Supplementary Table 1: Examples of reports of most recent dreaming experiences

Stage	Time of night	Report
N2	1:44 am	I was daydreaming. I was holding a musket, like a rifle, and I was skipping through images with it. Last image was a piece of pie, I am not sure but I think it was.
N2	5:23 am	I was thinking about perfume and fragrance. The very last word was 'fragrance'.
N2	5:55 am	The image of a Buddha belly, a bare belly.
N2	6:51 am	I saw a person waiting in a car. Maybe it was me.
N3	1:26 am	I was seeing geometric shapes that were moving very fast.
N3	5:18 am	I was trying to tell the difference between a homemade and a store-bought basket or tray of pastry.
N3	6:09 am	The last thing was raspberries, a pint of raspberries.
REM	3:28 am	I was doing this experiment with another girl. I asked her what time it was and she said 7:07. No, she actually said 6:55. Her boyfriend was in the room, too. The last scene was just her face. It was quite a long dream before that.
REM	3:59 am	I saw my brother eating hair on a plate.
REM	6:05 am	It was the end of a movie. I was getting out on the street through a door. At that moment I hear the noise of the alarm sound and woke up.
REM	6:36 am	In the last scene I was riding a bicycle in a street in B. Before that I was talking to someone in a court. Somebody taking care of the court. He gave lots of explanations about flowers.

Supplementary table 2: Proportion of dreaming experiences in NREM and REM sleep

Experiment 1 (NREM analysis, n=32, 1 night per subject)				
	DE	DEWR	NE	Total
NREM (N2)	97 (42%)	44 (19%)	92 (39%)	233 (100%)
Experiment 1 (REM analysis, n=6, 1 night per subject) [*]				
	DE	DEWR	NE	Total
REM	12 (55%)	0 (0%)	10 (45%)	22 (100%)
Experiment 2 (n=7, 5-10 nights per subject)				
	DE	DEWR	NE	Total
NREM (N2 & N3)	193 (33%)	225 (38%)	168 (29%)	586 (100%)
REM	131 (77%)	31 (18%)	8 (5%)	170 (100%)

[*] The proportion of DE and NE in Experiment 1 reflects the criterion of only including subjects that had both DE and NE during the night.

Supplementary table 3: Prediction accuracy of DE and NE in sleep

Participant	DE ACC	NE ACC	N awakenings	0.5---4.5 Hz thresh	18---25 Hz thresh
1	0.89	0.75	14	[30.0 217.0]	[0.25 0.40]
2	0.89	0.75	13	[30.0 165.0]	[0.11 0.22]
3	1.0	1.0	8	[32.0 188.0]	[0.09 0.30]
4	1.0	0.71	16	[42.9 153.2]	[0.19 0.43]
5	0.89	0.86	16	[15.0 94.0]	[0.08 0.20]
6	0.78	1.0	10	[14.8 63.0]	[0.06 0.11]
7	1.0	1.0	7	[19.0 154.0]	[0.09 0.28]

Supplementary table 4. High/Low frequency power ratio DE > NE

Region	Volume (k$_E$)	Peak t---value	Peak MNI		
			X	Y	Z
R precuneus/cuneus/SPL/SOC	2920	11.84	19	---63	58
L precuneus/cuneus/STS/SOC	1056	11.09	--7	---79	51
R MFG	309	10.78	37	50	---6
R lingual gyrus	158	9.39	20	---57	---13
R precentral gyrus	153	9.08	42	--8	65
L IFG	162	7.98	---53	24	---6

* All clusters significant at $p < 0.001$, FDR cluster corrected.

R: right; L: left; SPL: superior parietal lobule; STS: superior temporal sulcus;

SOC: superior occipital cortex; MFG: Middle frontal gyrus; IFG: inferior frontal gyrus

Supplementary table 5: lateralization indices

Contrast	Stage/Freq.	Experiment	Lateraliza-tion index	ANOVA Hemisphere x Report	
DE vs NE	NREM/LF	Exp 1 (n=32)	0.06 (L)	$F_{(1,31)}=0.699$	p=0.410
		Exp 2 (n=7)	0.55 (L)	$F_{(1,6)}=1.127$	p=0.329
	NREM/HF	Exp 1 (n=32)	0.01 (L)	$F_{(1,31)}=0.002$	p=0.961
		Exp 2 (n=7)	-0.28 (R)	$F_{(1,6)}=0.822$	p=0.399
DEWR vs NE	NREM/LF	Exp 1 (n=20)	0.40 (L)	$F_{(1,19)}=0.902$	p=0.354
DE vs DEWR	NREM/HF	Exp 1 (n=20)	-0.18 (R)	$F_{(1,19)=}0.210$	p=0.652
DE vs NE	REM/LF	Exp 1+2 (n=10)	0.37 (L)	$F_{(1,9)=}2.727$	p=0.133
	REM/HF	Exp E1+2 (n=10)	-0.25 (R)	$F_{(1,9)}=5.334$	p=0.046

Lateralization of findings. For each contrast, the brain hemisphere including the relative majority of activated voxels was identified (Lateralization Index, LI) [67] and repeated measure ANOVA was performed to evaluate the possible interaction between hemisphere and type of report.