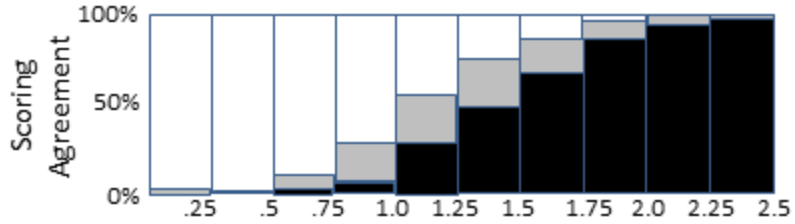
Fig. S1


Scoring Agreement
100%
50%
0%
.25
.5
.75
1.0
1.25
1.5
1.75
2.0
2.25
2.5

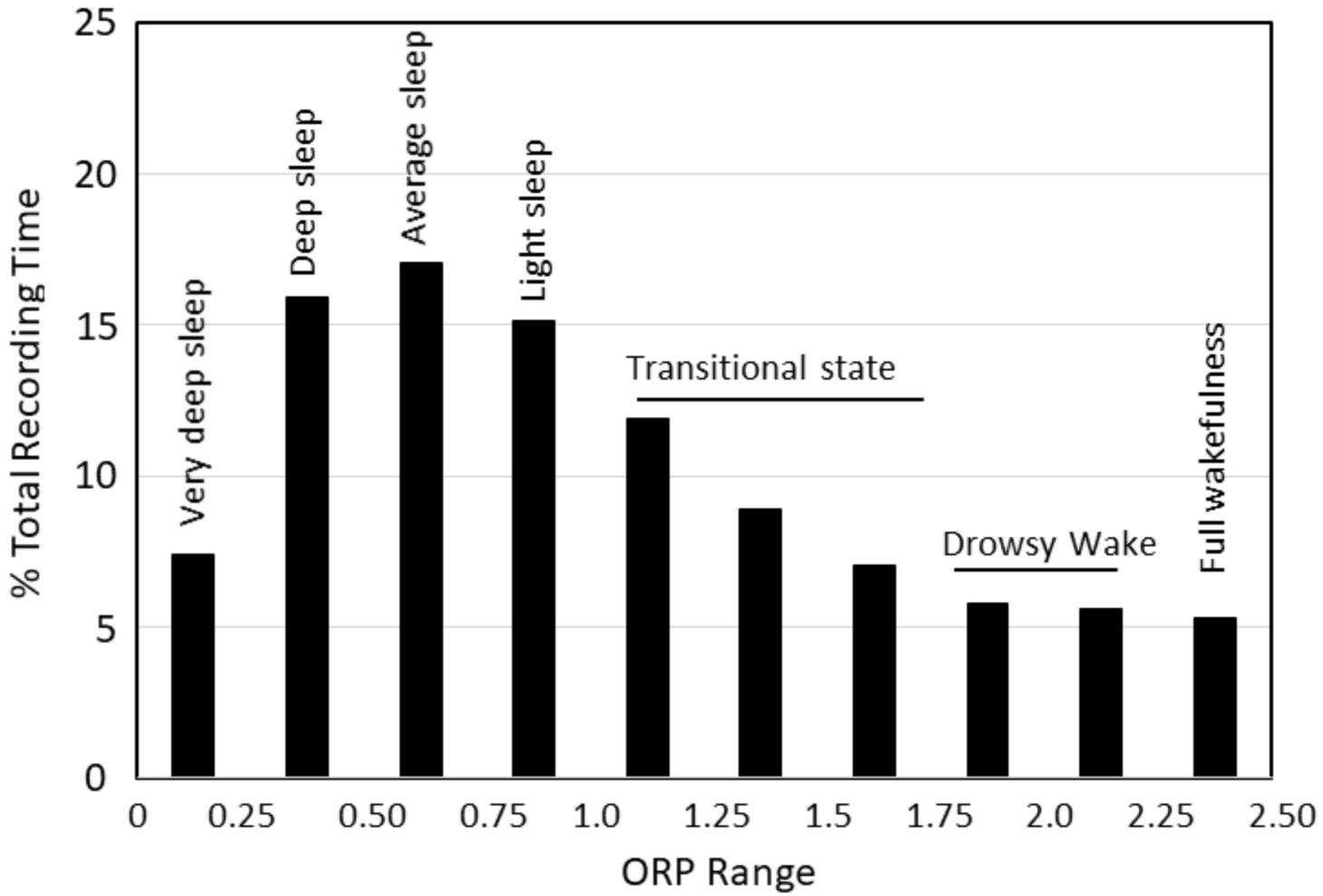

% Total Recording Time
25
20
15
10
5
0
Very deep sleep
Deep sleep
Average sleep
Light sleep
Transitional state
Drowsy Wake
Full wakefulness
0
0.25
0.50
0.75
1.0
1.25
1.5
1.75
2.0
2.25
2.50
ORP Range

Fig. S2

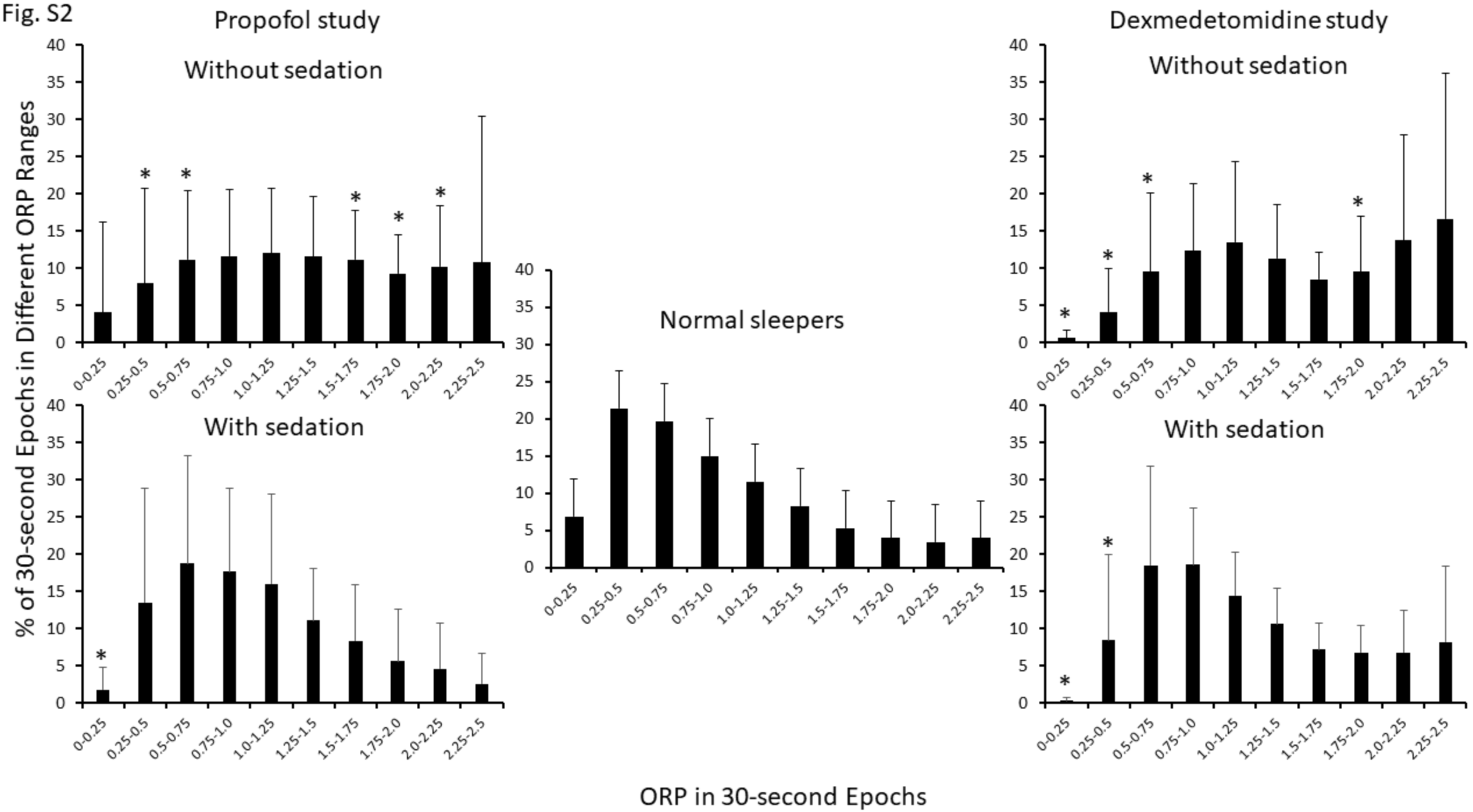

Propofol study
Without sedation
With sedation
Dexmedetomidine study
Without sedation
With sedation
Normal sleepers
% of 30-second Epochs in Different ORP Ranges
ORP in 30-second Epochs
0-0.25
0.25-0.5
0.5-0.75
0.75-1.0
1.0-1.25
1.25-1.5
1.5-1.75
1.75-2.0
2.0-2.25
2.25-2.5

Fig. S3

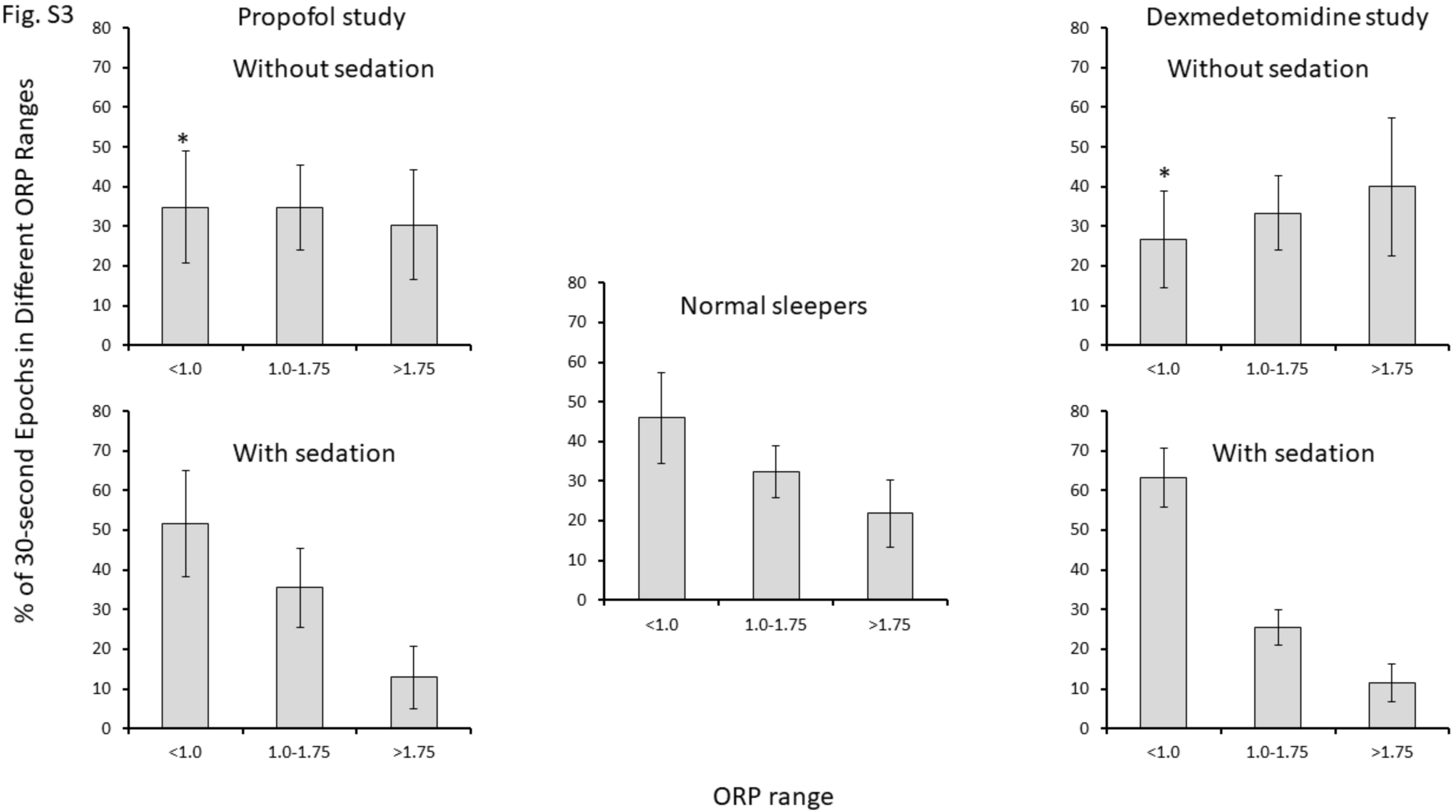

Propofol study
Without sedation
With sedation
Normal sleepers
Dexmedetomidine study
Without sedation
With sedation
% of 30-second Epochs in Different ORP Ranges
ORP range
<1.0
1.0-1.75
>1.75
0
10
20
30
40
50
60
70
80
*

Fig. S4

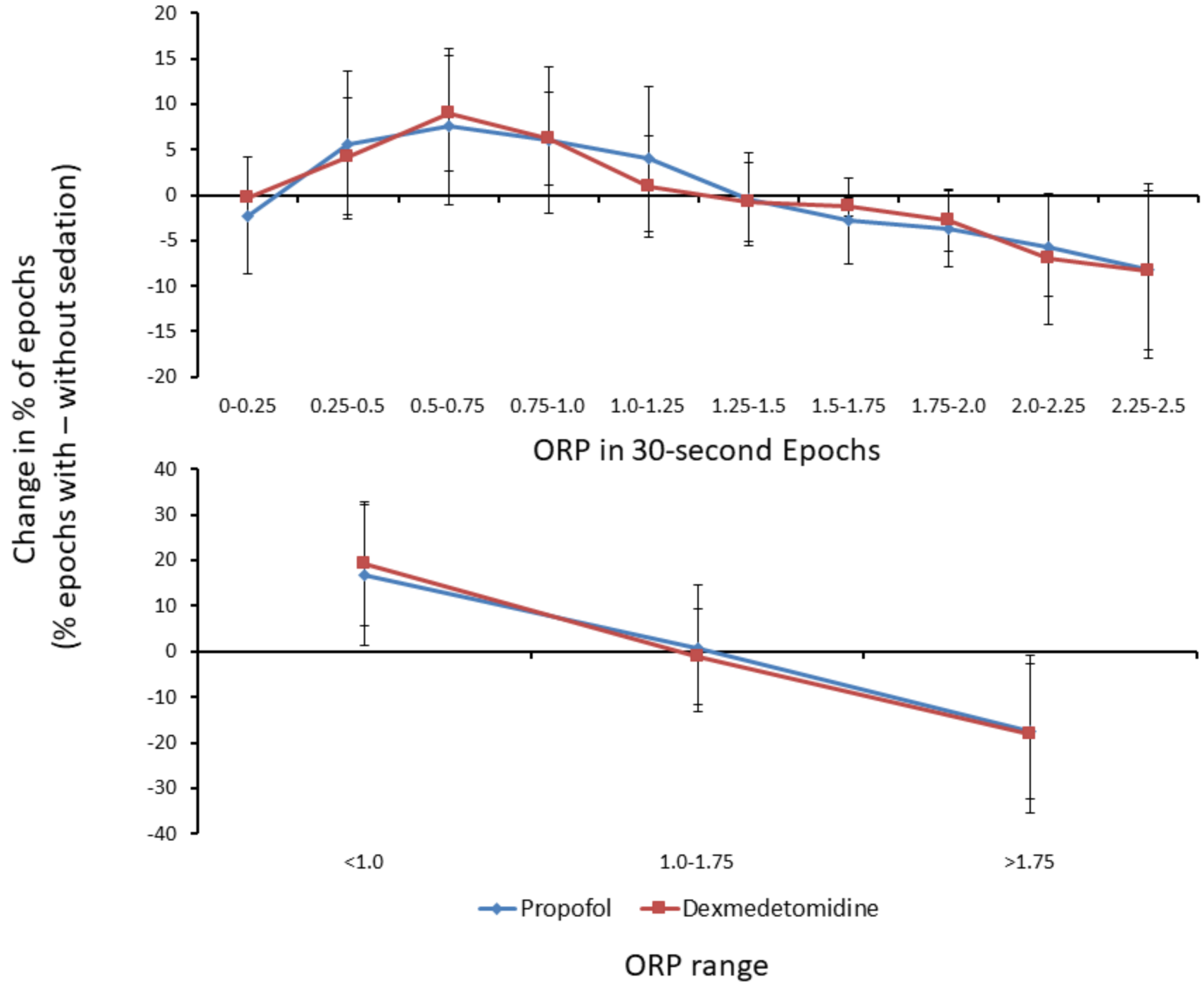

Change in % of epochs
(% epochs with – without sedation)
20
15
10
5
0
-5
-10
-15
-20
0-0.25
0.25-0.5
0.5-0.75
0.75-1.0
1.0-1.25
1.25-1.5
1.5-1.75
1.75-2.0
2.0-2.25
2.25-2.5
ORP in 30-second Epochs
40
30
20
10
0
-10
-20
-30
-40
<1.0
1.0-1.75
>1.75
Propofol
Dexmedetomidine
ORP range

Fig. S5

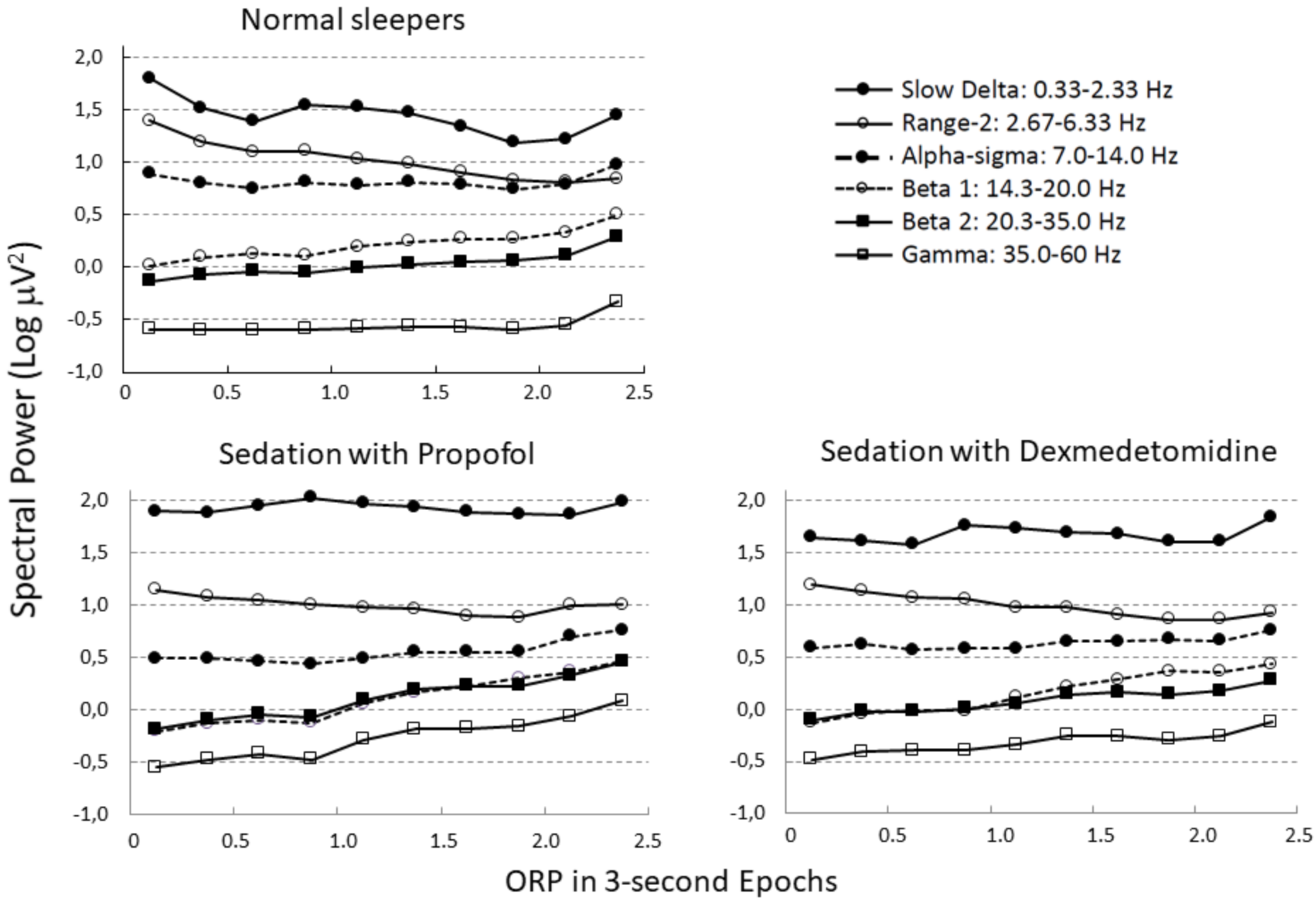

Normal sleepers
Sedation with Propofol
Sedation with Dexmedetomidine
Spectral Power (Log μV²)
ORP in 3-second Epochs
Slow Delta: 0.33-2.33 Hz
Range-2: 2.67-6.33 Hz
Alpha-sigma: 7.0-14.0 Hz
Beta 1: 14.3-20.0 Hz
Beta 2: 20.3-35.0 Hz
Gamma: 35.0-60 Hz
2,0
1,5
1,0
0,5
0,0
-0,5
-1,0
0
0.5
1.0
1.5
2.0
2.5

Fig. S6

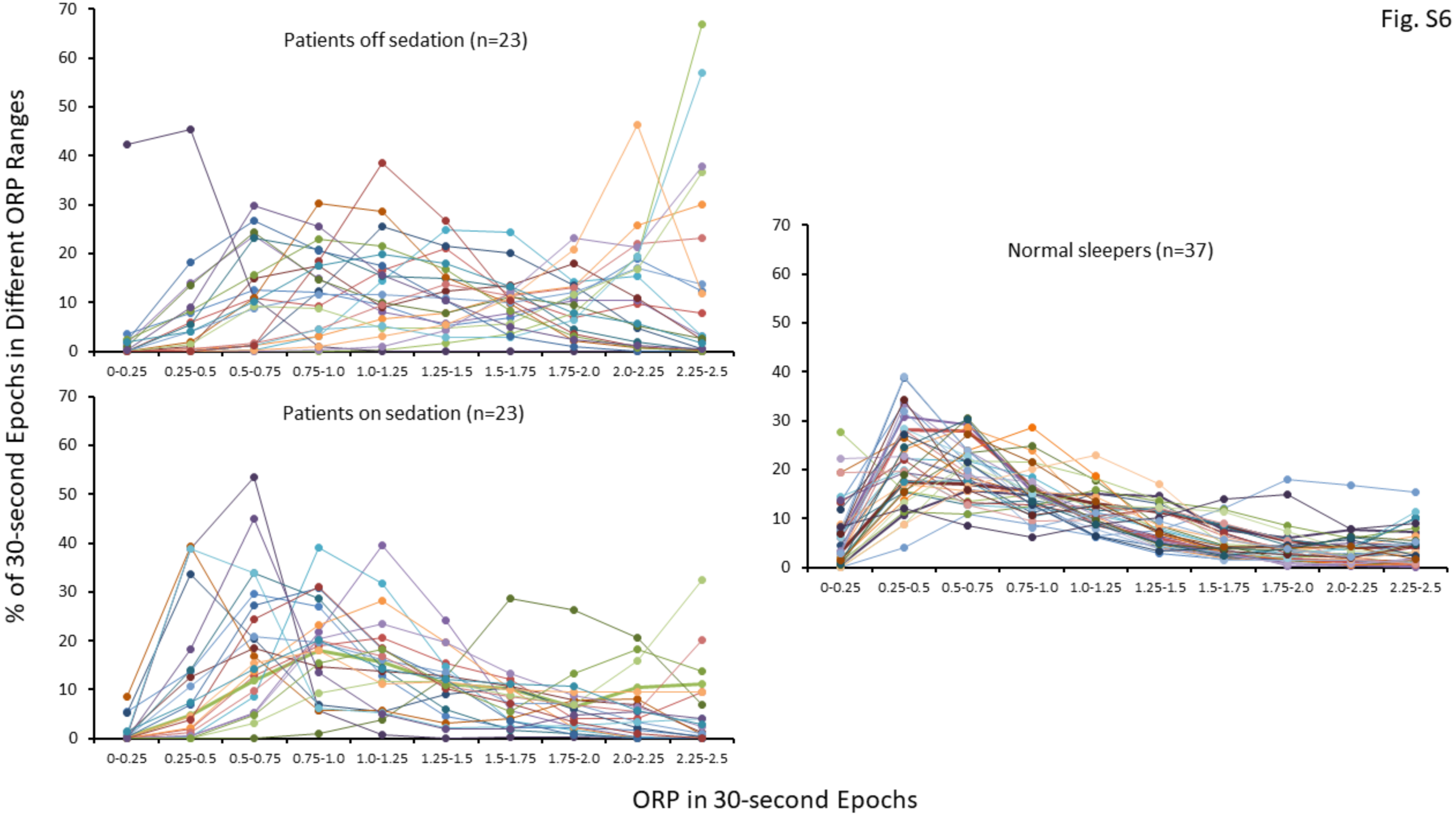

Patients off sedation (n=23)
Patients on sedation (n=23)
Normal sleepers (n=37)
% of 30-second Epochs in Different ORP Ranges
ORP in 30-second Epochs
0
10
20
30
40
50
60
70
0-0.25
0.25-0.5
0.5-0.75
0.75-1.0
1.0-1.25
1.25-1.5
1.5-1.75
1.75-2.0
2.0-2.25
2.25-2.5

Fig. S7

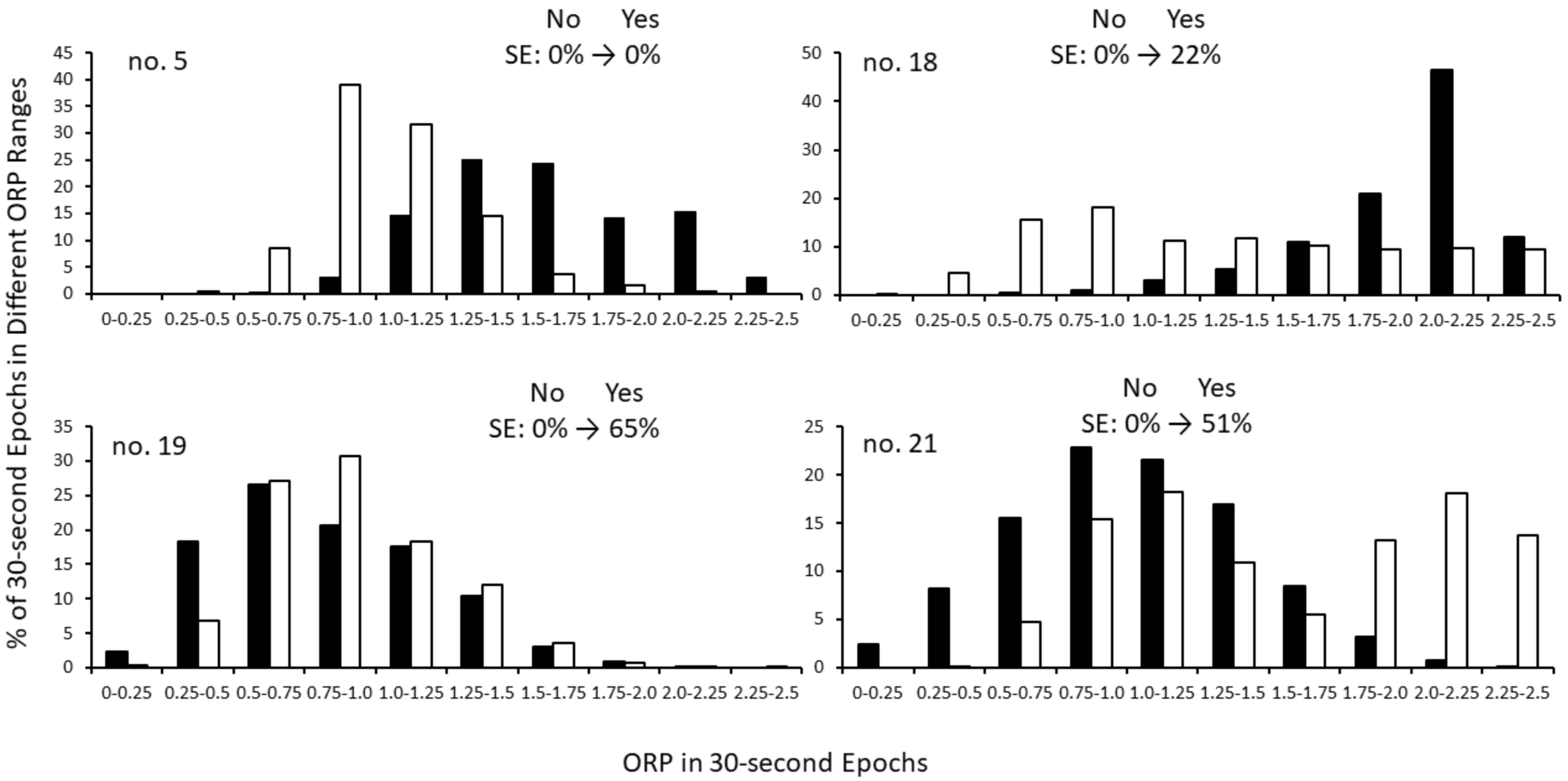

No Yes
SE: 0% → 0%
no. 5
No Yes
SE: 0% → 22%
no. 18
No Yes
SE: 0% → 65%
no. 19
No Yes
SE: 0% → 51%
no. 21
% of 30-second Epochs in Different ORP Ranges
0-0.25
0.25-0.5
0.5-0.75
0.75-1.0
1.0-1.25
1.25-1.5
1.5-1.75
1.75-2.0
2.0-2.25
2.25-2.5
ORP in 30-second Epochs

Fig. S8

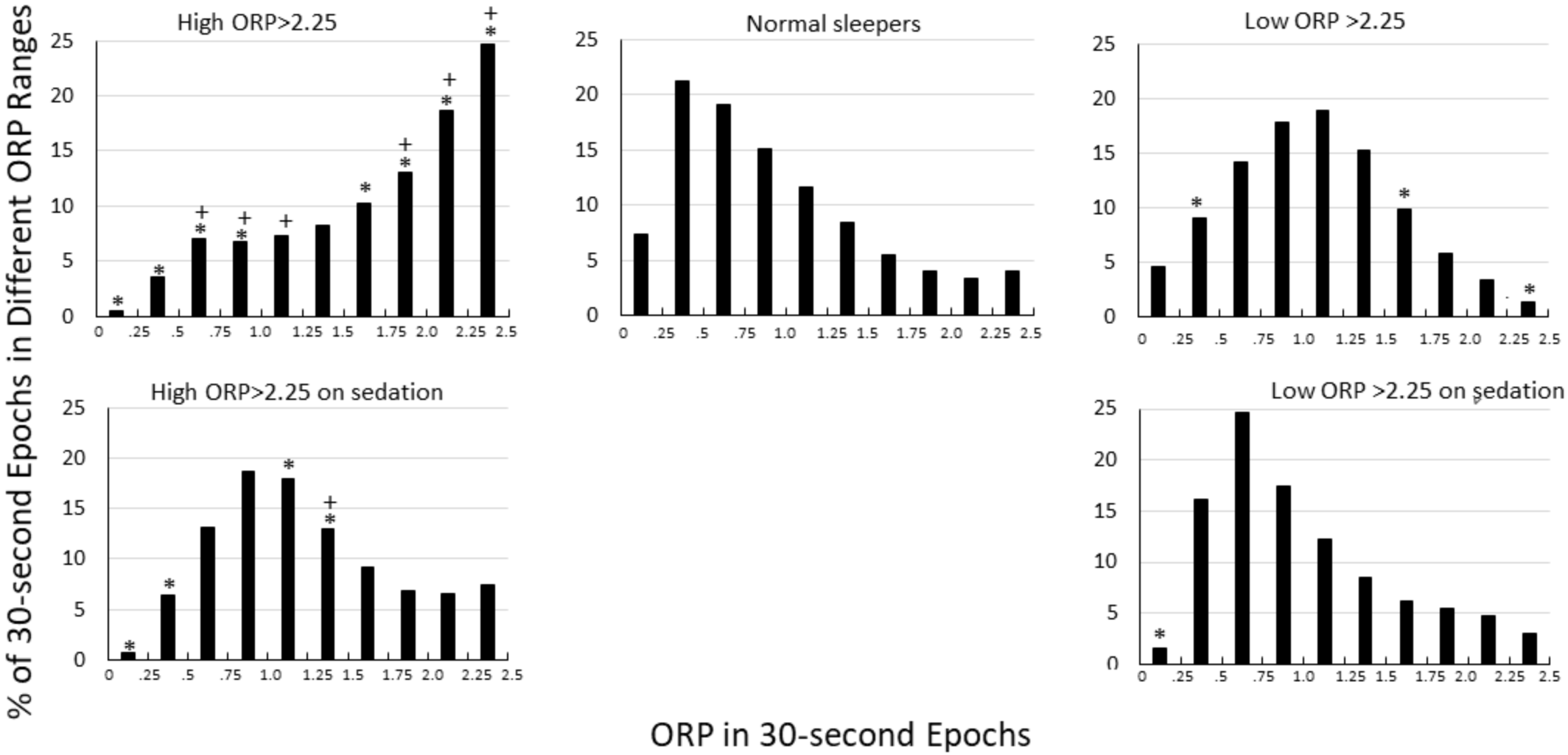

High ORP>2.25
Normal sleepers
Low ORP >2.25
High ORP>2.25 on sedation
Low ORP >2.25 on sedation
% of 30-second Epochs in Different ORP Ranges
ORP in 30-second Epochs
0
5
10
15
20
25
0
.25
.5
.75
1.0
1.25
1.5
1.75
2.0
2.25
2.5

Fig. S9

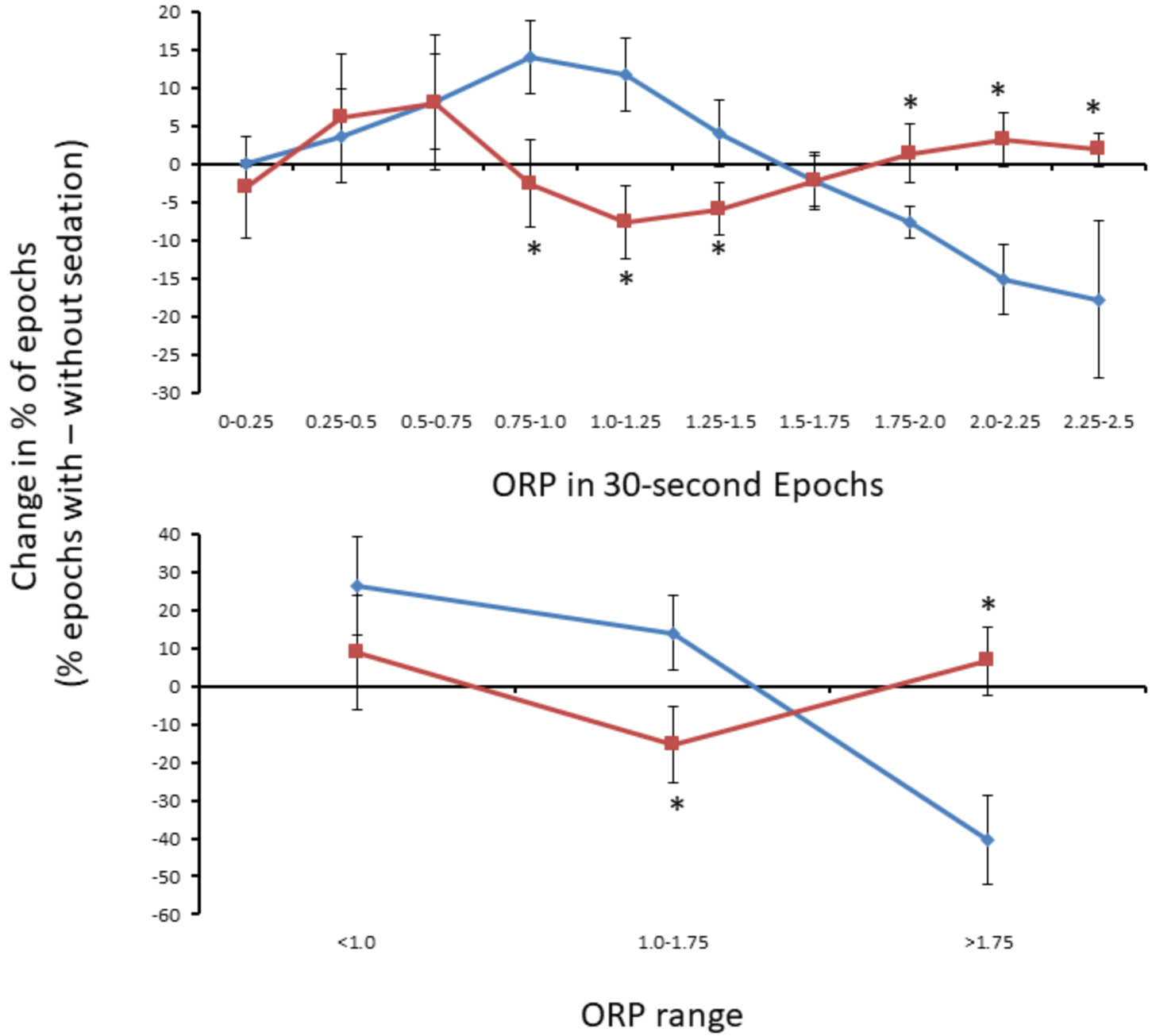
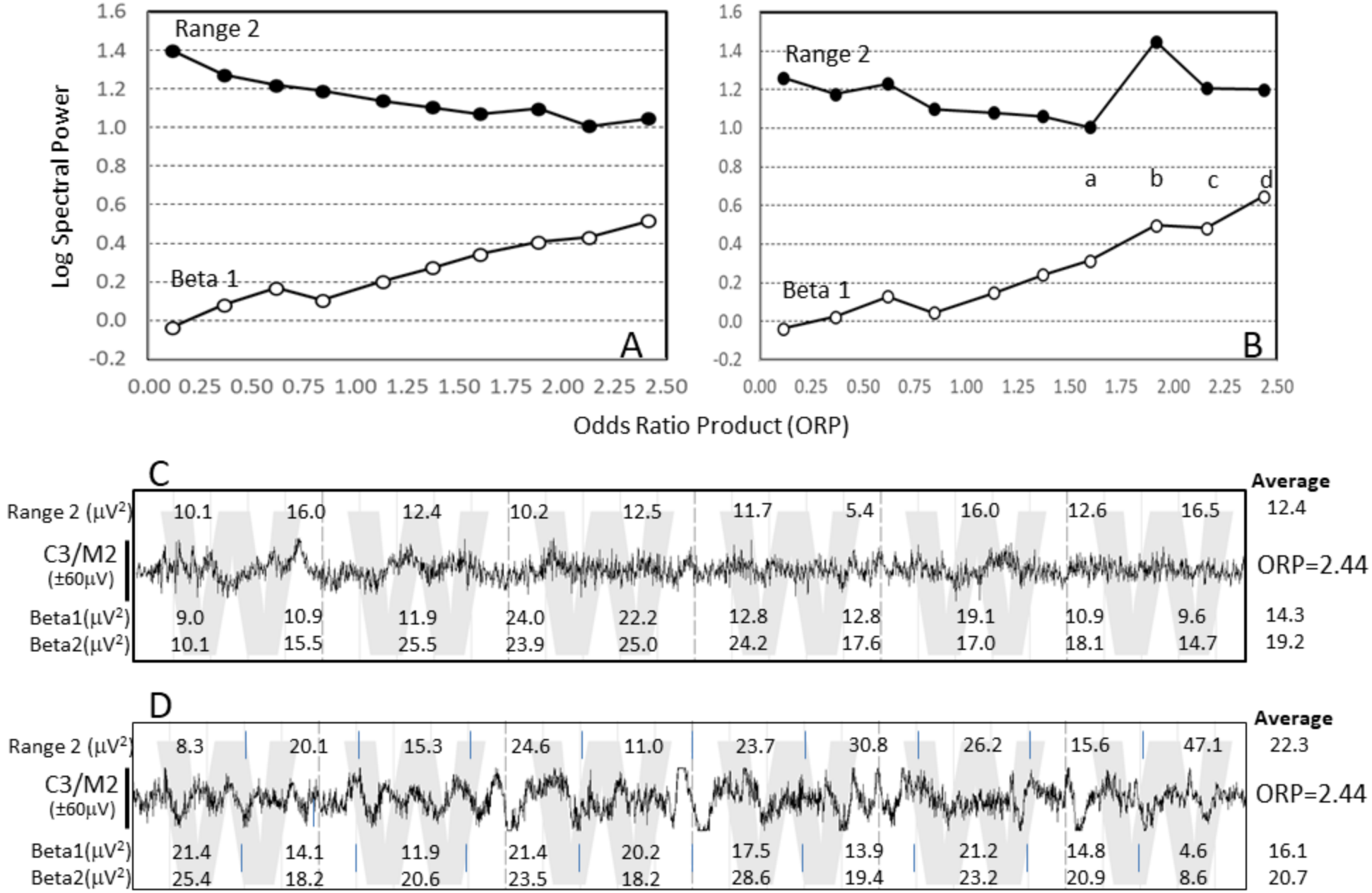

Change in % of epochs
(% epochs with – without sedation)
20
15
10
5
0
-5
-10
-15
-20
-25
-30
0-0.25
0.25-0.5
0.5-0.75
0.75-1.0
1.0-1.25
1.25-1.5
1.5-1.75
1.75-2.0
2.0-2.25
2.25-2.5
ORP in 30-second Epochs
40
30
20
10
0
-10
-20
-30
-40
-50
-60
<1.0
1.0-1.75
>1.75
ORP range

Fig. S10


Log Spectral Power
Range 2
Beta 1
A
B
a
b
c
d
Odds Ratio Product (ORP)
C
Average
Range 2 (μV²) 10.1 16.0 12.4 10.2 12.5 11.7 5.4 16.0 12.6 16.5 12.4
C3/M2 (±60μV)
ORP=2.44
Beta1(μV²) 9.0 10.9 11.9 24.0 22.2 12.8 12.8 19.1 10.9 9.6 14.3
Beta2(μV²) 10.1 15.5 25.5 23.9 25.0 24.2 17.6 17.0 18.1 14.7 19.2
D
Average
Range 2 (μV²) 8.3 20.1 15.3 24.6 11.0 23.7 30.8 26.2 15.6 47.1 22.3
C3/M2 (±60μV)
ORP=2.44
Beta1(μV²) 21.4 14.1 11.9 21.4 20.2 17.5 13.9 21.2 14.8 4.6 16.1
Beta2(μV²) 25.4 18.2 20.6 23.5 18.2 28.6 19.4 23.2 20.9 8.6 20.7