward their discussor. For the high empathy group, dream-sharers and discussors did not have a significant change in empathy.

**Table 1**

*Baseline and post-dream discussion empathy of dream-sharers and discussers toward each other, for the below and above median empathy groups separately.*

Role	<i>n</i>	Baseline		Post-dream discussions		Wilcoxon matched-samples test, two-tail	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>Z</i>	<i>p</i>
Below median baseline empathy group							
Sharer	11	75.64	10.21	79.46	19.61	1.379	.168
Discussor	10	79.10	11.14	86.32	9.09	2.803	.005
Above median baseline empathy group							
Sharer	10	99.90	6.57	95.55	6.67	1.683	.092
Discussor	10	98.90	3.84	98.45	8.93	0.533	.594

*Note:* Baseline empathy of sharers and discussers did not differ significantly for the low empathy ( $t(19)=0.744, p=.466$ ) or high empathy ( $t(18)=0.415, p=.683$ ) groups.

The change in empathy for the low empathy discussers had a medium effect size,  $\eta^2 = 0.39$  (calculated as  $\eta^2 = Z^2/n$ , where  $n$  = number of observations; Fritz et al., 2012). For the low empathy discussers who completed four discussions ( $n=7$ ), the mean empathy (with *SDs*) recorded at baseline and after each of the four discussions were 83.00 ( $SD=6.76$ ), 92.57 (8.06), 85.71 (6.97), 84.29 (13.96), and 91.43 (8.44) respectively, showing that empathy did not increase linearly with successive dream discussions. Using Spearman’s rho correlation, change in empathy for the low baseline empathy discussers was not positively associated with total length of discussions, total length of any of the six Ullman discussion stages, nor total length of dream reports (all Spearman rhos < .15, all  $ps > .34$ ).

The distribution of relationship types across the 44 participants was: Life family,  $n=10$ ; in a relationship,  $n=19$ ; friends/house mates/other,  $n=15$ . One-way ANOVA showed that baseline empathy scores did not differ as a function of relationship type ( $F(2,41)=0.501$ ,  $p=.610$ ). Across the whole sample, change in empathy did not differ as a function of relationship type (Kruskall-Wallis test,  $H=1.229$ ,  $df=2$ ,  $p=.541$ ). Univariate ANOVA confirmed that change in empathy from baseline to mean of the post-dream discussions did not differ as a function of relationship type ( $F(2,29)=0.300$ ,  $p=.743$ ), and relationship type did not interact with dream-sharer/discusser condition ( $F(2,29)=0.968$ ,  $p=.392$ ), nor as a three way interaction with dream-sharer/discusser condition and high/low empathy group ( $F(2,29)=0.782$ ,  $p=.467$ ).

### Discussion

The study aimed firstly to test whether the discussion of dreams results in increased empathy toward the dream-sharer. Discussers in the below median baseline empathy group were found to have a significant increase in empathy toward dream-sharers as a result of discussing dreams using the Ullman technique, and dream-sharers had a small but non-significant increase in empathy toward their discussor. This confirms our two main hypotheses, but only for the below median group, as the above median group may have been subject to a ceiling effect. This difference in outcomes between the dream-sharer and discussor conditions in the below median group can be understood in that the dream-sharer is addressing their own dream and own life experiences during the discussion process, and so does not discuss the life circumstances of the discussor, except briefly in stage 2 of the Ullman procedure, whereas the discussor is engaging with emotional information told by the dreamer about their experiences when asleep and when awake. An increase in empathy for both members of a dyad would thus need them to take turns in sharing and discussing, which would indeed occur in more naturalistic settings.

The current results extend the findings of Blagrove, Hale et al. (2019) in showing that change in empathy across discussers was not positively related to differences in the length of dream reports they discussed, nor with differences in length of discussions, and empathy did not increase linearly across successive discussions. Change in empathy across the whole sample was also not related to the type of relationship between the sharer and discussor. It may thus be that empathy change is related to the types of waking life experiences that the dream-sharer had prior to the dream, if those are the subject of discussion, or to characteristics of dream content, such as the level of emotion in the dream, or to whether the dyad were successful in connecting the dream to the dreamer's recent waking life. These possible mediating variables should be addressed in future research.

The current results were found although the aim to share four dreams within a two-week period may have resulted in sub-optimal dreams being examined. In naturalistic circumstances the main predictor of sharing for both negative and positive dreams is the emotional intensity of the dream (Curci & Rimé, 2008); the dreams shared for this current experiment might not have had such emotional intensity or urgency for sharing. Likewise, Schredl et al. (2015) found that for the last situation in which participants had told one of her/his own dreams to another person, or listened to a dream told by another person, the three main motives for dream telling were 'dream topic relevant for the interaction between the dreamer and the listener,' 'extraordinary dream,' and 'wish to understand the dream better.' These characteristics might have been absent for some dreams in the current study, and yet the hypothesized increase in empathy for discussors toward dream-sharers still occurred.

The empathy theory of dreaming holds that the sharing of dreams provides individual and group benefits through self-disclosure. It can be contrasted with almost all theories of dream function, which usually posit a benefit of dreams for the individual during sleep, and usually a benefit that occurs even for unrecalled dreams (Barrett, 2007; Valli & Revonsuo,

2007; Zadra & Stickgold, 2021). In contrast, the empathy theory proposes an effect that occurs when the dream is told, after waking. It further speculates that this effect may have led to selection for salient and fictional characteristics of dream content that support this effect, during human evolution, alongside the evolution of story-telling (Blagrove, Hale et al., 2019). This speculative proposal is offered irrespective of whether dreaming had evolved with some other, within-sleep function, or had developed as an epiphenomenal spandrel (Barrett, 2007). We suggest that studies that address within-sleep effects of dreaming should consider whether dream-content data might additionally favor a post-sleep self-disclosure and group bonding effect or function.

### **Implications for psychotherapy and personal relationships**

Many of the methods used for the exploration of dreams within psychotherapy, and for understanding the relationship of the dream to the current and past experiences and issues of the client, are detailed by Pesant and Zadra (2004) and by Ellis (2020). They describe how the consideration of dreams and their associations increases psychotherapy clients' self-knowledge and insight, increases clients' commitment to and engagement in therapy, due to the emotional valence of the material, and can result in the revelation of information or emotions that the client is unable or unwilling to acknowledge. Changes in dreams can also indicate the progress of therapy. However, these authors describe that the use of dreams is now rarely taught to new clinicians. The findings of this current study firstly support the use of the Ullman technique, as a systematic way of detailing and cross-mapping a dream and its waking life context, and the technique may thus be found useful by therapists and by the wider lay population, and especially as exploration-insight subscale (Heaton et al., 1998) ratings following its use are shown by Edwards et al. (2013) to be comparable to scores obtained from Hill's (2004) well-established therapist-led dream interpretation method. The technique can also be used in the training of psychotherapists, so as to provide hands-on

experience in the skills of exploring dream content and the relationships of dream content to recent waking life (Ullman, 1994).

The second implication of the current findings is that clients can be advised that, in addition to dreams being usefully addressed in therapy, they can also be told and discussed with significant others, and that this can result in closer understanding and empathy toward the client, outside the therapeutic environment, and also result in increased empathy from the client toward a dream sharing significant other. Clients and the wider population may be receptive to this advice of practicing dream sharing, given that, in Schredl et al. (2014), 35% of respondents representing the general population stated that they share dreams at least monthly, this figure including 10% who share dreams weekly or several times per week, and in Schredl and Bulkeley's (2019) diverse sociodemographic and ethnic background online survey, 23% of the sample reported sharing dreams at least once per week.

### **Limitations**

This study did not address participants' motives for sharing a dream or sharing dreams in general, nor participants' levels of being attuned to or skilled in the discussion of dreams or any other narrative form, nor the content characteristics of dreams that were shared, or not shared. In future research it is necessary, following Hill et al. (2001), to identify the person, technique, or dream-related variables that mediate or modulate the empathy inducing effects of dream sharing. It may also be that the sharing of some topics (such as those that are socially undesirable) might engender more empathy toward the sharer since such sharing can be a sign of trust to which the discussor is invited to reciprocate.

The main limitation to the study is that there was no comparison condition in which some narrative material other than a dream report is used to elicit a meaningful discussion. Comparison conditions in future work could be the discussion of a recent significant event in the life of the dreamer, as in Edwards et al. (2015), the dream-sharer telling someone else's

dream, as in Hill et al. (1993), or having the dreamer tell a story based on an ambiguous photograph or drawing, such as in the Thematic Apperception Test. A further range of self-disclosure techniques is given by Osmanoglu (2019), who, in addition to having group members tell to others a dream that had profoundly affected them, set them eight further activities, including: to express through drawing, thoughts of which you feel guilty; to consider what you would do if today was the last day of your life; and to describe your first three memories which you clearly remember in the first years of your life and to describe how they have affected your life. The nine sessions of group work, each with one of these activities, led to increased subjective assessment of positive relationships with others, and also of being open with others. However, assessments were only made at the start and end of the nine sessions, and so it remains to be investigated whether the sharing of dreams has a different outcome from each of the other eight self-disclosure methods used by Osmanoglu (2019). A further comparison condition is to have participants report their recent personal work experiences, which like dream recall also requires episodic recall: compared to this recall condition, dream recall results in increased activation of the limbic and inferior temporal area in response to emotional stimuli (Lai et al., 2019). However, we accept that these comparison conditions and the dream-sharing condition might all still be subject to statistical regression and also experimenter demand (McCambridge, de Bruin, & Witton, 2012).

We also note that the discussor group in which the significant increase in empathy was found had a sample size of 10, and that this is not ideal given the low statistical power that can result, and which raises the possibility of spurious or chance findings. Future work on this topic should be undertaken with larger sample sizes. Further studies should also have video-supervision of participants' discussions, so that adherence to the protocol and accuracy of process data are better controlled.



## Conclusions

The current study replicated the previous finding that the discussion of dreams enhances empathy toward the dream-sharer. This enhancement was found to not be a function of dream report length, nor discussion length, and did not increase linearly across discussions. Although future research should address how the enhanced empathy outcomes of the sharing and discussion of dreams compare to other methods of eliciting self-disclosure, dreams may still be valid and useful stimuli for discussion even if outcomes are no higher than for other objects of discussion. This is because the discussion of dreams may be expected to be at least as fruitful as the discussion of other narrative stimuli given that the brain is sifting memories for consolidation during sleep on the basis of their emotional relevance (van Rijn et al., 2017), and dreaming may reflect or be part of this filtering process (Eichenlaub et al., 2018; Malinowski & Horton, 2014; Wamsley & Stickgold, 2011; Zadra & Stickgold, 2021). Furthermore, whatever the outcomes for sharing dreams are, in comparison to outcomes for sharing other narrative reports, such as of a favorite film, it must be remembered that people often wake with a dream in mind that they want to tell. The personal and social benefits of such dream sharing thus do need to be investigated further, albeit with comparison conditions that present or generate narratives other than dreams as the basis for discussion. Such research is important given that increased dream telling across society might counteract current societal decreases in empathic concern and perspective taking, the two main components of empathy (Konrath et al., 2011).

**Data availability statement:** The data that support the findings of this study are available from the corresponding author upon reasonable request.

**Declaration of Conflicting Interest:** The authors declare that there are no conflicts of interest.

### References

- Antrobus, J. (1983). REM and NREM sleep reports: comparison of word frequencies by cognitive classes. *Psychophysiology*, 20, 562–568. doi:10.1111/j.1469-8986.1983.tb03015.x
- Barrett, D. (2007). An evolutionary theory of dreams and problem-solving In D. Barrett & P. McNamara (Eds.), *The new science of dreaming, Vol. 3. Cultural and theoretical perspectives* (pp.133-153). Westport, CT: Praeger.
- Blagrove, M., Edwards, C., van Rijn, E., Reid, A., Malinowski, J., Bennett, P., Carr, M., Eichenlaub, J-B., McGee, S., Evans, K., & Ruby, P. (2019). Insight from the consideration of REM dreams, Non-REM dreams and daydreams. *Psychology of Consciousness*, 6, 138-162. doi:10.1037/cns0000167
- Blagrove, M., Hale, S., Lockheart, J., Carr, M., Jones, A., & Valli, K. (2019). Testing the empathy theory of dreaming: The relationships between dream sharing and trait and state empathy. *Frontiers in Psychology*, 10, 1351. doi:10.3389/fpsyg.2019.01351
- Blechner, M.J. (2001). *The dream frontier*. Hillsdale, NJ: The Analytic Press.
- Curci, A., & Rimé, B. (2008). Dreams, emotions, and social sharing of dreams. *Cognition and Emotion*, 22, 155-167. doi:10.1080/02699930701274102
- Domhoff, G.W., & Schneider, A. (2018). Are dreams social simulations? Or are they enactments of conceptions and personal concerns. An empirical and theoretical comparison of two dream theories. *Dreaming*, 28, 1-23. doi:10.1037/drm0000080
- Duffey, T.H., Wooten, H.R., Lumadue, C.A., & Comstock, D.C. (2004). The effects of dream sharing on marital intimacy and satisfaction. *Journal of Couple and Relationship Therapy*, 3, 53-68. doi:10.1300/J398v03n01\_04
- Edwards, C., Malinowski, J., McGee, S., Bennett, P., Ruby, P., & Blagrove, M. (2015). Comparing personal insight gains due to consideration of a recent dream and

- consideration of a recent event using the Ullman and Schredl dream group methods. *Frontiers in Psychology*, 6, 831. doi:10.3389/fpsyg.2015.00831
- Edwards, C., Ruby, P., Malinowski, J., Bennett, P., & Blagrove, M. (2013). Dreaming and insight. *Frontiers in Psychology*, 4, 979. doi:10.3389/fpsyg.2013.00979
- Eichenlaub, J.-B., van Rijn, E., Gaskell, M. G., Lewis, P. A., Maby, E., Malinowski, J. E., Walker, M. P., Boy, F., & Blagrove, M. (2018). Incorporation of recent waking-life experiences in dreams correlates with frontal theta activity in REM sleep. *Social Cognitive and Affective Neuroscience*, 13, 637–647. doi:10.1093/scan/nsy041
- Eichenlaub, J., van Rijn, E., Phelan, M., Ryder, L., Gaskell, M., Lewis, P., P. Walker, M., & Blagrove, M. (2019). The nature of delayed dream incorporation ('dream-lag effect'): Personally significant events persist, but not major daily activities or concerns. *Journal of Sleep Research*, 28, e12697. doi:10.1111/jsr.12697
- Ellis, L. (2020). *A clinician's guide to dream therapy*. New York & London: Routledge.
- Fonagy, P., Kächele, H., Leuzinger-Bohleber, M., & Taylor, D. (eds.) (2018). *The significance of dreams: Bridging clinical and extraclinical research in psychoanalysis*. Abingdon, UK: Routledge.
- Fosse, M. J., Fosse, R., Hobson, J. A., & Stickgold, R. J. (2003). Dreaming and episodic memory: A functional dissociation? *Journal of Cognitive Neuroscience*, 15, 1–9. doi:10.1162/089892903321107774
- Fritz, C.O., Morris, P.E., & Richler, J.J. (2012). Effect size estimates: Current use, calculations, and interpretation. *Journal of Experimental Psychology: General*, 141, 2-18. doi:10.1037/a0024338
- Heaton, K. J., Hill, C. E., Petersen, D. A., Rochlen, A. B., & Zack, J. S. (1998). A comparison of therapist-facilitated and self-guided dream interpretation sessions. *Journal of Counseling Psychology*, 45, 115–122. doi:10.1037/0022-0167.45.1.115

Hill, C.E. (2004). *Dream work in therapy: Facilitating exploration, insight, and action*.

Washington, D.C.: American Psychological Association.

Hill, C. E., Diemer, R., Hess, S., Hilliger, A., & Seeman, R. (1993). Are the effects of dream interpretation on session quality due to the dream itself, to projection or the interpretation process? *Dreaming*, 3, 269–280. doi:10.1037/h0094385

Hill, C. E., Kelley, F., Davis, T., Crook, R., Maldonado, L., Turkson, M., Wonnell, T., Suthakaran, V., Zack, J., Rochlen, A., Kolchakian, M., & Codrington, J.N. (2001). Predictors of outcome of dream interpretation sessions: volunteer client characteristics, dream characteristics and type of interpretation. *Dreaming*, 11, 53-72. doi:10.1023/A:1009420619940

Ijams, K., & Miller, L.D. (2000). Perceptions of dream-disclosure: An exploratory study. *Communication Studies*, 51, 135-148. doi:10.1080/10510970009388514

Konrath, S.H., O'Brien, E.H., & Hsing, C. (2011). Changes in dispositional empathy in American college students over time: A meta-analysis. *Personality and Social Psychology Review*, 15, 180–198. doi:10.1177/1088868310377395

Lai, C., Lucarelli, G., Pellicano, G. R., Massaro, G., Altavilla, D., & Aceto, P. (2019). Neural correlate of the impact of dream recall on emotional processing. *Dreaming*, 29, 40–56. doi:10.1037/drm0000096

Malinowski, J., & Horton, C. L. (2014). Evidence for the preferential incorporation of emotional waking-life experiences into dreams. *Dreaming*, 24, 18-31. doi:10.1037/a0036017

Mar, R.A., & Oatley, K. (2008). The function of fiction is the abstraction and simulation of social experience. *Perspectives on Psychological Science*, 3, 173 – 192. doi:10.1111/j.1745-6924.2008.00073.x

- Matthijs Bal, P., & Veltkamp, M. (2013). How does fiction reading influence empathy? An experimental investigation on the role of emotional transportation. *PLOS ONE*, 8, e55341. doi:10.1371/journal.pone.0055341
- McCambridge, J., de Bruin, M., & Witton, J. (2012). The effects of demand characteristics on research participant behaviours in non-laboratory settings: A systematic review. *PLOS ONE*, 7, e39116. doi:10.1371/journal.pone.0039116
- Nielsen, T., Kuiken, D., Hoffmann, R., & Moffitt, A. (2001). REM and NREM sleep mentation differences: A question of story structure? *Sleep and Hypnosis*, 3, 9–17.
- Oatley, K. (2011). *Such stuff as dreams: The psychology of fiction*. Chichester, UK: Wiley.
- Oatley, K. (2016). Fiction: Simulation of social worlds. *Trends in Cognitive Sciences*, 20, 618-628. doi:10.1016/j.tics.2016.06.002
- Olsen, M. R., Schredl, M., & Carlsson, I. (2013). Sharing dreams: Frequency, motivations, and relationship intimacy. *Dreaming*, 23, 245–255. doi:10.1037/a0033392
- Osmanoğlu, D.E. (2019). Expansion of the open area (Johari Window) and group work directed to enhancing the level of subjective well-being. *Journal of Education and Training Studies*, 7, 76-85. doi:10.11114/jets.v7i5.4128
- Pace-Schott, E.F. (2013). Dreaming as a story-telling instinct. *Frontiers in Psychology*, 4, 159. doi:10.3389/fpsyg.2013.00159
- Pesant, N., & Zadra, A. (2004). Working with dreams in therapy: what do we know and what should we do? *Clinical Psychology Review*, 24, 489-512. doi:10.1016/j.cpr.2004.05.002.
- Revonsuo, A., Tuominen, J., & Valli, K. (2016). The avatars in the machine: Dreaming as a simulation of social reality. In T. Metzinger & J. M. Windt (Eds.), *Open MIND* (pp. 1295-1322). Cambridge, MA: MIT Press. doi:10.15502/9783958570375

Schrage-Früh, M. (2016). *Philosophy, dreaming and the literary imagination*. London:

Palgrave Macmillan. doi:10.1007/978-3-319-40724-1

Schredl, M. (2006). Factors affecting the continuity between waking and dreaming:

Emotional intensity and emotional tone of the waking-life event. *Sleep and Hypnosis*, 8, 1–5.

Schredl, M., Berres, S., Klingauf, A., Schellhaas, S., & Göritz, A. (2014). The Mannheim

Dream questionnaire (MADRE): Retest reliability, age and gender effects.

*International Journal of Dream Research*, 7, 141–147.

doi:10.11588/ijodr.2014.2.16675

Schredl, M., & Bulkeley, K. (2019). Dream sharing frequency: Associations with

sociodemographic variables and attitudes toward dreams in an American sample.

*Dreaming*, 29, 211–219. doi:10.1037/drm0000107

Schredl, M., Fröhlich, S., Schlenke, S., Stegemann, M., Voß, C., & De Gioia, S. (2015).

Emotional responses to dream sharing: A field study. *International Journal of Dream*

*Research*, 8, 135–138. doi:10.11588/ijodr.2015.2.23052

Schredl, M., & Schawinski, J.A. (2010). Frequency of dream sharing: The effects of gender

and personality. *American Journal of Psychology*, 123, 93–101.

doi:10.5406/amerjpsyc.123.1.0093

Shen, L. (2010). On a scale of state empathy during message processing. *Western Journal of*

*Communication*, 74, 504–524, doi:10.1080/10570314.2010.512278

States, B.O. (1993). *Dreaming and storytelling*. Ithaca, NY: Cornell University Press.

Ullman, M. (1994). The experiential dream group: Its application in the training of therapists.

*Dreaming*, 4, 223–229. doi:10.1037/h0094415

Ullman, M. (1996). *Appreciating dreams: A group approach*. Thousand Oaks, CA: Sage.

- Valli, K., & Revonsuo, A. (2007). Evolutionary psychological approaches to dream content. In D. Barrett & P. McNamara (Eds.), *The new science of dreaming: Vol. 3. Cultural and theoretical perspectives* (pp. 95–116). Westport, CT: Praeger.
- van Rijn, E., Lucignoli, C., Izura, C., & Blagrove M.T. (2017). Sleep-dependent memory consolidation is related to perceived value of learned material. *Journal of Sleep Research*, 26, 302-308. doi:10.1111/jsr.12457
- Vann, B., & Alperstein, N. (2010). Dream sharing as social interaction. *Dreaming*, 10, 111-119. doi:10.1023/A:1009452822669
- Wamsley, E. J., & Stickgold, R. (2011). Memory, sleep and dreaming: Experiencing consolidation. *Sleep Medicine Clinics*, 6, 97–108. doi:10.1016/j.jsmc.2010.12.008
- Windt, J. (2015). *Dreaming: A conceptual framework for philosophy of mind and Empirical Research*. Cambridge, MA: MIT Press.
- Zadra, A., & Stickgold, R. (2021). *When brains dream: Exploring the science and mystery of sleep*. New York: W.W.Norton.