Relationships between dream recall, motivation to remember dreams, and waking memory ability: A preliminary investigation

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Summary. Dream recall ability can vary between and within individuals, dependent on a number of influencing factors, including personality dimensions, number of nocturnal awakenings, and attitudes towards dreaming. Only a few studies, however, consider the possible connection of dream recall ability to general waking memory ability, or the influence of being motivated to actively remember dreams. The present survey-based study had two major aims: 1) To search for correlates and relationships between memory for dreams and memory for waking experience; 2) To address the effect of motivation on dream recall ability, split for both dream recall frequency (DRF) and dream recall detail (DRD). These questions were assessed in 57 participants who completed an online survey, consisting of questions from the Mannheim Dream Questionnaire (MADRE) and a memory exercise for an original short story. DRF and DRD were positively related, but showed different patterns of relation with the other measures. Of most interest, participants who reported high DRD also remembered the most details from the story, suggestive of an overlap between waking and dream recall ability. However, this relationship was non-linear, as the lowest memory score came from the intermediate DRD group, not the low DRD group, hence a non-significant correlation between DRD and score. DRF was unrelated to memory score, with no significant differences between high and low DRF groups, and no significant correlation between measures. This is likely due to the nature of the task being more compatible with memory for details. Correlations showed a consistent relationship between motivation and attitude measures, particularly the motivation to understand dreams. The most important points to be taken away from this study are: 1) there is apparent partial overlap between dream recall and waking memory for details; 2) being actively motivated to remember or understand dreams is an important variable to consider in future experiments; 3) and dream recall should be studied as its constituent parts of frequency and detail.

Keywords: Dream recall, motivation to remember dreams, waking memory ability

1. Introduction

Dream recall is the ability to remember dreams after awakening. It can vary quite widely from person to person, but it seems to be a relatively stable variable across periods of time (e.g., Lewis, Goodenough, Shapiro & Sleser, 1966; Schredl & Fulda, 2005; Watson, 2003). However, dream recall can also vary from night to night for the same person under certain conditions. For example, sleep deprivation can drastically reduce dream recall in subsequent recovery sleep (De Gennaro et al., 2010), dream recall rates differ depending on the sleep stage awoken from (Nielsen, 2000), and dream recall also seems to naturally decline with age (Giambra, Jung & Grodsky, 1996; Nielsen, 2012; Schredl & Göritz, 2015). Some researchers have attempted to discover the reasons for these inter-individual differences. One such attempt is the comprehensive model of Schredl, Wittman, Ciric & Götz (2003), which addresses many state and trait factors, and here, the factors which correlated significantly with Dream Recall Frequency (DRF) were attitudes towards dreams, frequency of nocturnal awakenings, creativity, and personality (specifically, openness to experience, thin boundaries, and absorption).

Some of these factors have been investigated more specifically. A greater frequency of nocturnal awakenings will result in higher dream recall, as shown in controlled awakenings taking place in a sleep laboratory, particularly in Rapid-Eye Movement (REM) sleep when the dream recall rate is much higher than for stages of non-REM sleep post awakening (Aserinsky & Kleitman, 1953; Dement & Kleitman, 1957; Goodenough, Lewis, Shapiro, Jaret & Sleser, 1965; Nielsen, 2000).

As for personality differences in DRF, results are mixed. Earlier studies (e.g., Hill, 1974; Tart, 1962), were able to identify specific personality differences, but as work and knowledge has progressed and more variables have been discovered, more recent studies have failed to find convincing personality correlates (Blagrove & Akehurst, 2000; Cory, Ormiston, Simmel & Dainoff, 1975; Farley, Schmuller & Fischbach, 1971; Levin, Fireman & Rackley, 2003; Schredl, 2005; Tonay, 1993), and instead cite a positive attitude towards dreaming as being a more robust predictor of DRF.

A positive attitude towards dreams is often seen to positively correlate with DRF (e.g., Robbins & Tanck, 1988; Schredl, Nürnberg & Weiler, 1996). This could easily be a two-way influence, as mentioned in a large-scale non-student survey of dreaming attitudes by Schredl (2013), in that recalling positive dreams may lead to greater enjoyment of

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them, and enjoying them may be an encouragement to remember more. However, the scale used to measure these attitudes has been shown to affect responses, specifically if the attitude measures contain reference to the respondent's own dream recall ability; if they do not contain such reference, the correlation coefficients are smaller (Schredl, Brenner & Faul, 2002; Schredl et al., 2003). Therefore, attitudes and DRF should ideally be measured independently using separate scales so they do not affect one another. Something else to keep in mind, also mentioned in Schredl's (2013) non-student sample study, is that many dream attitude studies use Psychology students as their samples, and such participants may have a higher than average interest in dreams from the start, while the general population has more negative attitudes, creating generalisation issues.

Related to DRF and dreaming attitudes is the social sharing of dreams, i.e., telling others about one's dreams. The obvious link is if one's DRF is very low or non-existent, the likelihood of sharing dreams is also correspondingly low, as there are less to share. However, when dreams are shared with other people, it is usually for the purpose of entertainment (Olsen, Schredl & Carlsson, 2013; Vann & Alperstein, 2000), and the emotionally intense ones, such as nightmares (Schredl & Schawinski, 2010), which are shared most often (Curci & Rimé, 2008). There is even some belief, backed up by empirical and anecdotal evidence, that sharing dreams may benefit the intimacy and satisfaction of interpersonal relationships with important others, such as spouse and parents (Bachner, Raffetseder, Walz & Schredl, 2012; Duffey, Wooten, Lumadue & Comstock, 2004; Olsen et al., 2013).

Gender seems to be strongly related to dreaming variables; it has been repeatedly shown that women both recall their dreams (Olsen et al., 2013; Schredl, 2002; Schredl & Reinhard, 2008) and share their dreams (Olsen et al., 2013; Schredl, Henley-Einion & Blagrove, 2016; Schredl, Kim, Labudek, Schädler & Göritz, 2015; Schredl & Schawinski, 2010) more often than men do. The exact reasons for this gender difference still are not entirely clear, but it may have something to do with personality factors or attitudes towards dreams. However, the effect sizes of these gender differences are smaller in children (Schredl & Reinhard, 2008), and this has prompted a recent hypothesis to emerge that individuals may learn their dream attitudes and socialisation processes in regards to their gender in childhood (Bachner et al., 2012; Schredl, Buscher, Haaß, Scheuermann & Uhrig, 2015).

However, the four significant factors in Schredl et al.'s (2003) model together accounted for only 8.4% of the variance, suggestive that there may exist other important influencing factors that were not included in the model. One such possible factor, that has received much less attention universally, is the evidence that it is possible to purposely increase one's dream recall with effort and training. Some studies endorse dream recall as a learnable skill, and have shown that it can be done successfully with the right training methods, but the most important prerequisite to increasing DRF is having the positive attitude towards dreams and the motivation to want to remember them (Halliday, 1992; Redfering & Keller, 1974; Reed, 1973; Rochlen, Ligiero, Hill & Heaton, 1999). With this knowledge in mind, it is perhaps more likely that personality variables influence the attitudes one has towards dreams (e.g., Schredl et al., 2002), and these attitudes may then affect an individual's motivations to remember their dreams, rather than DRF itself. Therefore, theoretically, a person who is more motivated to remember their dreams will likely employ more methods to achieve that goal; having the right attitude may not be enough by itself to elicit high DRF, and the individual may have to effortfully work towards the goal of remembering dreams.

Another issue to take into account is that dream recall can be separated into constituent components, namely frequency and detail. This is an important definitional issue to address, as to what exactly is meant when dream researchers use the term dream recall. The case to distinguish these two aspects of dream recall is made by Wolcott and Strapp (2002), and later supported by Schredl (2009) and Horton and Conway (2009), who identified differential associations with the commonly studied variables and aspects of dream recall. It is entirely possible, for example, for someone to remember dreams on a regular basis, but recall little of what happened in them, or conversely, one may remember very detailed dreams but not very frequently. However, while many attempts have been made to measure DRF as accurately as possible, for example through the use of daily dream logs and retrospective questionnaires, measuring DRD is much more challenging, as there is currently no way of externally verifying the accuracy of dream reports in regards to the dreams they refer to, or to measure unremembered parts of a dream. It all relies on what the dreamer can remember and explicitly describe, and there are several ways in which a dreamer may confabulate or fabricate parts of dreams, intentionally or otherwise (Rosen, 2013). Since dreams are always recounted when awake, the influence of waking memory ability most likely plays a role in the dream recalling process.

There are cognitive and experiential similarities between the states of wake and sleep. For example, the Continuity Theory of dreaming (Domhoff, 2017; Schredl, 2003) offers that there is a continuation in the thought patterns, personal concerns, events and experiences from our waking life into dreams, and vice versa to an extent as well. Important events that happen to us in waking life and their associated cognitive concerns and preoccupations may sometimes appear in subsequent dreams in 'day residue' and 'dream lag' forms (e.g., Blagrove et al., 2011; De Koninck, Prévost & Lortie-Lussier, 1996; Dement, Kahn & Roffwarg, 1965; Schredl, 2003; 2006; 2008; van Rijn et al., 2015). Not only that, but there is also evidence recently published that demonstrates overlap on the neurobiological level, likening dreaming to a sleep-state equivalent of wake-state mind wandering (Fox, Nijeboer, Solomonova, Domhoff & Christoff, 2013; Graveline & Wamsley, 2015). For example, the brain areas which are active during the performance of a specific activity in waking also show similar activation patterns when that activity is being dreamt about too (Dresler et al., 2011; Siclari et al., 2017). This suggests that the brain and mind states are more equivalent across sleep and wake than perhaps first believed.

When it comes to memory processes, there is neurological (De Gennaro, Marzano, Cipolli & Ferrara, 2012) and electrophysiological (Scarpelli et al., 2015; 2017) evidence that the mechanisms involved in episodic and declarative memory encoding and retrieval are the same, or at the very least similar, across wake and sleep. Behavioural findings by Horton (2011a) demonstrate that dreams can overall be remembered as well as waking events as long as they are encoded well, such as in a diary format, and that both can be similarly susceptible to rehearsal effects (Horton, 2011b).

Taking it further, Horton (2014) also provides evidence that personality and cognitive traits may inform a personality and life style which leads to awareness of one's experiences overall, dreams included, and that such a profile may also facilitate confabulation when reporting experiences. Meanwhile, Beaulieu-Prévost and Zadra (2015) show that dream memories can sometimes become confused with autobiographical waking memories, and may even become false memories. An older study by Cory et al. (1975) found a relationship between dream recall ability and waking visual memory ability. This is all suggestive that the cognitive and retrieval processes for both waking events and dreams are somewhat similar and possibly involve the same memory systems and processes. Therefore, dreams may also be viewed as a kind of memory.

This has already been tested to an extent, and an example is the research on memory for colours in dreams. Some studies have searched for whether the proliferation of dreams that lack colour is related to lesser memory ability, with generally favourable results. For example, Schredl, Fuchedzhieva, Hämig and Schindele (2008) found that colour memory is negatively related to the percentage of black and white dreams, and that colours are most highly remembered when the dream was elicited directly after waking. In contrast, Murzyn (2012) found no relationship with colour memory; instead, there were significant relationships between the frequency of coloured dreams remembered and the tendency to visualise detailed and coloured images. One more intriguing and unexpected finding by Bloxham and Durrant (2014) was that one participant who reported only ever dreaming in black and white before was able to start dreaming in colour for the first time by following the dream recall training instructions they were given. Though it was not possible to probe this finding in more detail, it was likely an effect of actively paying more attention to their dreams in the preliminary dream recall training exercise, and their memory for dream details began to improve.

One of the aims of the present study was to search for more cognitive determinants of the naturally occurring individual differences in dream recall ability, specifically targeting waking memory ability. It asks the question: will people who report a higher dream recall also exhibit higher recall for waking-life events? In other words, are waking memory and dream memory equivalent? Based on the previous research already described, it is hypothesised that there will be a relation, in that people who display better memory during their waking state will also report better dream recall than those of lesser memory ability. Therefore, we predict that people who have better general memory in their waking state will also report better memory for their dreams.

The second aim was to quantitatively assess the relationships between the commonly studied dream recall variables and motivation to understand and remember dreams, predicting, based on prior qualitative research (e.g., Reed, 1973), that those who report higher levels of motivation will report greater dream recall ability. We believe motivation to be an important variable that should be considered, and may modulate the previously discovered relationships with the other established dreaming variables, such as attitudes towards dreams. To assess these questions, dream recall ability is divided into frequency (DRF) and detail (DRD), as recommended by Wolcott and Strapp (2002).

2. Method

2.1. Participants

A total of 57 participants completed an online survey (11 male, 46 female, mean age = 23.7 years, range: 18–60). The majority were Psychology students (undergraduates and postgraduates) recruited at Swansea University from March to April 2016, who received course credit for their participation, while some others volunteered freely for no reward. No recruitment requirements or exclusion criteria were employed, and no personal details about participants were collected apart from their age and gender; all other data was anonymous.

2.2. Materials

An original fictional narrative (2143 words) was written specially for this study, in the style of a historical saga, and 16 questions focussing on specific details in the story were asked of participants. The questions were designed to be challenging and to require attentive reading to pick up on, and asked for explicit declarative details in the story like names of cities or places, or dates of important events, but all answers could be found explicitly mentioned in the text.

A dream recall and attitudes questionnaire was devised, incorporating questions from the English version of the Mannheim Dream Questionnaire (MADRE; Schredl, Berres, Klingauf, Schellhaas & Göritz, 2014), a comprehensive dream recall questionnaire. The questions chosen from the MADRE included dream recall frequency (7-point Likert scale), attitudes towards dreams (8 x 5-point Likert scales), dream sharing frequency (8-point Likert scale), who dreams are shared with (8-option ticklist, with 2 text boxes to elaborate on the 'others' option, and purposes for sharing dreams with other people), and specific beliefs/theories about dreams (open-response text box). For the purpose of the present study, some new questions were devised, adapted from the MADRE questions, to assess motivation to remember and understand dreams and dream recall detail. The motivational questions were adapted from the MADRE's scales that measure attitudes to dreaming, and were in the form of a 5-point Likert scale (1 = Not at all motivated; 2 = Not that much; 3 = Somewhat motivated; 4 = Quite motivated; 5 = Very motivated). The dream recall detail measure was in the form of a visual analogue scale, and participants had to drag a pointer along a line and place it where they thought most represented their dream recall detail ability, ranking it between 0–100%. At either ends of the line were the pole values of Wolcott and Strapp's (2002) dream recall detail scale (left end (0%)= *I can't recall any details from the dream*; right end (100%) = *I can recall the entire dream in detail*).

2.3. Procedure

Ethical approval for this study was obtained from the Ethics Committee of the Psychology Department, Swansea University.

This study was conducted in the form of an online survey. A web link was coded using WebQuest, a survey creation tool designed by Neil Carter, Swansea University. After giving informed consent, participants were first required to input age and gender, and were then shown a page that contained the following instructions: *"When you click the NEXT*

button at the bottom of the page, you will be taken to a story. You will have 20 minutes to read through it. After 20 minutes, it will disappear, and then you can move on by pressing the NEXT button. Please try to spend the full time familiarising yourself with as much of the story as possible before moving on, as you will be tested on your recall for it later. However, if you feel you have prepared yourself enough, you may move on early by pressing the NEXT button at the bottom of the page. When you are ready to begin reading the story, please click NEXT below." The story was on the following page, accessed when participants clicked the NEXT button, and it remained onscreen for a maximum 20 minutes before disappearing. Participants were encouraged to spend the full 20 minutes familiarising themselves with the story, but were allowed to move on to the next stage if they felt ready.

The next page bore the dreams questionnaire, containing questions from the MADRE, in the form of Likerts, ticklists, a slider, and a few comment boxes for open-ended responses about beliefs about dreams (see Materials section above). This answering stage was not timed.

The last page of the procedure asked 16 questions about details in the story, and participants had to type in their responses to each. This answering stage was not timed. Once this was done, participants were shown the debrief page, with contact details for the experimenters if they wished to know more, they were thanked for their participation.

2.4. Analysis and Scoring

Each participant was given a total score on the memory test, 1 point per question answered correctly, and their answers were judged against the wording in the story. Some lenience was allowed, and half a point was given for half-correct answers. For example, one question asked *Which city was most powerful?* The correct answer was *Metros*, so this was worth one point if given by participants. If the answer seemed along the correct lines but was spelled incorrectly (e.g., one participant gave the answer *Meteros*), then this was given half a point. An example of incorrect answer given by one participant is *Kur'rech*, which is a misspelling of one of the other city's names, and this was given no points. Most of the questions asked for names and dates from the story in this way, but an example of a slightly more complex question is *What did the cities fight over in the ensuing war?* The correct answer was Materials in the mountains, and participants who gave this exact answer or one that had an equivalent meaning (e.g., "the riches in the mountains", "kher'rechs mountains wealth") were accepted and given one point. Examples of half-correct answers that were given half a point are "about resources", "the mountain/crystals", "wealth".

The entire story and the questions that were asked (with their correct answers) are provided in the Appendix.

For comparative analyses of test score, participants were split into two sets of groups, based on their dream recall frequency (low recall = 'About once a month' or lower; intermediate recall = 'two to three times a month' to 'about once a week'; high recall = 'Several times a week' or higher) and dream recall detail (low recall = 33% or lower; intermediate recall = 66–34%; high recall = 67% or higher). Correlations and ordinal regressions were also performed between dream recall measures and the other dreaming measures.

Table 1. Distribution of dream recall measures across the sample

Dream Recall Frequency	No. of counts	Average DRD	Percentage of sample
Almost every morning	4	80.3%	7.02%
Several times a week	17	64.69%	29.83%
About once a week	15	52%	26.32%
About 2 to 3 times a month	10	53.1%	17.54%
About once a month	4	26%	7.02%
Less than once a month	5	40.75%	8.77%
Never	2	70.5%	3.51%

DRD = dream recall detail

3. Results

Seven participants did not provide a response for their level of dream recall detail, therefore all calculations involving this variable come from 50 respondents.

3.1. Dream Recall, Attitudes and Sharing descriptives

Distribution of dream recall variables are displayed in Table 1. As can be seen, a total of 21 participants (36.85% of the sample) reported remembering their dreams several times a week or higher, thereby classified as high recallers; 25 (43.86%) in total remembered dreams between once a week and 2 to 3 times a month, making them intermediate recallers; and the remaining 11 (19.3%) were low recallers. Of the 50 participants who gave a DRD response, 21 (42%) were classified as high recallers, 19 (38%) were intermediate, and 10 (20%) were low. DRF scores significantly correlated with DRD scores (r_s = .349, p = .013), demonstrating that those who remember their dreams more often also usually remember more detail from their dreams.

Table 2a exhibits the reported frequencies of dream sharing in the sample. Most participants (68.94%, N = 45) reported sharing their dreams at least once a month or more frequently, and the people with whom the dreams were most often shared (Table 2b) were friends (75.44%, N = 43), followed by parents or other relatives (54.39%, N = 31) and partners (52.63%, N = 30). The most frequently cited reason for sharing dreams (Table 2c) was by far for entertain-

Table 2a. Distribution of dream sharing frequency across the sample

Dream Sharing Frequency	No. of counts	Percentage of sample
Several times a week	1	1.75%
2 to 3 times a week	7	12.28%
About once a week	16	18.07%
About once a month	21	36.84%
About 2 to 4 times a year	7	12.28%
About once a year	0	0.00%
Less than once a year	3	5.26%
Never	2	3.51%

Table 2b. Who dreams were shared with across the sample

Persons	No. of counts	Percentage of sample
Friends	43	75.44%
Parents or other relatives	31	54.39%
Partner	30	52.63%
Colleagues	2	3.51%
My children	2	3.51%

Note: participants could select more than one option. Zero counts are not included.

ment purposes (77.19%, N = 44), followed by interpretation or getting opinions or a better understanding (24.56%, N = 14).

Table 2c. Reasons for sharing dreams across the sample, drawn from their open-ended responses

Reasons for dream sharing	No. of counts	Percentage of sample
Entertainment/enjoyment/ funny/bizarre/interesting	44	77.19%
Better understanding/interpretation/getting opinions	14	24.56%
Involved recipient of shared dream	5	8.77%
Shared interest with recipient	4	7.02%
Emotionally strong	3	5.26%
Remember more/ aid recall	2	3.51%
Comfort	2	3.51%

Note: participants could describe more than one reason.

3.2. Dream Recall and Memory score

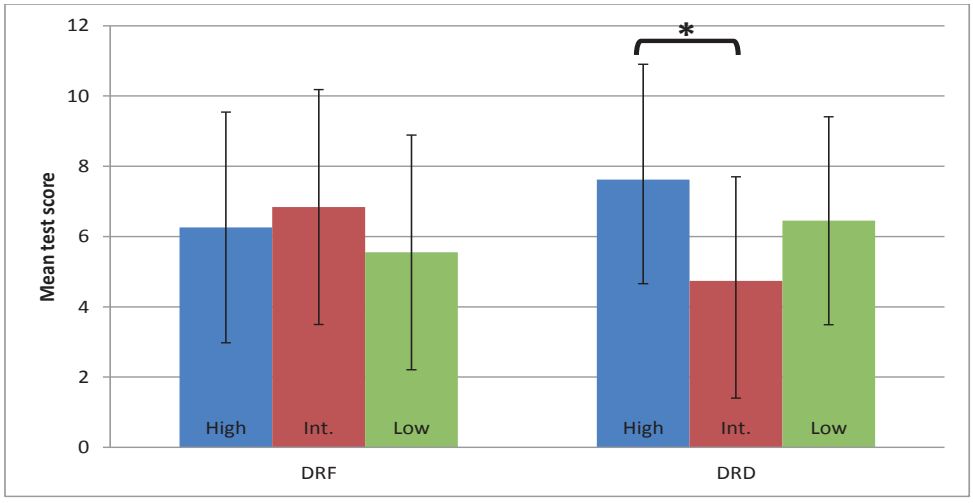
In order to answer the question of whether dream recall is associated with waking memory, correlations and t-tests were performed on the scores participants achieved on the story recall task and their dream recall measures. Splitting the sample into DRF groups of high (N = 21), intermediate (N = 25) and low (N = 11) recall and conducting a one-way between-subjects ANOVA did not yield any significant difference on memory score ($F < 1$; High: $M = 6.26$, $SD = 3.28$, Intermediate: $M = 6.84$, $SD = 3.34$, Low: $M = 5.55$, $SD = 4.11$), nor was there any significant correlation between score and DRF ($r_s = .056$, $p = .677$). However, when splitting the sample into DRD groups of high (N = 21), intermediate (N = 19) and low (N = 10), a one-way between-subjects ANOVA revealed a significant difference ($F_{[2,47]} = 4.121$, $p = 0.02$), but a Tukey post-hoc test ($p = .017$) revealed that the only significant difference was between the high DRD group and the intermediate DRD group. Therefore, the high detail recallers achieved the highest average score ($M = 7.62$, $SD = 2.96$), and the intermediate detail recallers achieved the lowest ($M = 4.74$, $SD = 2.96$). There were no significant differences where the low detail group was concerned ($M = 6.45$, $SD = 3.97$), and no significant correlation between score and DRD ($r_s = -.016$, $p = .912$) when DRF was partialled out (see below). Because the low and intermediate groups did not significantly differ from each other, they were combined into a single group for further exploration and compared against the unchanged high group, and there was still a significant difference ($t_{[48]} = 2.494$, $p = 0.016$; High: $M = 7.62$, $SD = 2.96$; combined Low and Intermediate: $M = 5.33$, $SD = 3.37$). Scores are summarised visually in Figure 1.

3.3. Differences between recallers

Gender differences in dream recall, dreaming attitudes and sharing frequency were examined. Contrary to the much-replicated finding that females remember their dreams more often than males, our differences were not significant for either DRF (U = 226.5, p = 0.582) or DRD (U = 145.5, $p = 0.106$). However significant gender differences were found for dream sharing frequency (U = 94, $p = 0.001$), amount of interest in dreams (U = 160, $p = 0.046$), the desire to know more about dreams (U = 139, $p = 0.013$), and motivation to remember dreams (U = 124.5, $p = 0.007$); on average, females reported significantly higher responses in all of these measures than males.

Participants who reported a higher DRF were more likely to share their dreams with others; this is shown by the

Figure 1. Mean test scores displayed by dream recall group



**Significantly different at p<0.05 (two-tailed)*

Table 3. Partial correlations between Dream Recall Frequency, Dream Recall Detail, Dream Attitude measures and Dream Sharing Frequency

Variable	DRF	DRD
How much meaning do you attribute to your dreams?	.238	.086
How strong is your interest in dreams?	–.014	.348*
I think that dreams are meaningful.	.153	.172
I want to know more about dreams.	–.071	.321*
If somebody can recall and interpret his/her dreams, his/her life will be enriched.	.024	.256
I think that dreaming is in general a very interesting phenomenon.	–.053	.235
A person who reflects on his/her dreams is certainly able to learn more about her/himself.	–.021	.297*
Do you have the impression that dreams provide impulses or pointers to your waking life?	.110	.083
How motivated are you to remember your dreams?	.032	.364*
How motivated are you to understand your dreams?	.191	.139
How often do you tell your dreams to others?	.169	.276

*Significant at p<0.05 (two-tailed)
DRF = Dream Recall Frequency; DRD = Dream Recall Detail

significant correlation between DRF and DSF (r_s = .436, p = 0.001), and a significantly higher average score on the DSF scale (high = 5.58; low = 4.43; U = 173.5, p < 0.001). High detail recallers had higher DRF (High = 4.86; Low = 2.92; U = 59, p = 0.048), were more highly motivated to remember their dreams (High = 3.57; Low = 2.5; U = 54.5, p = 0.026), and shared their dreams to others more often (High = 5.33; Low = 3.9; U = 56.5, p = 0.034) than low detail recallers. High and intermediate detail recallers did not significantly differ from one another in any of these measures.

3.4. Correlational findings

DRF and DRD exhibited different patterns of association with the attitudinal and motivational measures. DRF was significantly and positively correlated with meaning attributed to dreams (r_s = .317, p = 0.017) and dream sharing frequency (r_s = .436, p = .001); while DRD significantly and positively correlated with interest in dreams (r_s = .280, p = .049) and motivation to remember dreams (r_s = .313, p = .027). However, because DRF and DRD were significantly and positively correlated with each other (r_s = .349, p = .013), partial correlations were performed to control for their influences (summarised in Table 3). As a result, the correlations of DRF with meaning attributed to dreams (r_s = .238, p = 0.104) and dream sharing frequency (r_s = .169, p = 0.252) were no longer significant when the influence of DRD was controlled. The correlations of DRD with interest in dreams (r_s = .348, p = 0.015) and motivation to remember dreams (r_s = .364, p = 0.011) were actually slightly strengthened when the influence of DRF was controlled, and additionally, the correlations with wanting to know more about dreams (r_s = .321, p = 0.026) and learning more about the self through reflecting on dreams (r_s = .297, p = 0.041) became significant at the p < 0.05 level.

Associations with the motivational measures were a lot stronger and more consistent. Both motivation to remember and understand dreams correlated positively and significantly with all of the attitudinal measures, the only exception being motivation to understand dreams with dream sharing frequency (r_s = .135, p = 0.316). Again, because both motivational measures correlated with each other strongly and positively (r_s = .705, p < 0.001), partial correlations were performed to control for their influence on one another (summarised in Table 4). As a result, only the correlations of motivation to remember dreams with interest in dreams (r_s = .432, p = 0.002), the belief that dreams are meaningful (r_s = .404, p = 0.004), the desire to know more about dreams (r_s = .395, p = 0.005), and dream sharing frequency (r_s = .307, p = 0.034) remained significant, albeit not as strong, when motivation to understand dreams was controlled. The correlation of motivation to remember dreams with DRD also remained significant (r_s = .351, p = 0.015). The correlations of motivation to understand dreams with all of the attitudinal measures remained significant, albeit not as strong, except for the belief that dreaming is in general a very interesting phenomenon (r_s = .282, p = 0.052), which rose to just above the p < 0.05 level of significance. The correlation of motivation to understand dreams with dream sharing frequency remained non-significant (r_s = -.064, p = 0.663).

To further investigate which variable contributed most to DRF, an ordinal regression was carried out. It revealed that an increase in DRD was significantly associated with an increase in the odds of reporting high DRF (Wald $\chi^2_{[1]}$ = 11.218, p = 0.001), adding further complementary support to their significant correlations. Additionally, motivation to understand dreams was a stronger predictor of DRF than motivation to remember dreams; notably,

Table 4. Partial correlations between Motivation to Remember Dreams (MRD), Motivation to Understand Dreams (MUD), Dream Attitude measures and dream sharing frequency

Variable	MRD	MUD
How much meaning do you attribute to your dreams?	.151	.349*
How strong is your interest in dreams?	.432**	.332*
I think that dreams are meaningful.	.404**	.436**
I want to know more about dreams.	.395**	.512***
If somebody can recall and interpret his/her dreams, his/her life will be enriched.	.235	.325*
I think that dreaming is in general a very interesting phenomenon.	.199	.282
A person who reflects on his/her dreams is certainly able to learn more about her/himself.	.228	.320*
Do you have the impression that dreams provide impulses or pointers to your waking life?	.231	.315*
How often do you tell your dreams to others?	.307*	-.064

*Significant at p<0.05 (two-tailed), **Significant at p<0.01 (two-tailed), ***Significant at p<0.001 (two-tailed)
MRD = Motivation to Remember Dreams; MUD = Motivation to Understand Dreams

the odds of people who were very motivated to understand their dreams to report high DRF were higher than those who were not at all motivated to understand their dreams (Wald $\chi^2_{[1]} = 7.677$, $p = 0.006$), whereas the same pattern was not seen in the motivation to remember dreams (Wald $\chi^2_{[1]} = 0.253$, $p = 0.615$).

Similarly, a multiple regression analysis was attempted to determine which variable predicted DRD. Even though the model was not significant ($F_{[12,36]} = 1.853$, $p = 0.076$, $R^2 = 0.382$), memory score did emerge as a significant positive predictor ($t = 2.313$, $p = 0.027$), suggesting that general waking memory ability (as measured in this task at least) does predict the ability to remember dream details.

4. Discussion

One of the aims of the present study was to search for waking correlates of dream recall ability, predicting that those who better remembered a waking life experience (measured here by memory of details from a short story) would also report greater dream recall ability. There was no correlation between dream recall frequency (DRF) and memory performance. However, participants who reported high dream recall detail (DRD) remembered the most details from the story; this is suggestive of at least some overlap between the ability to remember details from dreams and details from waking life. However, in contrast, the low DRD group did not achieve the overall lowest score; the intermediate group did, resulting in the only significant difference to be between high and intermediate DRD groups, and this pattern most likely contributes to the non-significant correlation between DRD and memory score. The reasons why the intermediate group performed less well than the low group are not entirely clear, but it is worth considering the way in which the participants were grouped regarding their DRD. Perhaps a different method may be used, for example, splitting groups based around the sample mean. However, when the intermediate and low DRD groups were combined together, there was still a significant difference with the high DRD group, which still had the highest memory score. Also, we must consider the possible confound of dream length (shorter dreams will presumably contain less details) and the ability to know if there were unremembered parts of the dream. It would be better perhaps to first attempt to replicate this finding, as generalisations cannot be made from a single test.

Meanwhile, there were no significant differences when the same sample was split into high and low DRF groups; they performed almost identically. This suggests that general waking memory and the actual frequency of dream recall are independent of each other, and the non-significant correlation between memory score and DRF lends further support to this interpretation. However, it could be that the nature of the memory test presently employed is much better suited for comparing DRD than DRF; retrospectively recalling details from a story that was read a few minutes ago may be more equivalent to remembering details from a dream a few minutes after waking from it, than merely trying to remember if a dream happened or not. Perhaps a different kind of test is required when looking for waking parallels of DRF; an example task could be a simple yes/no response to specific activities that were done during the day.

To really discover if waking memory ability is related to dream recall ability, it would be interesting to carry out a study wherein participants are trained on their memory for waking events and experiences, in a similar manner perhaps to how they may be trained on their dream recall (Reed, 1973), and if this helps them to remember more of or from their dreams. If it does, then this may provide an extra training method for those who wish to remember their dreams more often and/or in more detail, by practicing their general memory in waking.

Nevertheless, the above findings demonstrate that there are differences between the detail and frequency dimensions of dream recall, both in relation to waking memory and to other dreaming variables, discussed next. DRD and DRF correlated with one another, suggestive that those who remember dreams more often also remember more details from them, but there were some anomalous findings. Most notably, the two participants who reported never remembering their dreams reported their DRD at around 70%. It may still be valid if it is assumed that they answered the question as instructed, for it asked what their dream recall has been like in the past several months; they may not have recalled any dreams in this time period, but may know what their DRD is like from dreams they remember from before the past several months. This cannot be confirmed to be the case, however, and remains speculation. To avoid this issue in future, it may be advisable to use a different research tool, such as dream diaries for example, which can elicit data on both DRF and DRD in a prospective rather than a retrospective manner. The methodological shortcomings and implications of such methods are discussed in more detail later.

When controlled for the effects of DRF, DRD was significantly associated with greater interest in dreams, wanting to know more about dreams, believing that reflection on dreams can help to learn more about the self, and motivation to remember dreams. This paints an image of people with high DRD generally being more invested in their dreams. DRF was not significantly correlated with any of the attitudinal or motivational measures once the effect of DRD was controlled. Doing this resulted in some results that contradict previous findings. For example, the present study failed to replicate the much-cited finding that females report dreaming significantly more often than males (e.g.: Olsen et al., 2013; Schredl, 2002; 2010; Schredl & Schawinski, 2010); in this study there were no significant differences between genders in DRF, nor with DRD, suggesting that the gender difference is not so robust or widespread as previously thought. Most of the present sample was female, which is typical of the samples of Psychology studies (Richmond, Broussard, Sterns, Sanders & Shardy, 2015). The present study did, however, replicate the finding that females shared their dreams more often than males (e.g.: Olsen et al., 2013; Schredl & Schawinski, 2010; Vann & Alperstein, 2000), and that females reported significantly higher scores on some of the dreaming attitude measures, specifically: a higher amount of interest in dreams, a greater desire to know more about dreams, and a greater motivation to remember their dreams. Further, DRF has previously been seen to correlate with dream sharing frequency (e.g.: Schredl, Fröhlich, Schlenke, Stegemann, Voß & De Gioia, 2015; Schredl & Schawinski, 2010), and it did in the present study too until DRD was partialled out; therefore, this result advises caution be taken when examining the relationships between DRF and dream sharing frequency, as DRD may also have an effect. These observed differences add support to the claim made by Wolcott and Strapp (2002) that these two dimensions of dream recall should be studied separately,

especially DRD, which in the present study had stronger correlations with the other measures than did DRF.

By far the most frequently cited reason for sharing dreams with others was for entertainment purposes (e.g.: Olsen et al., 2013; Vann & Alperstein, 2000). This was followed by trying to understand them better, reported by about a quarter of the present sample, but it is curious that the dream sharing frequency measure was not significantly correlated with motivation to understand dreams, therefore these two forms of data are not complementary. Instead, motivation to remember dreams correlated with dream sharing frequency; therefore sharing dreams may be a motivated attempt at trying to remember them better, or conversely, that people who have more of a desire to share their dreams will work harder to try and remember some they can share. Motivation to understand dreams, on the other hand, was more consistently correlated with the attitudinal measures, specifically those that relate to active engagement with dreams in waking life, such as how much meaning is applied to them, how much interest is held, and interpreting, reflecting, and believing that dreams can provide some pointers in waking life. It seems likely that people who hold these beliefs will spend more time thinking about and pondering their dreams during waking, searching for the meanings and pointers they believe they hold.

The motivational measures currently employed proved to be insightful, and turned out to be more consistently and robustly related to dreaming attitude measures than dream recall measures, particularly the motivation to understand dreams. These findings lead to the interpretation that even if someone may think positively about dreaming, this in itself is not enough to ensure good rates of dream recall; they also need to feel motivated to remember and understand their dreams, and will presumably employ some technique to actually achieve that, such as writing them down every morning, for example. Whether participants engaged in any such activities, however, was not addressed in the present survey, so this cannot be confirmed, and it is a recommendation for future research. Nevertheless, these results demonstrate the importance of motivational variables when studying dream recall, and it is recommended to include measures of motivation in future research. To obtain a more complete picture of their effects, perhaps they may be applied to non-student samples too, which seem to have an overly more negative attitude toward dreams (Schredl, 2013); under current rationale, we would predict such samples to be less motivated to remember or understand their dreams.

The sample in the experiment was comprised mostly of young adults under the age of 30. Because dream recall rates are known to change across the lifespan (Giambra, Jung & Grodsky, 1996; Nielsen, 2012; Schredl & Göritz, 2015), the results of the present experiment may not be generalised to older populations. It may be possible, if dream and waking memory are related, that there would be a general decrease in waking memory alongside the decrease in dream memory as one gets older. With only 3 participants older than 50 in the present sample, there is not enough data to investigate this in the present experiment, but this could be an interesting question to investigate in future.

Some methodological points need to be raised. Retrospective self-report questionnaires were used to measure dreaming variables, and it is possible that these may not represent true dream recall ability, but rather participants' own perceptions of their ability (Beaulieu-Prévost & Zadra, 2007), which tends to be underestimated (e.g., Aspy, 2016; Robert & Zadra, 2008; Zadra & Robert, 2012). Their actual dream recall ability would be harder to measure accurately and validly; dream journals may be used, for example, but these have been shown to increase dream recall merely by keeping one, especially for those who report low dream recall to begin with (Aspy, 2016; Cory et al., 1975; Schredl, 2002). Combining dream diaries with questionnaires may be wise thing to do, as scores on both tend to correlate with each other (Zadra & Robert, 2012) but are not always equivalent (Aspy, 2016), and may be used to compare how close participants' perceptions of their dream recall ability are to their measured ability. Not to mention, these beliefs and abilities may fluctuate over time with regards to the known state factors of dream recall (Schredl et al., 2003). Therefore, to be safe, a perhaps more accurate conclusion to be drawn from our memory score data is that *participants who remembered the most details from the story also believed themselves to remember more details from their dreams, at this particular moment in time.*

This is also worth considering when addressing the results from the methodologically similar study conducted by Horton (2014), who also assessed waking memory in the form of recalling a previously-read short story. She found that awareness of dreams was significantly correlated with confabulation rates in story recall, leading to the idea that those of a certain personality profile may have a greater tendency of confabulating their dream experiences, as well as other experiences in general. This may also be the case in the present study, especially since dream recall was measured retrospectively using questionnaires, and this again emphasises that what was really measured here was individuals' beliefs about their own dream recall abilities, using a waking memory measure as a more objectively-measured parallel. A difference between the present study and Horton (2014), however, is the way in which story recall was measured. Horton (2014) segmented the story into 'idea units', and measured how many of these units were correctly recalled, forgotten, or confabulated. Meanwhile, the present study probed story recall by asking explicit questions aimed to extract specific details from the story. Perhaps an 'idea unit' analysis would have been a more thorough approach, but since the present story was a lot longer than Horton's (2014), it was unreasonable and too demanding to test participant recall on it in this way.

Concerning the nature of the presently employed memory task, it can be questioned whether it serves as a suitable representation for waking life experience. Reading a story can be seen as a passive recreational activity, one that does not involve the subject in much interactive action, whereas a person's everyday waking life is likely to contain much more personally engaging activities involving the subject as an active instigator or agent — the memory for the latter is more likely to be autobiographical. Likewise, dreams may also feature this quality, involving the dreamer as an active participant in events. When reading a story, though active participation in the attended events may be low to non-existent, mental engagement may be high. A suitable measure for this may be absorption in imaginative experience, as was measured by Schredl, Jochum and Souguenet (1997) for example, who also found that it correlated positively and significantly with DRF. It could be possible that there is a relation between this absorption measure and general experience in both dreams and waking events; i.e., an indi-

vidual who reports high on this measure may be similarly stimulated by and absorbed in stories and waking/dream experiences. However, this was not measured in the present study, but it may be an interesting area to explore.

It would be interesting and informative to test a participant's memory for an experimentally-controlled waking experience, and then comparing this with their own DRF and DRD, as measured through the use of diaries kept over a few weeks. The diaries would likely provide a more accurate representation of dream recall ability than a retrospective questionnaire can, and the recalling of experimentally-controlled waking experience would likely serve as a better equivalent to the remembering of a dream experience; the memory would likely be more autobiographical.

Another limitation of the present study is that it did not employ any measures of personality variables, as these were not the main focus of the aims. A potential area of future research is to include such variables alongside the dreaming, attitude and motivational measures used here, so it can be established more clearly how all of these variables fit together and complement each other in the bigger picture, perhaps measured at several different times to accommodate the varying individual recall patterns.

To summarise, this survey-based study provides preliminary evidence of overlap between waking and dream memory, particularly for the perceived amount of detail remembered rather than the actual perceived frequency of dream recall. The motivation to remember and understand dreams are important variables to add to the dream research literature, as they were shown to be more robustly related to dreaming attitudes than the recall measures. Future work should aim to replicate these findings, and try out different measures of waking memory ability, as well as investigate older age samples.

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Appendix:

This story recounts the chronicles and exploits of The Four Cities.

Long ago, four races of people dwelt upon the continent of Aegis.

The largest and most powerful of these four was the city of Metros. Metros was a palatial city of great knowledge and stature, and its people were renowned throughout the land for their wisdom and wealth. They concerned themselves with the studies of the mind and of mathematics and architecture, constructing elaborate spires, domes, fountains, and places of education and learning. The grandest and tallest of their structures was the Tower of Time, an astronomical clock that stood right at the city's heart. Within this tower dwelt the Hebdomad, a ruling body of seven of the wisest individuals elected to govern Metros and all its deeds.

But the greatness of Metros would have never existed were it not for its three smaller protectorate states in the surrounding landscape. One of these, Kher'rech, lay at the meeting point of two mountain chains far to the east. The people of Kher'rech were a hardy and mysterious folk who mostly kept to themselves. They spoke a language that even the scholars of Metros could not decipher, and they would often go wandering in the vast barren desert that lay beyond their mountains, known as the Lost Lands. The other kingdoms regarded them as strange and unapproachable outcasts, but they traded regularly with Metros, supplying them with the minerals and materials that they mined from their mountain quarries, never asking for anything in return.

Out of the mountains flowed the river Delfen, all the way to the Great Southern Ocean. On the shores, within a curving bay that formed into a peninsula, was the city of Dersidia. The people who lived here were adept at woodworking, and supplied the city of Metros with timber, which they transported in wagons along the Inland Highway, the single road that connected the two cities. They were a superstitious people, and carved wooden idols of their deities along the coastal hills that marked the borders of their land, looking both inwards to the continent and outwards to the sea.

The fourth and final city was the island state of Pheri, visible in the distance from the shores of Dersidia. The islanders of Pheri were experienced sea-farers, the only people who were bold enough to brave the open waters. They were fishers, and traded their stock with the mainland in exchange for the timber they needed to build and maintain their ocean vessels. Sometimes they would venture far out into the uncharted ocean, navigating by the sun and stars. They were very protective of their island culture, and rarely permitted anyone from any of the other cities to visit. Therefore they felt a great sense of security, isolated on their island and possessing the only means to travel there.

These four cities shared a stable and peaceful relationship, held together by their trade agreements. But in the year 642, the islanders of Pheri committed what was seen as a transgression by the inhabitants of Dersidia. They beached one of their boats on the tiny islet of Azi, named after the unique grove of trees that grew upon it, in the shallow waters off the coast of Dersidia. Only reachable by a causeway at low tide, the coastal villagers had never set foot on its soil, for they held it to be a sanctuary of their deities.

The following night, a violent storm hit the coastal regions, and one of the idols on the hilltops was struck by lightning and destroyed. The villagers interpreted this as a sign that their deities were angry with the defiling of the sacred isle. This created tension between the two cities, and Dersidia halted all trade with Pheri until recompense had been assured. But Pheri did not agree with their terms, believing that they had done nothing wrong.

So Dersidia called upon the might of Metros to assist them with resolving this dispute. Metros, understanding that it had to maintain order and good relations among its protectorates, stepped in with a team of emissaries to try and settle the disagreement. After a long talk in which the perspectives of both sides were expressed and understood, the issue was resolved, trade resumed, and the islanders of Pheri agreed to never set foot on the holy isle of Azi again. However, Dersidia had not been unmarked by this incident, and from then on its people viewed those of Pheri with suspicion and mistrust.

For the next seventy years there were no further problems between the cities, and soon all those who had lived during the incident at Azi had died and the event had been largely forgotten. But in those years, the people of Kher'rech had made many excursions far into the Lost Lands and had discovered the ruins of an ancient unknown culture, half-submerged in the hot sand. Far away from civilisation, many of them moved out of Kher'rech to make the long and treacherous journey to this new place of interest, excavating and salvaging for artefacts.

This change in attention meant that the mines that Metros relied on for their income were largely abandoned, and therefore the stream of resources one day stopped arriving at the city. Metros sent an emissary to Kher'rech to investigate what had happened, only to find just a few remaining inhabitants who would not speak of their discovery in the desert, keeping it a guarded secret until they themselves understood it. Communication was very difficult due to the language barrier, and the Metros emissary left disappointed and without firm answers.

Making do with the remaining wealth and resources they had, and with the goods coming in from Dersidia, the citizens of Metros began to feel miserable. It was by no means poverty, but it was far below the standard of living they had grown used to. This generated a fear that the estranged people of Kher'rech were severing their valuable connections with Metros, and that the city would soon fall into disorder.

The Hebdomad, desperate for a solution to calm the people and secure the future prosperity of the city, levied a tax on Dersidia. Now, with every wagon of goods that came in along the Inland Highway, the merchants were ordered to pay an additional sum for little in exchange. For a while, the generous people of Dersidia obliged, but in time the taxes began to take their toll, and their treasured coastal woodlands were shrinking every day. Therefore they started asking for more from Pheri as well.

All cities were feeling the strain, but each tried their best to cope with the increased demands, while the people of Kher'rech remained out in the desert. They were all managing the difficulties quite well, but then things got worse. The winter of the year 715 descended fiercely upon the continent, bringing with it cruel winds, torrents of snow and ice, illness and death. The Great Southern Ocean froze over, and the ships of Pheri had to be dragged ashore and stowed away lest they be entrapped and crushed by the thick sea ice.

The terrible winter claimed the life of Pheri's leader, a just and fair ruler by the name of Kastos, and his death was

mourned by all on the island. His funeral could not take place either because the earth was too frozen to dig his grave. His two sons, Thoris and Laester, stepped up as joint leaders to get their people through this difficult time. Many approved of their appointment, for they both bore much in likeness with their father, and seemed like capable successors.

Meanwhile, the people of Kher'rech remained out in the desert, oblivious to the cold clime that gripped the other cities, as they continued to excavate the ancient ruins. They had cleared away most of the sand and had uncovered causeways of columns, and deep passages and catacombs that ran beneath the surface. Here they discovered many grave goods and treasures, which they removed and kept for a later purpose.

After much sorrow, the winter passed, but the people had been left battered and depleted by its effects. The seas unfroze and the boats of Pheri could set sail once more. The brothers Thoris and Laester continued ruling effectively together over the fractured population; due to the huge amounts of snow and ice that had fallen, the sea levels had risen, and both Pheri and Dersidia had lost parts of their land to the waters. Even the holy isle of Azi had been submerged.

In Metros, the Hebdomad convened within the Tower of Time to assess their losses and the resultant solution. The winter had only worsened their state of affairs after the loss of trade with Kher'rech, and many of the surviving citizens were becoming disgruntled with the situation. In an attempt to repair the trade agreement and bring things back into stability, they commissioned another embassy to Kher'rech.

But Kher'rech now had its own problems. Out in the old ruins, their excavations had gone too far and they had disturbed an ancient nameless guardian power that resided in the deeps, and it rose out to take its vengeance on the invaders. Many of the diggers were wiped out by its force, and it then went drifting on the winds throughout the Lost Lands in search of further destruction, turning them even bleaker and more dead than before.

The Metros embassy arrived in Kher'rech to find its inhabitants mysteriously missing; not a soul remained. They now faced a dilemma; the mines where their valuable riches came from were lying open before them, ripe for the taking, but was it the right thing to help themselves to something they desperately needed without permission? If the people of Kher'rech ever came back, surely they would face further trouble with them.

Faced with the desperate circumstances, and after relaying the news back to the city, the decision was made to collect whatever they could find. The people of Kher'rech never returned, and the other cities, while never truly understanding what had happened to them, began to accept that they had left the world forever, for whatever their own unknowable reasons.

With the seas open again, the sailors of Pheri went on exploring and mapping the coastlines. One year, they sailed up the river Delfen to the mountains of Kher'rech, and they too discovered the wealth that was lying there for anyone to take for themselves. This caused a disagreement with Metros, who had now set up their own mining camp there, and very soon word spread of the mountains' treasures to Dersidia too. All three cities now found themselves involved in a struggle over the rights to claim it. Peaceful diplomacy began to fall apart as they all succumbed to the desperate greed; the War of the Mountains had begun.

All cities began to raise armies, and Metros turned the mining camp into a well-fortified position. Dersidia's armies would march across the land, while Pheri would bring war boats up the Delfen, loaded with catapults to bring down the defences. Metros was facing a war on two fronts, and feared that Dersidia and Pheri may ally themselves and form and even greater enemy. It was also torn between defending the mines and the home city, so its soldiers were thinly spread out and remained encamped within the two locations. Their reliance was in the strength of their high walls.

Pheri lost ships in the river, and without the trade of timber from Dersidia, soon had to rely on their reserve resources. Therefore they started raids on Dersidia's coast by night, sending ashore spies to smuggle out wagons of wood. This only served to further undermine the already fragile relations between the cities. Dersidia increased its guard and set lookouts along the shoreline to counter.

With Metros in control of the mines, they faced heavy attacks. Transporting the resources needed to fuel their efforts back to the city became a dangerous risk, as enemies would encamp along the roadways and wait for them to pass by, taking the materials for themselves. The whole war turned into one giant stalemate: Metros could not get the resources back to the city; Dersidia was rotting from the lack of income; and Pheri soon found itself isolated at sea as its ships were destroyed and could not be repaired.

Dersidia prayed to its deities for strength and victory, but their idols were silent and no help came to them. The cities grew weaker and weaker until none could stand the needless suffering anymore. And so, in the year 723, after six difficult years of struggle, a truce was arranged. Negotiations among the leaders culminated in an understanding and the re-establishment of trade. The wealth and resources were redistributed evenly throughout the continent, and the hostility finally died down to nothing. The three cities now lived in carefully-maintained peace and co-operation.

Questions to ask:
What was the name of the continent in this story? (ANSWER: Aegis)
How many cities were there on the continent at the start of the story? (ANSWER: 4)
Which city was most powerful? (ANSWER: Metros)
What was the name of the tallest building in Metros? (ANSWER: The Tower of Time)
How many rulers did Metros have? (ANSWER: 7)
What did the people of Dersidia trade in? (ANSWER: timber)
How did the island of Azi get its name? (ANSWER: After the trees that grew on it)
In what year did the dispute of Azi occur? (ANSWER: 642)
What did Kher'rech discover in the Lost Lands? (ANSWER: Ancient ruins)
What did Metros choose to do once the trade from Kher'rech stopped? (ANSWER: put a tax on Dersidia)
In which year did the harsh winter strike? (ANSWER: 715)
The leader of Pheri died during the harsh winter. What was his name? (ANSWER: Kastos)
What did the cities fight over in the ensuing war? (ANSWER: Materials in the mountains)
What was the name of the river that Pheri used to attack Metros with war boats? (ANSWER: Delfen)
How long did the war last? (ANSWER: 6 years)
In which year did the war end? (ANSWER: 723)