Dreaming

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Associations Between Autobiographical Memory and Dreaming: An Individual-Differences Approach

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Autobiographical memory and dreaming are ubiquitous in everyday life. The study of their relation has largely been assessed using experimental approaches, abstracting from individual differences, despite evidence of stable individual differences in both mental processes. Here, we examined, for the first time, whether individual differences in the recollective experience of autobiographical memory (measured by the Autobiographical Recollection Test [ART]; Berntsen et al., 2019) are associated with individual differences in dreaming (measured by the Inventory of Dream Experiences and Attitudes, Beaulieu-Prévost et al., 2009) in a sample of 246 participants. The ART showed consistent and robust associations with five out of seven aspects of dreaming, demonstrating that the way people generally remember their personal past is reliably related to the way they experience their dreams. The findings provide new perspectives on the role of autobiographical memory in dreaming as well as on the continuity hypothesis of dreaming.

Keywords: autobiographical memory, dreaming, affectivity, individual differences, Autobiographical Recollection Test

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In the early 20th century, the scientific investigation of dreaming began in earnest with Sigmund Freud's (1900) seminal book *The Interpretation of Dreams*, wherein Freud argued that dreams relate to waking life and, more specifically, that personal past experiences (i.e., autobiographical memories) are "the material of dreams" (p. 44). Freud, thus, described what the scientific community defines today as the continuity hypothesis of dreaming, which claims that there is a continuum of waking-life experiences in dreams (Domhoff, 1996; Hall & Nordby, 1972; Schredl, 2003). While

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not addressing Freud's central thesis that dreams are symbolic fulfillments of unconscious wishes, contemporary research on the continuity hypothesis of dreaming has validated Freud's early suggestions about the crucial role autobiographical memory plays in dreams, by showing that fragments of recent and remote personal past experiences—particularly those that are highly emotional and perceived as relevant to one's life story and one's self—are routinely incorporated into dreams (Cappeliez, 2008; M. J. Fosse et al., 2003; Grenier et al., 2005; Horton et al., 2009; Malinowski & Horton, 2014a, 2014b; Schredl, 2006; Wang et al., 2021).

The studies investigating the continuity hypothesis have examined the relation of dreams and autobiographical memory by relying on reports and ratings of specific dreams and specific personal memories. For example, in these studies, participants kept waking-life and dream diaries, or were cued to report specific dreams, and then asked to score their dreams for incorporation of events from their personal past (M. J. Fosse et al., 2003; Grenier et al., 2005; Horton et al., 2009). Thus, these studies have examined whether the content of dreams occurring in a particular night overlaps with the content of experience from the preceding day(s); while individual variations in these mental processes were not analyzed. However, growing evidence has shown reliable individual differences in the experience of autobiographical memory (Berntsen et al., 2019; Gehrt et al., 2022; Rubin, 2021) as well as in the experience of dreams (Beaulieu-Prévost et al., 2009; Horton & Conway, 2009; Schredl et al., 2003). To the best of our knowledge, no work has examined whether the way people generally remember their personal past is related to the way they generally experience their dreams. Here, we aimed to fill this gap in the literature by examining associations between autobiographical memory and dreaming at the level of individual dispositions.

Shared Characteristics and Differences Between Autobiographical Memory and Dreaming

Autobiographical memory is the ability to remember and consciously reexperience events from our personal past. It is essential for self-identity, emotion, and a feeling of continuity in life (Brewer, 1986; Conway & Pleydell-Pearce, 2000). As such, autobiographical remembering and dreaming are both central to human consciousness and both constitute major aspects of human experience. Observations of connections between memory and dreaming are plentiful, and a number of similarities can be identified between autobiographical remembering and dreaming. Both consist of similar cognitive components, such as sensory imagery, narrative structure, and spatial knowledge (Mutz & Javadi, 2017; Rubin, 2005, 2006; Tulving, 2002), and both are characterized by an emotional experience (R. Fosse et al., 2001; Holland & Kensinger, 2010). Moreover, both are self-referential, as their content involves self-relevant information (Domhoff, 1996; Palombo et al., 2018), and both have been found to play an integral role in simulating and planning for the future (D'Argembeau, 2012; Levin & Young, 2002).

With respect to the neural correlates, increased connectivity among specific nodes of the default mode network—such as the medial prefrontal cortex, posterior cingulate cortex, and medial temporal lobe—has been implicated during autobiographical remembering (Spreng & Grady, 2010), as well as during rapid eye movement sleep dreaming (Fox et al., 2013; Siclari et al., 2017; but see Ruby, 2020).

Moreover, well-documented phenomena in autobiographical memories have also been identified in memory for dreams, suggesting the involvement of similar

retrieval processes (Horton & Conway, 2009). Indeed, Fiske and Pillemer (2006) reported childhood amnesia for dream memories; that is, people rarely remember dreams that occurred before age 3, as is the case for autobiographical events occurring in waking life (e.g., Howe & Courage, 1993). Likewise, Ritchie and Skowronski (2008) found a fading affect bias of memories of negatively valenced dreams compared to memories of positively valenced dreams (i.e., the emotional intensity prompted by negative dreams faded faster than the emotional intensity triggered by positive dreams). Lastly, a reminiscence bump in the content of dream memories has also been identified, wherein older adults' dreams often incorporate experiences from their adolescence and early adulthood (Cappeliez, 2008; Grenier et al., 2005).

Despite these parallels between autobiographical memory and dreaming, dissimilarities have also been reported in terms of autonoetic consciousness (i.e., the feeling of reliving a past personal experience) and reality monitoring (i.e., the ability to distinguish between internally generated and outside world stimuli), with dreaming involving less autonoetic consciousness and reduced reality monitoring (Baird et al., 2022). Moreover, although dreaming can be seen as an autobiographical experience (Horton & Conway, 2009), recollections of dreams differ from recollections of personal experiences in waking life on dimensions such as bizarreness and correspondence to reality (Fox et al., 2013; Gross et al., 2021).

Collectively, this evidence is consistent with the notion that, even though they are closely related, dreaming should not be reduced to autobiographical memory, as important differences exist between the two mental processes. Nonetheless, the findings reviewed here demonstrate that autobiographical memory is essential for dreaming because it supports and provides content of dreams (Freud, 1900; Malinowski & Horton, 2014b).

Individual Differences in Dreaming and Memory

The reviewed similarities between dreaming and autobiographical remembering might suggest that individual differences in dreaming would be associated with individual differences in autobiographical remembering. However, to date, this question has received surprisingly little attention in the scientific literature.

The study of individual differences in dreaming has revealed that some people generally report more-frequent dreams, have more-positive attitudes toward them, and experience their dreams as more meaningful and as reflections of their waking life, whereas others report rarely remembering their dreams, have a more-skeptical or negative attitude toward them and do not assign any meaning or value to them (Beaulieu-Prévost et al., 2009; Horton & Conway, 2009; Schredl, 2002; Schredl et al., 2003). Likewise, it is well established that some individuals generally remember their past more clearly and vividly than others, consider their memories central to their identify and life story, and frequently engage in autobiographical remembering, whereas others have vague personal memories and rarely think of their personal past, suggesting a trait-like tendency in autobiographical memory (Berntsen et al., 2019; Rubin, 2021).

A few studies have examined whether individual differences in memory correlate with individual differences in dreaming. However, these studies did not measure autobiographical memory, but instead focused on other types of memory (i.e., short term and working memory), and examined their relationships with individual

differences within a single aspect of dreaming: dream recall. For instance, D. B. Cohen (1971) and Blagrove and Akehurst (2000) did not find an association between participants' narrative-memory recall and their dream-recall frequency. Ruby and colleagues (Blain et al., 2022; Vallat et al., 2022) observed no differences between high-dream recallers and low-dream recallers in their memory abilities as measured by the Wechsler Memory Scale III, the digit span task, and a working-memory task. Only Bloxham (2018) reported a significant association between participants' memory of a fictional narrative and higher dream recall. Given their focus on memory types other than autobiographical memory, and their focus on dream recall only, these previous studies leave several questions unanswered. First, they do not clarify whether there might be an association specifically between individual differences in autobiographical remembering and dreaming. Second, if such an association is found, it is unclear whether the association holds for aspects of dreaming other than dream recall, such as dream significance and dream continuity. The present study was designed to address these questions.

Current Study and Hypotheses

The current study systematically examines a possible association between individual differences in autobiographical memory and individual differences in various aspects of dreaming. To do so, we administered the Autobiographical Recollection Test (ART, Berntsen et al., 2019) and the Inventory of Dream Experiences and Attitudes (IDEA, Beaulieu-Prévost et al., 2009).

The ART (Berntsen et al., 2019) was recently developed to provide a reliable and easy-to-administer psychometric test of autobiographical memory, as opposed to previous scales measuring deficits in autobiographical remembering in patient populations (Kopelman et al., 1990; Levine et al., 2002; Williams et al., 2007) or specific aspects of autobiographical memories such as their psychological functions (Bluck et al., 2005) or narrative coherence (Hallford & Mellor, 2017). Here, we used the ART because it measures seven theoretically motivated, empirically supported, interrelated features typically associated with the recollective experience of personal memories: vividness, reliving (both central to the sense of mentally traveling in time), visual imagery, scene (refers to remembering the spatial layout of an event memory), rehearsal (in social communication and privately), narrative coherence, and life story relevance. These recollective qualities form one unique underlying dimension of autobiographical recollection that varies among people (Berntsen et al., 2019). The ART has demonstrated high internal consistency (see also Table 1), test–retest reliability, and high construct validity (Berntsen et al., 2019; Gehrt et al., 2022; Nielsen et al., 2023).

With respect to dreaming, most scales measure only two standard constructs of dreaming; namely, dream-recall frequency and attitudes toward dream (i.e., a general interest in dreams; Horton & Conway, 2009; Schredl, 2002; Schredl et al., 2003). The IDEA (Beaulieu-Prévost et al., 2009) integrates these two dimensions into a multidimensional approach, which identifies seven interrelated but independent dimensions of the dream experience acknowledging the complexity and multifaceted nature of dreaming: dream significance (i.e., the personal significance, meaning and importance attributed to the experience of dreaming), dream positivity (i.e., the perceived positive content of dreams), dream recall (i.e., the perceived clarity, consistency, intensity and vividness of dreams), dream apprehension (i.e., the fear of dreaming, thinking

about dreams or seeking their meaning), dream guidance (i.e., the belief that dreams are spiritual, premonitory and a source of guidance to the present and future), dream entertainment (i.e., the desire and pleasure of dreaming), and dream continuity (i.e., the belief that dreams reflect waking-like events, concerns, and goals). Therefore, the IDEA was most appropriate for the research aims of the present work. Moreover, the IDEA has demonstrated high internal consistency (see also Table 1) and construct validity (Beaulieu-Prévost et al., 2009).

Lastly, because both autobiographical remembering and dreaming involve a relevant emotional component, we also aimed to examine the role of individual dispositions toward positive and negative affect using The Positive and Negative Affect Schedule (PANAS; Watson et al., 1988), which is a standard measure of trait positive and trait negative affect.

We expected to observe positive associations between individual differences in autobiographical memory and individual differences in dreaming. We also hypothesized that better autobiographical remembering (i.e., higher scores on the ART) would be related to higher trait positive affect due to the positivity bias in autobiographical memory (Walker et al., 2003), and previous associations with measures of positive affect and well-being (Cárdenas-Egúsquiza & Berntsen, 2023; Gehrt et al., 2023). We did not have specific hypotheses concerning the relationship between dreaming and affectivity due to contradictory results regarding a positivity or negativity bias in dreams (R. Fosse et al., 2001; Revonsuo, 2000; Valli et al., 2008).

Method

Participants

We preregistered our procedure and analytical approach[1] via the Open Science Framework (https://osf.io/2czdv/?view_only=3d9bfe8264fb4c0b91f1888d8a41cd96). The target sample size was 250 participants. We collected data from 264 respondents recruited from Amazon Mechanical Turk (MTurk) using CloudResearch Prime Panels (Litman et al., 2017). As per our preregistration, we excluded data from seven participants who failed to pass one attention check (a question with four response options that participants could pass only by choosing the correct answer, which was provided to them in the instructions); five who completed the survey in less than 10 min, and six who reported not being native English speakers. All remaining respondents provided meaningful words to a word-fluency test, thereby meeting another preregistered inclusion criterion. Thus, the remaining sample consisted of 246 individuals, with 142 men and 104 women (no participant answered the available categories of "other" or "prefer not to answer"), a mean age of 40.20 ($SD = 10.62$, range = 20–71), and mean number of years of education of 15.05 ($SD = 2.34$). All participants indicated that they resided in the United States at the time of completion of the study and were compensated with US$2.50. The study was conducted in accordance with current professional ethical guidelines and was reviewed by the Local Ethics Committee at the Center on Autobiographical Memory Research, Department of Psychology and Behavioural Sciences, Aarhus University.

[1] The present study was part of a larger data collection including measures of spontaneous waking thought, and fluid and crystallized intelligence, which were not reported here.

Measures

The ART (Berntsen et al., 2019)

The ART is a self-report questionnaire consisting of 21 items examining individual differences in the recollective experience of personal memories; that is, individual differences in how well, vividly, and detailed people think they remember personal events and how much they engage in autobiographical remembering. The ART measures seven interrelated recollective qualities: vividness, narrative coherence, reliving, rehearsal, scene, visual imagery, and life story relevance. Each component consists of three items that are rated on a 7-point Likert-type scale from 1 = *strongly disagree* to 7 = *strongly agree.* Higher scores on the ART reflect a higher tendency to think one remembers its own past well. We used the mean score of the full 21-item set (ART), which ranges from 1 to 7, in the analyses.

The IDEA (Beaulieu-Prévost et al., 2009)

The IDEA is a 50-item self-report questionnaire assessing individual differences in how people represent and understand dream experiences; it measures seven dimensions of dreaming: dream significance (12 items), dream positivity (seven items), dream recall (eight items), dream apprehension (four items), dream guidance (five items), dream entertainment (nine items), and dream continuity (five items). All items are rated in a 5-point Likert scale (1 = *I strongly disagree* to 5 = *I strongly agree*). Higher scores on each dream dimension indicate higher tendencies to experience each specific aspect of dreaming. Mean scores for each dream dimension were used in the analyses.

The PANAS (Watson et al., 1988)

The PANAS measures trait affect with 10 words assessing positive affect (PA), and 10 words addressing negative affect (NA). Evidence suggests that the PANAS PA and NA are orthogonal dimensions of the affective phenomena showing weak intercorrelations (Kercher, 1992; in the present study: $r = -.21$). The 20 items are rated on a scale ranging from 1 = *very slightly or not at all* to 5 = *extremely.* We used PA and NA sum scores, which range from 10 to 50, in the analyses. While administering the PANAS, we used the original instruction: "Indicate to what extent you GENERALLY feel this way, that is how you feel ON AVERAGE."

Procedure

The study was administered through the survey platform Qualtrics in June 2022. The study was described to participants as a scientific study about dreaming and other types of mental activity, such as thinking about the past and mind wandering. Participants accessed a secure link with an informed consent form and then were presented with the questionnaires, which were completed in the following fixed order: PANAS, ART, and IDEA. Demographic information was provided after completion of the scales. The average completion time was 22.34 min ($SD = 10.01$ min).

Plan of Analysis

As per our preregistration, we first performed Pearson bivariate correlations among the ART, each dream dimension, trait PA, trait NA, age, and gender

(Table 1). To further examine patterns of associations among the ART, the seven dream dimensions, and affectivity, we conducted an exploratory factor analysis of scores on each scale with the method of principal component analysis and Oblimin rotation, as recommended for the social sciences (Watkins, 2018).[2] All the analyses were performed with SPSS Version 27 (IBM Corp., 2020).

Results

Descriptive statistics for the included scales are reported in Table 1. In addition, Pearson bivariate correlations among the ART, each dream dimension, trait positive and negative affect, age, and gender[3] are displayed in Table 1. The seven dream dimensions of the IDEA were not highly correlated (*r*s range = .03–.61; J. Cohen, 1988), demonstrating that they measure distinguishable aspects of dreaming, which can be analyzed and interpreted separately.

Correlations Between Autobiographical Memory and Dreaming

The ART showed consistent correlations with six out of seven dreaming dimensions: higher scores on the ART were positively associated with higher scores on dream significance, dream positivity, dream recall, dream guidance, dream entertainment, and dream continuity, but were unrelated to dream apprehension (Table 1). The seven components of the ART showed similar correlations with all dream

Table 1
Descriptive Statistics, Cronbach's Alpha, and Correlations Between Included Variables

Measure	1	2	3	4	5	6	7	8	9	10	11
1. ART	—										
2. Dream significance	.40**	—									
3. Dream positivity	.21**	.07	—								
4. Dream recall	.52**	.53**	.06	—							
5. Dream apprehension	.03	.03	−.37**	.22**	—						
6. Dream guidance	.30**	.61**	.05	.41**	.38**	—					
7. Dream entertainment	.44**	.52**	.06	.59**	.19**	.49**	—				
8. Dream continuity	.41**	.42**	−.08	.44**	.34**	.47**	.57**	—			
9. Positive affect	.40**	.08	.34**	.21**	.01	.23**	.12*	.14*	—		
10. Negative affect	.00	.06	−.25**	.08	.49**	.22**	.18**	.28**	−.21**	—	
11. Age	.04	−.03	−.04	.00	−.11	−.06	.00	.04	.10	−.09	—
12. Gender[a]	.03	.13*	−.13*	.14*	.04	.20**	.14*	.08	−.05	.00	.14*
M	4.92	3.10	3.20	3.14	1.90	2.37	3.22	3.10	32.09	16.09	40.20
SD	1.21	0.99	0.94	0.94	0.97	1.10	0.85	0.90	8.66	7.54	10.62
α	.97	.93	.90	.90	.83	.86	.82	.82	.92	.95	—

Note. $N = 246$. ART = Autobiographical Memory Recollection Test.
[a] Gender was coded as 0 = *men*; 1 = *women*.
* $p \leq .05$. ** $p < .01$.

[2] We examined the assumptions of Principal Component Analysis. The Kaiser–Meyer–Olkin test showed a value of 0.74 indicating good sampling adequacy (Kaiser, 1974). Likewise, Bartlett's test of sphericity, $\chi^2(45) = 868.8$, $p < .001$, indicated that correlations between scales were sufficiently large to warrant factor analysis (Field, 2013).

[3] See Analysis on age and gender in the online supplemental materials for further results.

dimensions as the full ART (see Table S1 in the online supplemental materials). This suggests a pattern of associations wherein more vivid, relevant, and coherent autobiographical memories are associated with more meaningful, memorable, vivid, positive, and pleasant dreams, but not with worry-based and fearful dreams.

Relationship Between Autobiographical Memory, Dreaming, and Affectivity

Table 1 shows that higher scores on the ART significantly correlated with a higher tendency toward positive affect and were unrelated to negative affect. Similarly, higher scores on five out of seven dream dimensions (positivity, recall, guidance, entertainment, and continuity) were associated with more positive affect. In contrast, dream apprehension was unrelated to positive affect, but positively correlated with negative affect, and dream significance was unrelated to affectivity.

The findings showing that the ART and five dream dimensions consistently correlated with positive affect indicate that the association between autobiographical memory and dreaming might be explained by shared variance with positive affectivity. To test the robustness of the relationships between the ART and the five dream dimensions when controlling for trait positive affect, we ran five multiple regression analyses (see Table S2 in the online supplemental materials). Results showed that the ART remained associated with four dream dimensions: recall, guidance, entertainment, and continuity, above and beyond positive affect (β values ranging from .25 to .52, all $ps < .001$), indicating that these associations were not driven by a general tendency toward positive affect. In contrast, the ART was no longer correlated with dream positivity when controlling for trait positive affect ($\beta = .08$). Not surprisingly, a disposition toward positive affect appears to explain substantial variance in people's tendency to experience positive emotional states in their dreams (i.e., dream positivity). We also examined whether dream recall was driving the relationship between the ART and the other dream dimensions, given a plausible involvement of shared retrieval processes. We ran a set of regression analyses (see Table S3 in the online supplemental materials) showing that the ART remained associated with four out of six dream dimensions even when controlling for dream recall (β values ranging from .17 to .25, all $ps < .01$), demonstrating that autobiographical memory and dream significance, positivity, entertainment, and continuity are associated over and beyond dream recall.

We next aimed to more systematically examine patterns of associations among the ART, each dream dimension, and affectivity, by conducting an exploratory factor analysis on the full set of scales. Principal factors extraction identified two factors with eigenvalues of 3.63 and 2.00, respectively (remaining eigenvalues < 1.0). Factor 1 accounted for 36.27% of the variance and Factor 2 contributed to an additional 19.75% of variance. The two-factor solution was obliquely rotated using the Oblimin method. Table 2 shows the rotated factor pattern with the loadings for the included variables, and Figure 1 shows the factors' plot in rotated space.

The ART, together with dream significance, recall, guidance, entertainment, and continuity loaded highly on Factor 1. These five dream dimensions refer to the tendency to experience dreams that are meaningful and involve personally relevant information about one's past, present, and future. Since the ART probes the tendency to frequently engage in autobiographical remembering with vivid and meaningful recollections, Factor 1 appears to reflect a general tendency to experience an

Table 2
Rotated Factor Pattern With Loadings Rank-Ordered for Each Factor

Scales	Factor 1	Factor 2
Dream significance	**.74**	.06
Dream recall	**.77**	.04
Dream guidance	**.74**	−.16
Dream entertainment	**.79**	−.07
Dream continuity	**.72**	−.26
ART	**.69**	.31
Positive affect	.37	**.51**
Negative affect	.20	**−.72**
Dream positivity	.14	**.72**
Dream apprehension	.31	**−.71**
	Interfactor correlation	
Factor 2	−.01	

Note. $N = 246$. Bold fonts indicate highest factor loadings. ART = Autobiographical Memory Recollection Test.

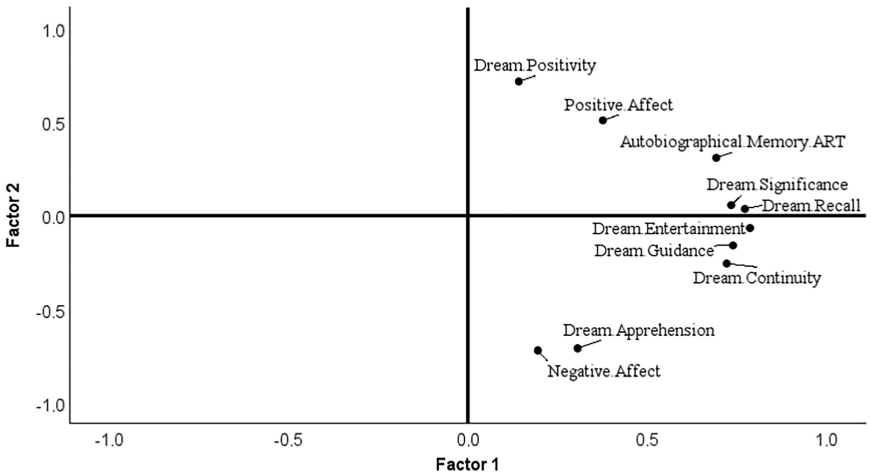
overarching quality of meaning-making out of personally relevant autobiographical memories and dreams.

Factor 2 consisted of positive and negative affect, and dream positivity and dream apprehension (i.e., the remaining dream dimensions). Both of these dream dimensions are clearly emotionally valenced. Consequently, Factor 2 appears to reflect an emotional valence component ranging from highly positive to highly negative emotional valence. Factors 1 and 2 showed a weak intercorrelation (Table 2).

Discussion

The present work addressed a critical gap in the literature by examining the association between autobiographical memory and dreaming at the level of individual

Figure 1
Factors' Plot in Rotated Space



Note. ART = Autobiographical Memory Recollection Test.

dispositions. We determined whether the way people generally experience their personal memories (as measured by the ART; Berntsen et al., 2019) was related to the way they generally experience their dreams (as measured by the IDEA, Beaulieu-Prévost et al., 2009). We also examined whether people's dispositions to positive and negative affect (as measured by the PANAS, Watson et al., 1988) influenced the relation between autobiographical memory and dreaming.

First, in line with our hypothesis and previous experimental research on the role of autobiographical memory in dreaming (Grenier et al., 2005; Malinowski & Horton, 2014a, 2014b; Wang et al., 2021), we found that individuals who report that they generally remember their past well and have vivid and clear recollections of the past (i.e., higher scores on the ART) were more inclined to experience their dreams as meaningful, vivid, entertaining, and as reflections of their past, present and future (i.e., higher scores on the IDEA dimensions of dream significance, recall, entertainment, guidance and continuity). These findings provide a new perspective on the relation of dreams to autobiographical memory by showing that not only does dreaming reflect the content of specific autobiographical memories, but also that the way people generally remember their personal past is closely associated with their general dream experiences. In short, people who think they remember their personal past well tend to report experiencing a richer dream life. This is in line with a previous study, which similarly showed that individuals with higher scores on the ART have a higher tendency to engage in spontaneous waking thoughts, such as unintentional mind wandering and positive-constructive daydreaming, but this study did not include measures of dreaming (Cárdenas-Egúsquiza & Berntsen, 2023). Because dreaming can be viewed as a type of spontaneous thought occurring during sleep (Fox & Christoff, 2018), the current findings, together with the findings from Cárdenas-Egúsquiza and Berntsen (2023), provide novel evidence in support of the notion that autobiographical memory is a key component process of spontaneous cognition in both waking life and sleep (Horton, 2017; Karapanagiotidis et al., 2017), and extend this notion to the level of individual differences.

Second, consistent with our hypotheses and prior findings (Cárdenas-Egúsquiza & Berntsen, 2023; Gehrt et al., 2023), we found that people with higher scores on the ART tended to report a higher tendency toward positive affect. Results were less clear regarding associations between dream experiences and affectivity, which is in line with previous conflicting results on dreaming and its relation to positive and negative emotions (R. Fosse et al., 2001; Valli et al., 2008). To more systematically examine patterns of association among individual differences in autobiographical memory, dreaming, and positive and negative affect, we ran an exploratory factor analysis. The two most clearly emotionally valenced dream dimensions (i.e., dream positivity and dream apprehension), together with positive and negative affect, separated from a factor that, we suggest, reflects a general tendency to seek meaning out of vivid and self-relevant autobiographical memories and dreams. This factor showed that the tendency to consider one's personal memories to be vivid, as well as coherent and relevant to one's life story and identity, was associated with the tendency to experience meaningful and self-relevant dreams. Given that people typically rely on their autobiographical memories to construct their sense of identity, life story, and meaning in life (Conway & Pleydell-Pearce, 2000), and that dreams often include fragments of personally relevant autobiographical memories (Wang et al., 2021), it might be that, for

some people, dreaming is an essential part of their identity, life story, and life meaning construction. This notion remains understudied and may be of interest for future work (Morewedge & Kupor, 2018).

The finding that the ART was unrelated to dream apprehension may have at least two explanations. One possibility is that dream apprehension reflects a more general tendency to avoid or be uninterested in one's inner stream of thought, which could thereby account for its observed lack of a relation with individual differences in autobiographical memory as measured by the ART (Berntsen et al., 2019). Another possible explanation is that these measures related very differently to affectivity and measures of psychological well-being. Indeed, while dream apprehension strongly correlated with negative affect in the current study and has shown associations with measures of psychological distress (Beaulieu-Prévost et al., 2009), the ART showed a strong correlation with positive affect in the present paper as well as in previous studies, where correlations with well-being have also been reported (Gehrt et al., 2023). Future studies should examine whether the ART and dream apprehension are related among patients with psychiatric disorders in which both autobiographical memory and dreaming are disrupted, such as in trauma- and stressor-related disorders (American Psychiatric Association, 2013).

The results of the present study should be interpreted with some limitations in mind. The findings are based on a single data collection and an online sample of MTurk workers, all residing in the United States. MTurk has demonstrated to produce reliable results when compared to other methods of data collection (Casler et al., 2013), and several precautions were taken to ensure high data quality (e.g., attention checks and preregistered criteria). However, we acknowledge that replications of the findings in different populations and contexts—such as nonwestern, educated, industrialized, rich, and democratic societies and cultures—are needed as cultural differences in autobiographical memory and dreaming have been reported (Musiol et al., 2022; Ross & Wang, 2010). Furthermore, the findings are based on self-report questionnaires, which might be viewed as a limitation due to potential problems associated with relying on intro- and/ or retrospective judgments answering such questionnaires.

Finally, we interpret our results as suggesting that individual differences in autobiographical memory influence the way people experience their dreams, and base this on the view that autobiographical memory supports dreaming. However, given previous work suggesting that dreaming involves consolidation of personally relevant information and past events (Horton & Malinowski, 2015; Wamsley & Stickgold, 2010), it seems likely that there exists a bidirectional relationship, whereby the tendency to experience dreams that include personally relevant content (such as past and present concerns) contributes to experiencing more-vivid autobiographical memories.

To conclude, here we found that people's general experience of their autobiographical memories, as measured by the ART (Berntsen et al., 2019), is reliably related to their individual dispositions to various dream experiences as measured by the IDEA (Beaulieu-Prévost et al., 2009), with the exception of the tendency to experience dream-related apprehensions or fears. By identifying such consistent associations, the current study extends research on the continuity hypothesis of dreaming to the fields concerned with individual differences.

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