APPENDIX B

TABLE 1

SOURCE TABLE FOR THE ANALYSIS OF VARIANCE ON BASELINE REM SLEEP AS A PERCENTAGE OF TOTAL SLEEP

SOURCE OF VARIANCE	SS	DF	MS	F	P
Total	290,08				
Between Groups	41,14	2	20,57	1,24	
Within Groups	248,94	15	16,60		

TABLE 2

SOURCE TABLE FOR THE ANALYSIS OF VARIANCE ON BASELINE REM SLEEP AS A PERCENTAGE OF TOTAL RECORDING TIME

SOURCE OF VARIANCE	SS	DF	MS	F	P
Total	115,15				
Between Groups	23,60	2	11,80	1,93	
Within Groups	91,55	15	6,10		

TABLE 3

SOURCE TABLE FOR THE ANALYSIS OF VARIANCE ON BASELINE SWS AS A PERCENTAGE OF TOTAL SLEEP

SOURCE OF VARIANCE	SS	DF	MS	F	P
Total	290,19				
Between Groups	41,19	2	20,59	1,24	
Within Groups	249,00	15	16,60		

TABLE 4

SOURCE TABLE FOR THE ANALYSIS OF VARIANCE ON BASELINE SWS AS A PERCENTAGE OF TOTAL RECORDING TIME

SOURCE OF VARIANCE	SS	DF	MS	F	P
Total	2351,92				
Between Groups	319,09	2	159,54	1,18	
Within Groups	2032,83	15	135,52		

TABLE 5

SOURCE TABLE FOR THE ANALYSIS OF VARIANCE ON BASELINE TOTAL SLEEP AS A PERCENTAGE OF TOTAL RECORDING TIME

SOURCE OF VARIANCE	SS	DF	MS	F	P
Total	2951,03				
Between Groups	461,40	2	230,70	1,39	
Within Groups	2489,63	15	165,98		

TABLE 6

SOURCE TABLE FOR THE ANALYSIS OF VARIANCE ON THE BASELINE NUMBER OF REM PERIODS

SOURCE OF VARIANCE	SS	DF	MS	F	P
Total	882,45				
Between Groups	208,78	2	104,30	2,32	
Within Groups	673,67	15	44,91		

TABLE 7

SOURCE TABLE FOR THE ANALYSIS OF VARIANCE ON THE BASELINE NUMBER OF SWS PERIODS

SOURCE OF VARIANCE	SS	DF	MS	F	P
Total	8022,50				
Between Groups	1919,50	2	956,75	2,36	
Within Groups	6103,00	15	406,87		

TABLE 7

SOURCE TABLE FOR THE ANALYSIS OF VARIANCE ON THE BASELINE NUMBER OF SWS PERIODS

SOURCE OF VARIANCE	SS	DF	MS	F	P
Total	8022,50				
Between Groups	1919,50	2	956,75	2,36	
Within Groups	6103,00	15	406,87		

TABLE 8

SOURCE TABLE FOR THE ANALYSIS OF VARIANCE ON THE BASELINE NUMBER OF SLEEP PERIODS

SOURCE OF VARIANCE	SS	DF	MS	F	P
Total	7969,63				
Between Groups	2161,75	2	1080,88	2,79	
Within Groups	5807,88	15	387,19		

TABLE 9

SOURCE TABLE FOR THE ANALYSIS OF VARIANCE ON THE BASELINE MEAN DURATION OF EACH REM PERIOD

SOURCE OF VARIANCE	SS	DF	MS	F	P
Total	8167,44				
Between Groups	301,94	2	150,97	0,29	
Within Groups	7865,50	15	524,37		

TABLE 10

SOURCE TABLE FOR THE ANALYSIS OF VARIANCE ON THE BASELINE MEAN DURATION OF EACH SWS PERIOD

SOURCE OF VARIANCE	SS	DF	MS	F	P
Total	23199,38				
Between Groups	6845,88	2	3422,94	3,14	
Within Groups	16353,50	15	1090,23		

TABLE 11

SOURCE TABLE FOR THE ANALYSIS OF VARIANCE ON THE BASELINE MEAN DURATION OF EACH SLEEP EPISODE

SOURCE OF VARIANCE	SS	DF	MS	F	P
Total	32001,56				
Between Groups	9952,06	2	4976,03	3,39	
Within Groups	22049,50	15	1469,97		

TABLE 12

SOURCE TABLE FOR THE ANALYSIS OF VARIANCE ON BASELINE SWS LATENCY

SOURCE OF VARIANCE	SS	DF	MS	F	P
Total	30105968,00				
Between Groups	1288512,00	2	644256,00	0,34	
Within Groups	28817456,00	15	1921163,00		

TABLE 13

SOURCE TABLE FOR THE ANALYSIS OF VARIANCE ON BASELINE REM LATENCY

SOURCE OF VARIANCE	SS	DF	MS	F	P
Total	69689088,00				
Between Groups	1114624,00	2	557312,00	0,12	
Within Groups	68574464,00	15	4571630,00		

APPENDIX C

TABLE 1

SOURCE TABLE FOR THE ANALYSIS OF COVARIANCE OF REPEATED MEASURES ON REM AS A PERCENTAGE OF TOTAL SLEEP

SOURCE	SS	DF	MS	F	P
Groups	530,86	2	265,43	5,75	0,025
Subjects within groups	646,55	14	46,18		
Halves	104,95	1	104,95	8,23	0,025
Groups x Halves	47,17	2	23,59	1,85	
Halves x subjects within Groups	178,62	14	12,76		

APPENDIX D

APPENDIX D

Note on the absolute and relative measures of rapid eye movement and slow wave sleep.

In the present study two broad categories of REM and SWS indices were used. The first category consists of REM and SWS as a percentage of total sleep time (REM percent and SWS percent). These constitute the relative indices of REM and SWS percent. Since total sleep time in the rat is defined exclusively in terms of REM and SWS, REM percent and SWS percent are perfectly inversely proportional to one another. Consequently increments in REM percent are paralleled by corresponding decrements in SWS percent and vice versa. This point is illustrated by a comparison of Tables 1 and 3 in Appendix A. Although changes in REM percent have been emphasised in Experiment 1, the corresponding changes in SWS percent are implied.

The second category of REM and SWS consists of REM and SWS as a percentage of total recording time (REM time and SWS time). These constitue the absolute measures of REM and SWS. Since total recording time contains epochs of REM, SWS, and waking, changes in REM time do not necessarily bear a constant relationship to changes in SWS time. Thus both indices are emphasised throughout this study.

APPENDIX E

TABLE 1

MEANS AND STANDARD DEVIATIONS FOR REM AS A PERCENTAGE OF TOTAL SLEEP

	BASELINE		POSTTREATMENT	
GROUP	MEAN	SD	MEAN	SD
PREDICTABLE	15.72	5.39	8.38	5.92
UNPREDICTABLE	12.32	2.38	6.98	4.83
CONTROL	12.76	3.88	15.54	4.28
DEPRIVATION	11.01	4.90	17.96	3.93

TABLE 1

MEANS AND STANDARD DEVIATIONS FOR REM AS A PERCENTAGE OF TOTAL SLEEP

	BASELINE		POSTTREATMENT	
GROUP	MEAN	SD	MEAN	SD
PREDICTABLE	15.72	5.39	8.38	5.92
UNPREDICTABLE	12.32	2.38	6.98	4.83
CONTROL	12.76	3.88	15.54	4.28
DEPRIVATION	11.01	4.90	17.96	3.93

TABLE 2

MEANS AND STANDARD DEVIATIONS FOR REM SLEEP
AS A PERCENTAGE OF TOTAL RECORDING TIME

	BASELINE		POSTTREATMENT	
GROUP	MEAN	SD	MEAN	SD
PREDICTABLE	7.61	3.14	4.95	3.99
UNPREDICTABLE	4.82	1.60	4.09	3.26
CONTROL	6.47	2.42	7.50	2.43
DEPRIVATION	5.71	3.21	10.56	3.75

TABLE 3

MEANS AND STANDARD DEVIATIONS FOR SWS AS A PERCENTAGE OF TOTAL SLEEP

	BASELINE		POSTTREATMENT	
GROUP	MEAN	SD	MEAN	SD
PREDICTABLE	84.27	5.40	91.62	5.92
UNPREDICTABLE	87.68	2.39	93.01	4.83
CONTROL	87.24	3.88	84.46	4.28
DEPRIVATION	88.99	4.90	82.04	3.93

TABLE 4

MEANS AND STANDARD DEVIATIONS FOR SWS AS A PERCENTAGE OF TOTAL RECORDING TIME

	BASELINE		POSTTREATMENT	
GROUP	MEAN	SD	MEAN	SD
PREDICTABLE	40.93	8.69	44.40	17.11
UNPREDICTABLE	34.69	10.90	41.51	19.72
CONTROL	44.92	14.58	41.28	10.87
DEPRIVATION	40.16	15.95	46.87	6.42

TABLE 5

MEANS AND STANDARD DEVIATIONS FOR TOTAL SLEEP
AS A PERCENTAGE OF TOTAL RECORDING TIME

	BASELINE		POSTTREATMENT	
GROUP	MEAN	SD	MEAN	SD
PREDICTABLE	48.55	9.76	49.34	20.55
UNPREDICTABLE	39.51	12.08	45.60	22.82
CONTROL	51.38	16.02	48.78	12.47
DEPRIVATION	45.87	18.80	57.43	9.61

TABLE 6

MEANS AND STANDARD DEVIATIONS FOR THE NUMBER OF REM PERIODS

	BASELINE		POSTTREATMENT	
GROUP	MEAN	SD	MEAN	SD
PREDICTABLE	20.50	7.71	11.50	9.79
UNPREDICTABLE	12.17	4.36	9.33	7.39
CONTROL	16.67	7.50	19.50	5.01
DEPRIVATION	12.33	7.09	21.50	4.18

TABLE 7

MEANS AND STANDARD DEVIATIONS FOR THE NUMBER OF SWS PERIODS

	BASELINE		POSTTREATMENT	
GROUP	MEAN	SD	MEAN	SD
PREDICTABLE	99.17	24.65	65.67	16 74
UNPREDICTABLE	83.33	6.89	61.33	12.85
CONTROL	74.17	23.78	68.33	14.51
DEPRIVATION	67.17	15.75	56.33	11.29

TABLE 8

MEANS AND STANDARD DEVIATIONS FOR THE NUMBER OF SLEEP PERIODS

	BASELINE		POSTTREATMENT	
GROUP	MEAN	SD	MEAN	SD
PREDICTABLE	98.50	24.16	64.16	16.67
UNPREDICTABLE	82.50	6.02	60.33	13.72
CONTROL	71.83	23.27	66.83	14.06
DEPRIVATION	65.17	16.01	54.33	11.88

TABLE 9

MEANS AND STANDARD DEVIATIONS FOR THE
MEAN DURATION OF EACH REM PERIOD

	BASELINE		POSTTREATMENT	
GROUP	MEAN	SD	MEAN	SD
PREDICTABLE	80.17	19.88	85.62	47.33
UNPREDICTABLE	89.65	29.56	83.74	43.96
CONTROL	87.75	17.44	82.68	19.39
DEPRIVATION	94.25	26.80	104.25	25.03

TABLE 10

MEANS AND STANDARD DEVIATIONS FOR THE
MEAN DURATION OF EACH SWS PERIOD

	BASELINE		POSTTREATMENT	
GROUP	MEAN	SD	MEAN	SD
PREDICTABLE	95.52	36.75	155.11	92.22
UNPREDICTABLE	90.56	30.44	144.67	73.38
CONTROL	134.18	31.52	139.10	54.76
DEPRIVATION	125.82	43.98	182.58	24.27

TABLE 11

MEANS AND STANDARD DEVIATIONS FOR THE
MEAN DURATION OF EACH SLEEP EPISODE

	BASELINE		POSTTREATMENT	
GROUP	MEAN	SD	MEAN	SD
PREDICTABLE	113.99	44.92	178.89	118.75
UNPREDICTABLE	104.12	34.09	165.60	97.91
CONTROL	158.20	35.07	167.38	64.83
DEPRIVATION	149.10	56.54	233.53	47.44

TABLE 12

MEANS AND STANDARD DEVIATIONS FOR SWS LATENCY

	BASELINE		POSTTREATMENT	
GROUP	MEAN	SD	MEAN	SD
PREDICTABLE	1282.17	644.40	1285.00	761.38
UNPREDICTABLE	1937.50	1394.08	1333.50	1299.12
CONTROL	1616.00	1845.20	1335.33	1031.85
DEPRIVATION	1835.33	1169.65	1898.00	1233.37

TABLE 13

MEANS AND STANDARD DEVIATIONS FOR RFM LATENCY

	BASELINE		POSTTREATMENT	
GROUP	MEAN	SD	MEAN	SD
PREDICTABLE	3755.17	1653.08	8615.83	7362.76
UNPREDICTABLE	3624.83	1106.57	7752.66	5166.32
CONTROL	4205.66	3123.74	3143.17	2063.95
DEPRIVATION	6655.83	5159.79	532.33	516.09

APPENDIX F

TABLE 1

RAW DATA: REM SLEEP AS A PERCENTAGE OF TOTAL SLEEP

GROUP	SUBJECT	BASELINE	POSTTREATMENT
PREDICTABLE	1	16.03	4.16
	2	11.45	12.51
	3	20.35	5.89
	4	7.15	0.00
	5	20.34	15.17
	6	19.03	12.57
UNPREDICTABLE	7	11.32	7.88
	8	12.13	9.63
	9	14.78	2.15
	10	9.23	10.04
	11	15.47	0.00
	12	10.99	12.21
CONTROL	13	10.33	9.74
	14	20.10	20.21
	15	9.83	15.17
	16	10.25	13.25
	17	12.65	13.07
	18	13.41	19.79
DEPRIVATION	19	2.59	13.65
	20	12.85	22.64
	21	17.57	15.66
	22	9.82	14.47
	23	12.13	22.19
	24	11.09	19.13

TABLE 2

RAW DATA: REM SLEEP AS A PERCENTAGE OF TOTAL RECORDING TIME

GROUP	SUBJECT	BASELINE	POSTTREATMENT
PREDICTABLE	1	5.87	2.02
	2	6.70	9.90
	3	11.24	2.52
	4	3.41	3.00
	5	11.40	3.59
	6	7.05	6.65
UNPREDICTABLE	7	2.33	4.14
	8	4.47	5.21
	9	4.66	.60
	10	4.59	6.21
	11	7.21	3.00
	12	5.67	8.37
CONTROL	13	3.45	3.47
	14	9.48	8.28
	15	6.18	8.90
	16	6.08	7.19
	17	9.12	10.32
	18	4.49	3.83
DEPRIVATION	19	.24	7.41
	20	6.36	14.94
	21	9.71	3.24
	22	4.44	5.78
	23	7.60	14.53
	24	5.89	11.45

TABLE 3

RAW DATA: SWS AS A PERCENTAGE OF TOTAL SLEEP

GROUP	SUBJECT	BASELINE	POSTTREATMENT
PREDICTABLE	1	83.97	95.84
	2	88.55	87.49
	3	79.65	94.11
	4	92.85	100.00
	5	79.66	84.83
	6	80.97	87.43
UNPREDICTABLE	7	88.68	92.12
	8	87.87	93.37
	9	85.22	97.85
	10	90.77	89.96
	11	84.53	100.00
	12	89.01	87.79
CONTROL	13	89.67	91.20
	14	79.90	79.79
	15	90.17	84.83
	16	39.75	86.75
	17	87.35	83.93
	18	86.59	80.21
DEPRIVATION	19	97.41	80.35
	20	87.15	77.36
	21	92.43	84.34
	22	90.18	85.53
	23	87.87	77.81
	24	89.91	80.87

TABLE 4

RAW DATA: SWS AS A PERCENTAGE OF TOTAL RECORDING TIME

GROUP	SUBJECT	BASELINE	POSTTREATMENT
PREDICTABLE	1	30.76	45.51
	2	51.84	09.22
	3	44.01	40.37
	4	44.33	13.94
	5	44.67	43.05
	6	29.99	46.29
UNPREDICTABLE	7	13.29	48.41
	8	32.41	43.95
	9	26.89	27.34
	10	45.16	55.68
	11	39.44	3.50
	12	45.93	60.20
CONTROL	13	29.95	36.26
	14	37.71	24.83
	15	56.71	49.81
	16	53.20	47.05
	17	62.94	53.90
	18	28.99	35.82
DEPRIVATION	19	9.15	46.86
	20	43.18	51.06
	21	45.54	49.77
	22	40.79	34.19
	23	55.06	50.96
	24	47.23	48.41

TABLE 5

RAW DATA: TOTAL SLEEP AS A PERCENTAGE OF TOTAL RECORDING TIME

GROUP	SUBJECT	BASELINE	POSTTREATMENT
PREDICTABLE	1	36.63	48.53
	2	50.54	79.12
	3	55.26	42.89
	4	47.74	15.94
	5	56.08	56.65
	6	37.04	52.94
UNPREDICTABLE	7	20.32	52.55
	8	36.03	54.16
	9	31.54	27.94
	10	49.75	61.89
	11	46.65	8.49
	12	51.60	68.57
CONTROL	13	33.40	39.73
	14	47.19	31.11
	15	62.89	58.71
	16	59.27	54.24
	17	72.05	64.22
	18	33.47	44.65
DEPRIVATION	19	9.39	54.27
	20	49.55	66.00
	21	55.25	59.01
	22	45.23	39.97
	23	62.66	65.49
	24	53.13	59.06

TABLE 6

RAW DATA: THE NUMBER OF REM PERIODS

GROUP	SUBJECT	BASELINE	POSTTREATMENT
PREDICTABLE	1	13.00	4.00
	2	21.00	20.00
	3	22.00	4.00
	4	13.00	0.00
	5	34.00	20.00
	6	20.00	21.00
UNPREDICTABLE	7	8.00	11.00
	8	7.00	12.00
	9	10.00	1.00
	10	16.00	13.00
	11	15.00	0.00
	12	17.00	10.00
CONTROL	13	7.00	14.00
	14	27.00	13.00
	15	15.00	21.00
	16	12.00	11.00
	17	24.00	25.00
	18	15.00	25.00
DEPRIVATION	19	1.00	20.00
	20	13.00	24.00
	21	17.00	22.00
	22	10.00	14.00
	23	22.00	23.00
	24	11.00	26.00

TABLE 7

RAW DATA: THE NUMBER OF SWS PERIODS

GROUP	SUBJECT	BASELINE	POSTTREATMENT
PREDICTABLE	1	127.00	73.00
	2	102.00	44.00
	3	63.00	65.00
	4	81.00	43.00
	5	124.00	83.00
	6	93.00	73.00
UNPREDICTABLE	7	90.00	97.00
	8	78.00	76.00
	9	78.00	67.00
	10	86.00	73.00
	11	92.00	43.00
	12	76.00	52.00
CONTROL	13	40.00	59.00
	14	91.00	90.00
	15	104.00	60.00
	16	79.00	60.00
	17	79.00	58.00
	18	53.00	31.00
DEPRIVATION	19	49.00	63.00
	20	60.00	51.00
	21	62.00	55.00
	22	60.00	37.00
	23	92.00	65.00
	24	80.00	67.00

TABLE 8

RAW DATA: THE NUMBER OF SLEEP PERIODS

GROUP	SUBJECT	BASELINE	POSTTREATMENT
PREDICTABLE	1	124.00	73.00
	2	102.00	41.00
	3	62.00	65.00
	4	82.00	48.00
	5	124.00	85.00
	6	97.00	73.00
UNPREDICTABLE	7	88.00	55.00
	8	77.00	70.00
	9	80.00	67.00
	10	83.00	73.00
	11	91.00	44.00
	12	76.00	46.00
CONTROL	13	39.00	59.00
	14	84.00	91.00
	15	104.00	59.00
	16	79.00	59.00
	17	73.00	56.00
	18	52.00	77.00
DEPRIVATION	19	49.00	60.00
	20	57.00	44.00
	21	61.00	56.00
	22	55.00	36.00
	23	91.00	65.00
	24	78.00	65.00

TABLE 9

RAW DATA: THE MEAN DURATION OF EACH REM PERIOD

GROUP	SUBJECT	BASELINE	POSTTREATMENT
PREDICTABLE	1	97.38	110.50
	2	63.33	106.00
	3	110.20	135.50
	4	56.46	0.00
	5	72.35	93.15
	6	76.30	68.57
UNPREDICTABLE	7	62.38	81.45
	8	137.10	93.33
	9	100.50	129.00
	10	62.19	102.40
	11	103.60	0.00
	12	72.12	93.75
CONTROL	13	106.30	53.21
	14	75.48	75.00
	15	88.87	91.62
	16	109.30	110.60
	17	81.71	89.60
	18	64.87	76.04
DEPRIVATION	19	52.00	79.20
	20	105.00	134.40
	21	123.00	90.86
	22	95.60	88.79
	23	74.23	137.30
	24	115.70	94.96

TABLE 10

RAW DATA: THE MEAN DURATION OF EACH SWS PERIOD

GROUP	SUBJECT	BASELINE	POSTTREATMENT
PREDICTABLE	1	52.20	139.16
	2	108.78	336.84
	3	150.60	133.14
	4	117.53	72.13
	5	77.68	121.06
	6	66.21	128.36
UNPREDICTABLE	7	43.42	183.53
	8	89.10	139.01
	9	74.27	87.58
	10	113.66	163.32
	11	92.27	42.98
	12	130.64	251.60
CONTROL	13	161.32	131.73
	14	89.01	57.92
	15	117.55	179.30
	16	145.27	168.95
	17	173.49	201.59
	18	118.47	95.11
DEPRIVATION	19	39.92	159.10
	20	154.30	216.10
	21	153.20	195.70
	22	146.40	198.50
	23	129.60	170.30
	24	127.50	155.80

TABLE 11

RAW DATA: THE MEAN DURATION OF EACH SLEEP EPISODE

GROUP	SUBJECT	BASELINE	POSTTREATMENT
PREDICTABLE	1	63.68	145.20
	2	122.90	413.20
	3	192.10	141.50
	4	125.10	72.13
	5	97.52	144.40
	6	82.63	156.70
UNPREDICTABLE	7	50.00	202.80
	8	102.70	153.80
	9	84.97	89.51
	10	129.80	181.50
	11	110.40	42.00
	12	146.80	324.00
CONTROL	13	184.50	144.40
	14	120.70	73.40
	15	130.40	214.90
	16	161.90	193.10
	17	212.20	248.80
	18	139.50	124.70
DEPRIVATION	19	40.98	193.40
	20	186.40	323.80
	21	195.10	227.90
	22	177.10	233.60
	23	147.90	218.90
	24	147.10	193.60

TABLE 12

RAW DATA: SWS LATENCY

GROUP	SUBJECT	BASELINE	POSTTREATMENT
PREDICTABLE	1	1477.00	572.00
	2	1400.00	1185.00
	3	1323.00	2693.00
	4	1566.00	1031.00
	5	31.00	752.00
	6	1896.00	1472.00
UNPREDICTABLE	7	2346.00	483.00
	8	2446.00	1125.00
	9	4147.00	240.00
	10	999.00	1445.00
	11	90.00	3834.00
	12	1597.00	374.00
CONTROL	13	2765.00	1459.00
	14	1824.00	3183.00
	15	130.00	353.00
	16	330.00	439.00
	17	0.00	933.00
	18	4647.00	1593.00
DEPRIVATION	19	3606.00	1042.00
	20	2576.00	3403.00
	21	1380.00	2180.00
	22	2088.00	3240.00
	23	349.00	1002.00
	24	1013.00	516.00

TABLE 13

RAW DATA: REM LATENCY

GROUP	SUBJECT	BASELINE	POSTTREATMENT
PREDICTABLE	1	3126.00	13543.00
	2	1651.00	2285.00
	3	4003.00	8739.00
	4	6176.00	20680.00
	5	2580.00	2061.00
	6	4995.00	4376.00
UNPREDICTABLE	7	1641.00	5632.00
	8	3172.00	5805.00
	9	3893.00	6602.00
	10	4793.00	7342.00
	11	4275.00	17910.00
	12	3975.00	3225.00
CONTROL	13	6724.00	5222.00
	14	753.00	2892.00
	15	2543.00	1974.00
	16	9070.00	6077.00
	17	2122.00	1841.00
	18	3922.00	853.00
DEPRIVATION	19	15032.00	1530.00
	20	3339.00	564.00
	21	3002.00	437.00
	22	11166.00	276.00
	23	4317.00	313.00
	24	3079.00	69.00