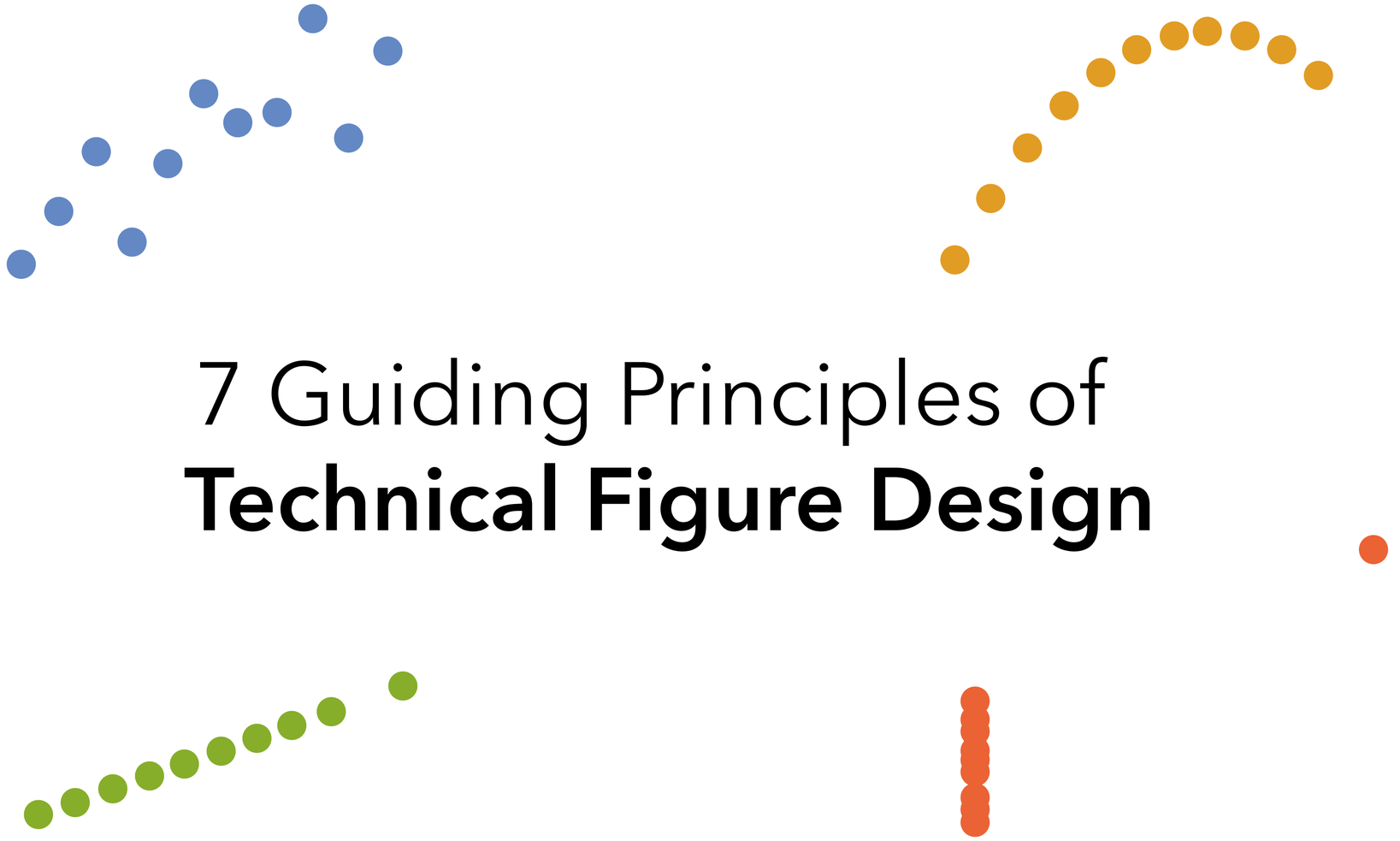
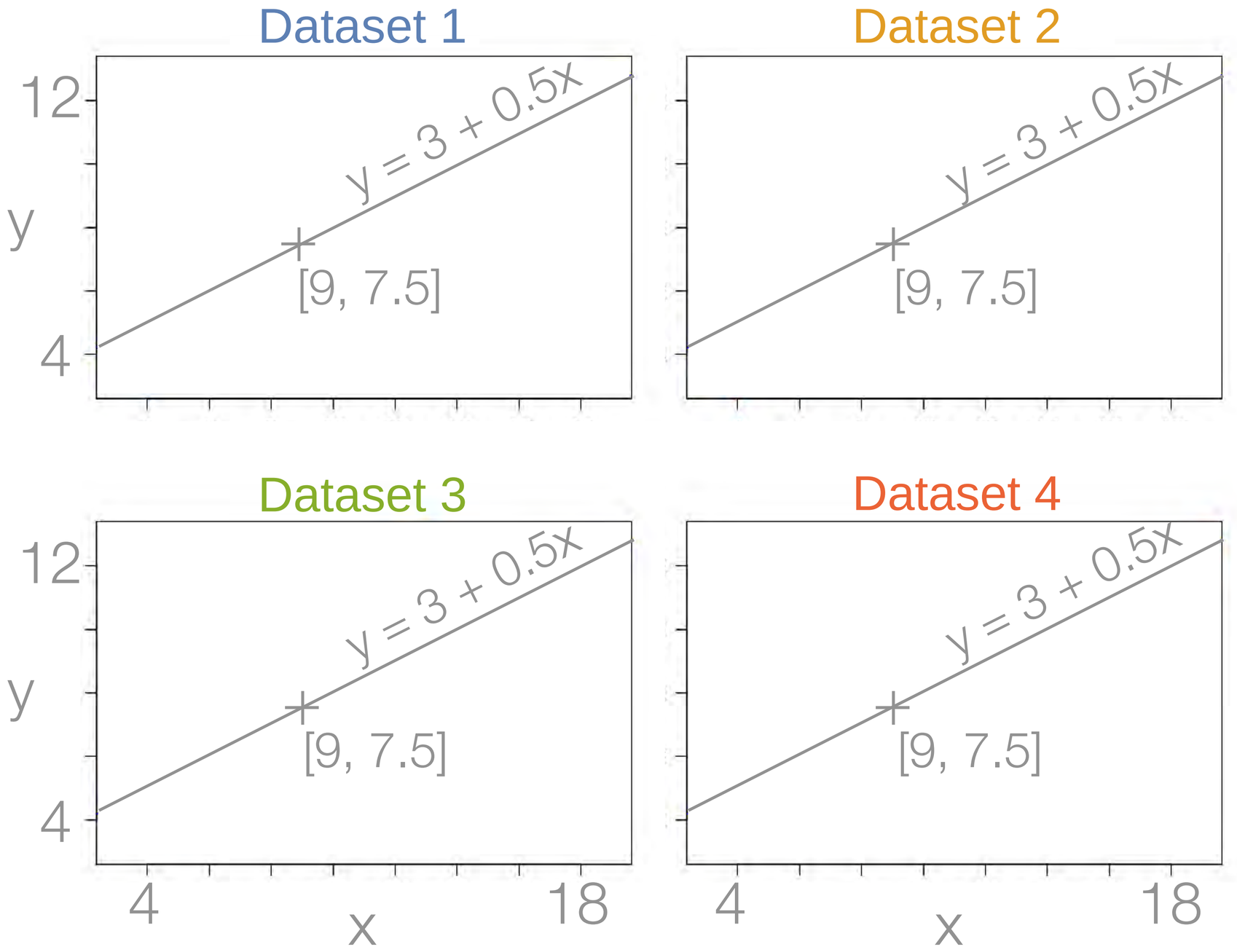
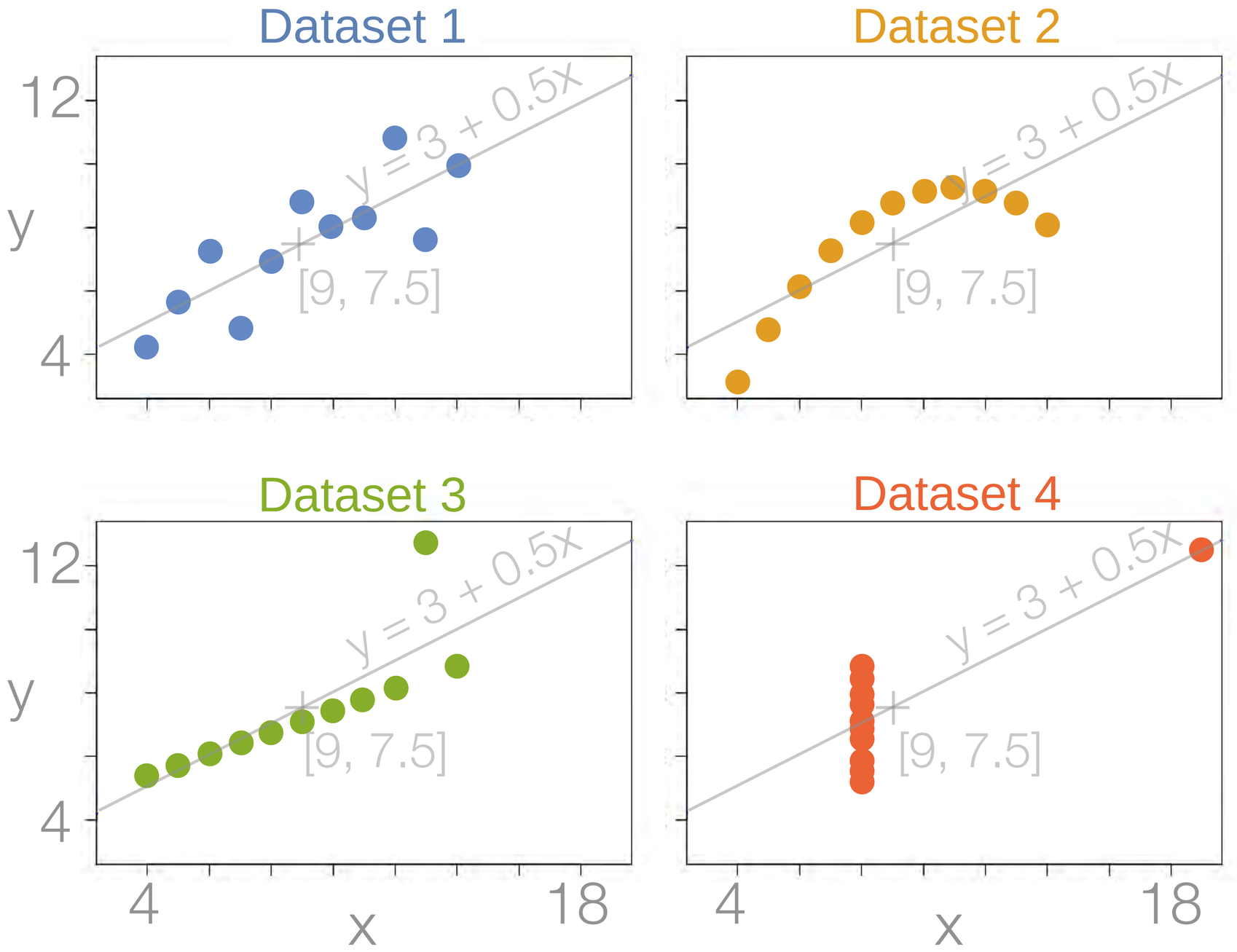


7 Guiding Principles of **Technical Figure Design**

Dan Quinn
MAE/ECE

	Dataset 1		Dataset 2		Dataset 3		Dataset 4	
	x	**y**	**x**	**y**	**x**	**y**	**x**	**y**
	10.0	8.04	10.0	9.14	10.0	7.46	8.0	6.58
	8.0	6.95	8.0	8.14	8.0	6.77	8.0	5.76
	13.0	7.58	13.0	8.74	13.0	12.74	8.0	7.71
	9.0	8.81	9.0	8.77	9.0	7.11	8.0	8.84
	11.0	8.33	11.0	9.26	11.0	7.81	8.0	8.47
	14.0	9.96	14.0	8.10	14.0	8.84	8.0	7.04
	6.0	7.24	6.0	6.13	6.0	6.08	8.0	5.25
	4.0	4.26	4.0	3.10	4.0	5.39	19.0	12.50
	12.0	10.84	12.0	9.13	12.0	8.15	8.0	5.56
	7.0	4.82	7.0	7.26	7.0	6.42	8.0	7.91
	5.0	5.68	5.0	4.74	5.0	5.73	8.0	6.89
Mean:	9	7.5	9	7.5	9	7.5	9	7.5
Linear fit:	$y = 3 + 0.5x$		$y = 3 + 0.5x$		$y = 3 + 0.5x$		$y = 3 + 0.5x$	
	$R^2 = 0.69$		$R^2 = 0.69$		$R^2 = 0.69$		$R^2 = 0.69$	


Dataset 1
Dataset 2
Dataset 3
Dataset 4
y = 3 + 0.5x
[9, 7.5]
12
4
y
4
18
x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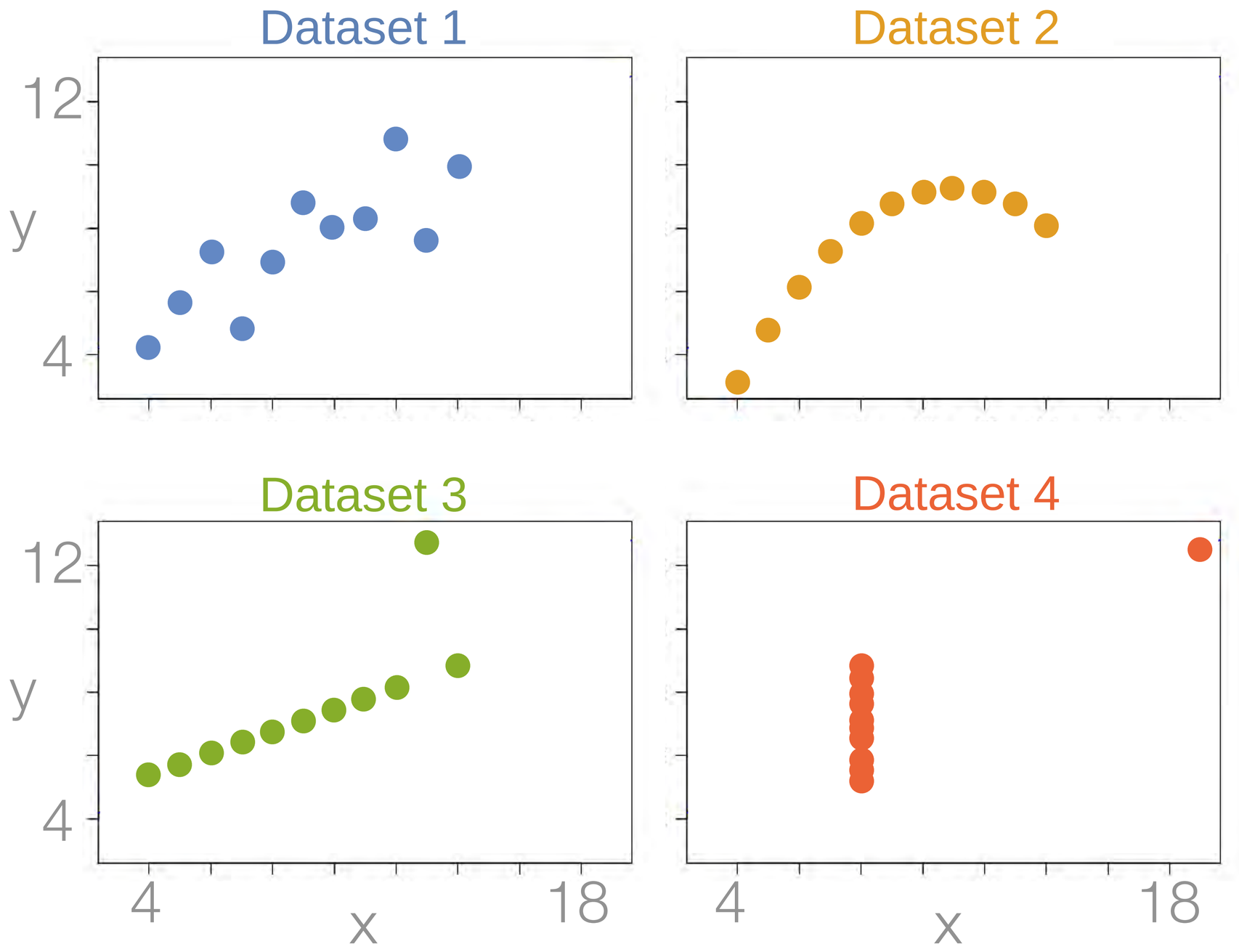
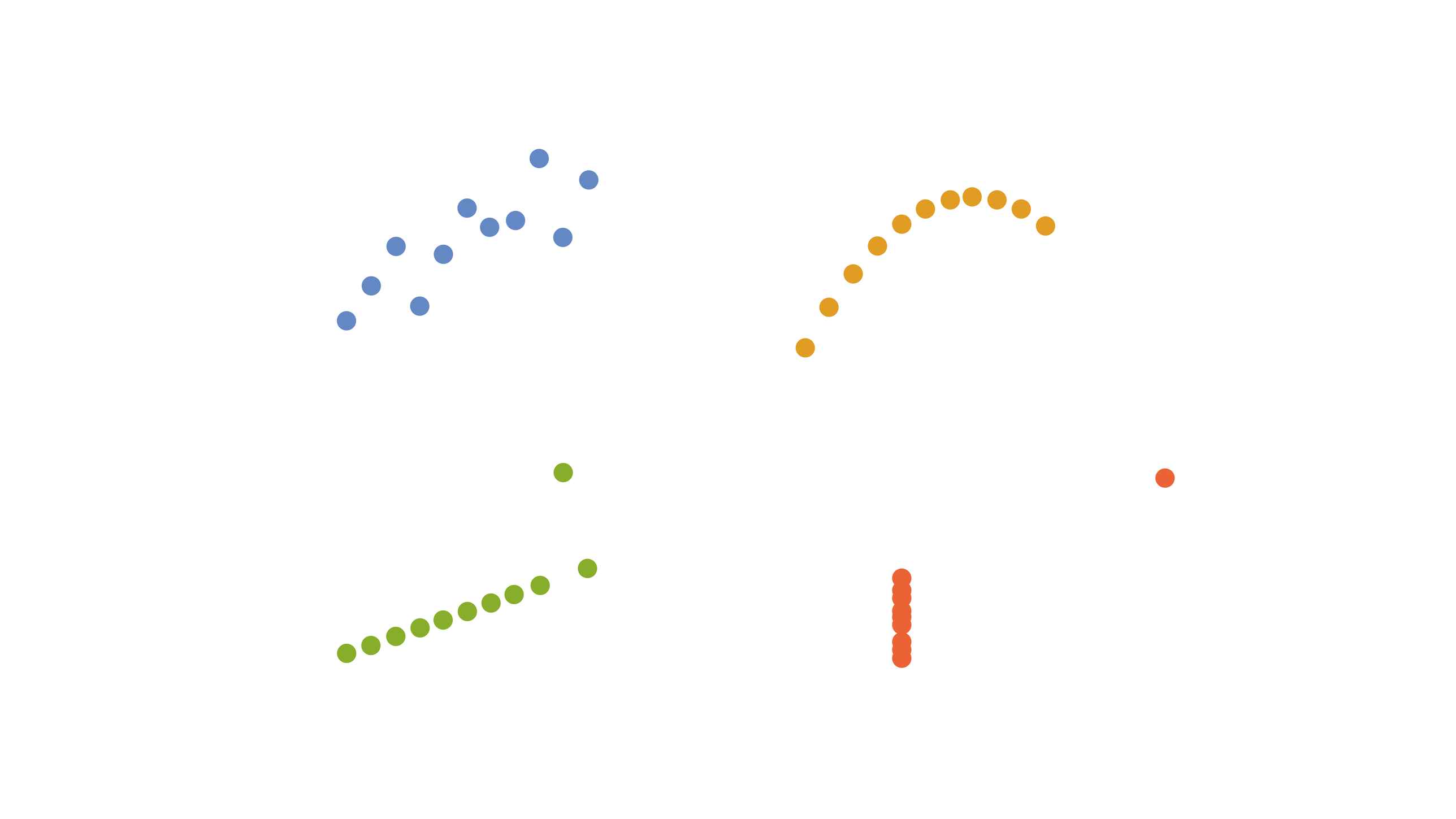
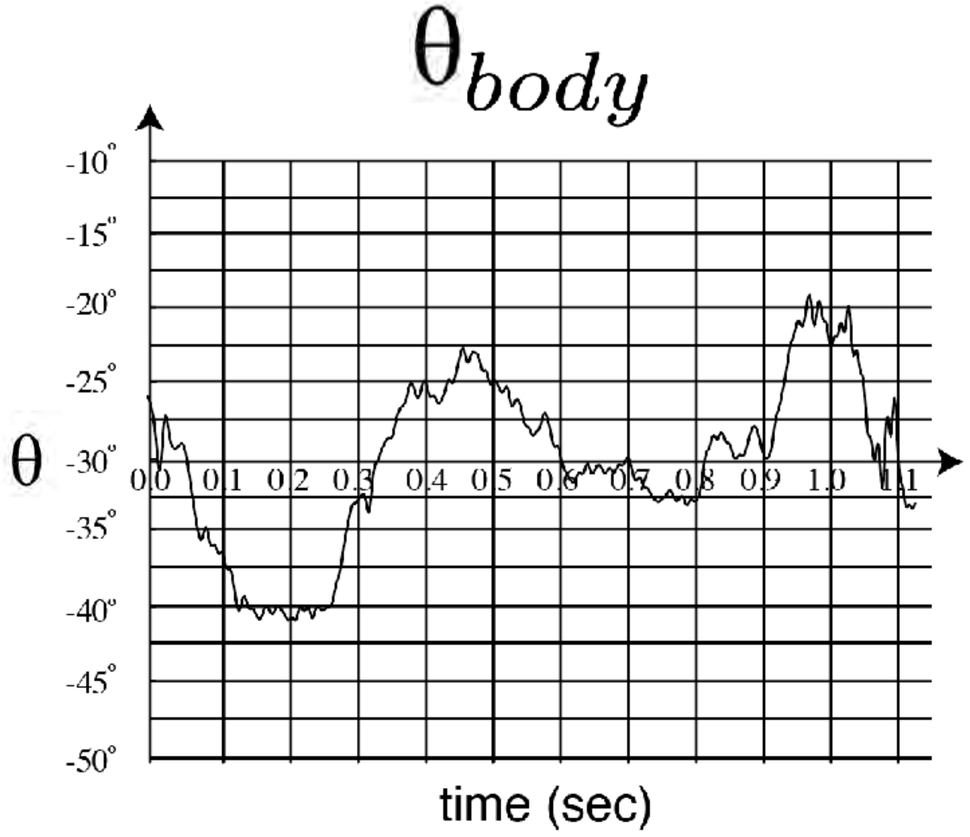
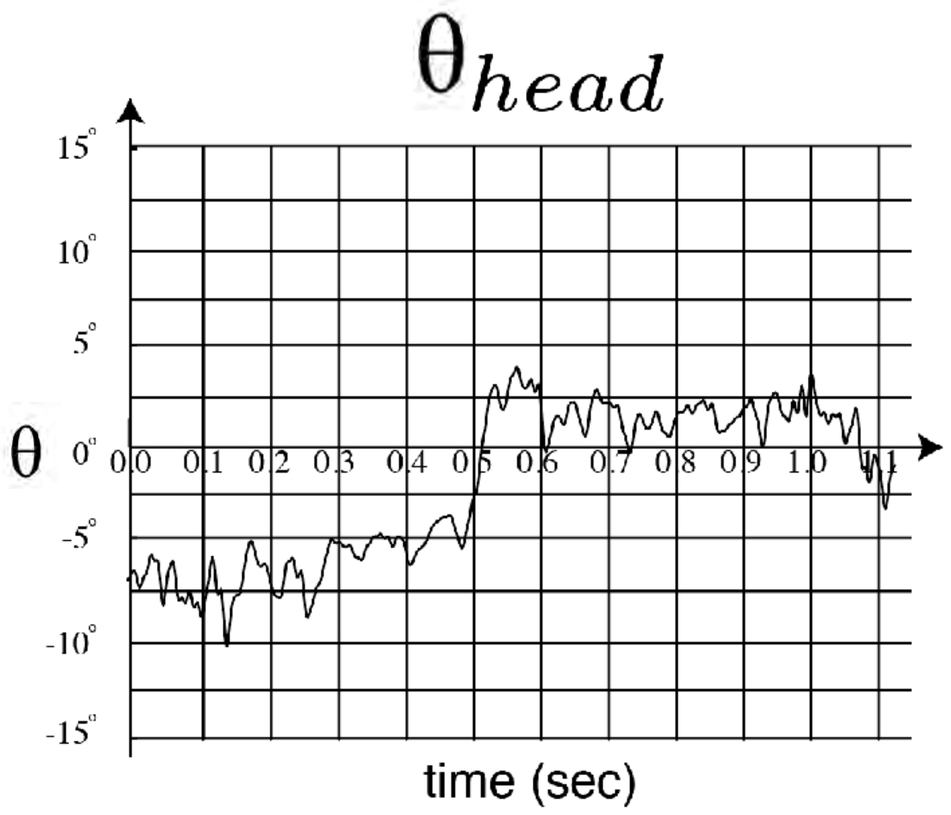

Dataset 1
Dataset 2
Dataset 3
Dataset 4
12
4
y
4
18
x

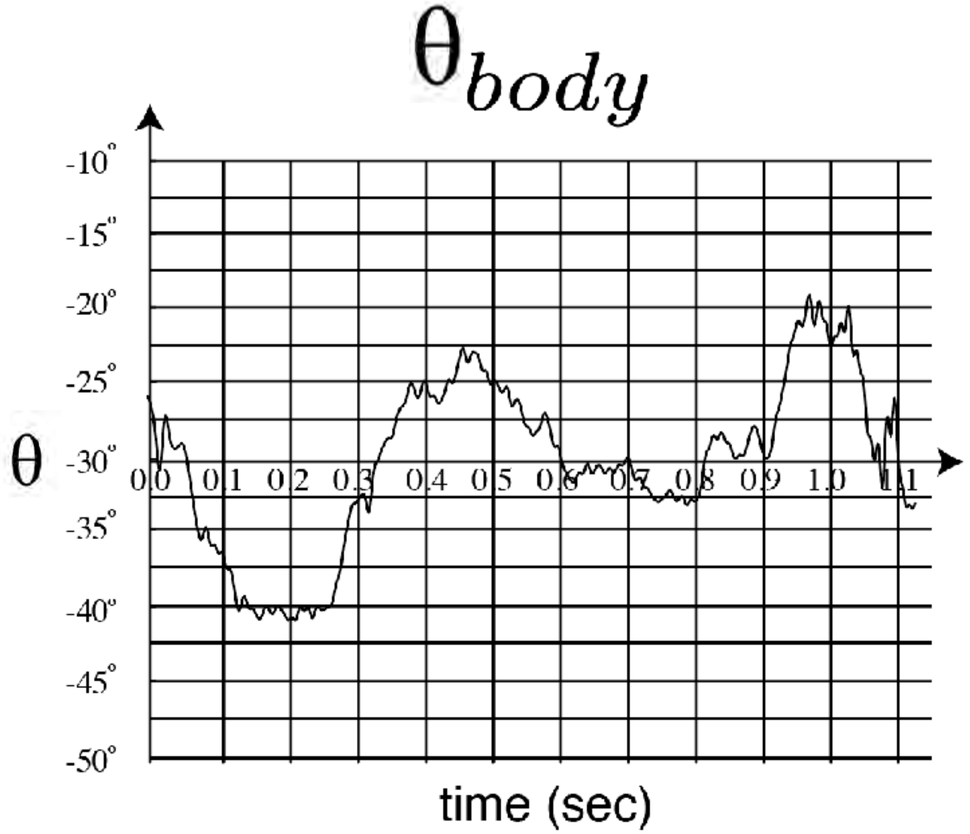


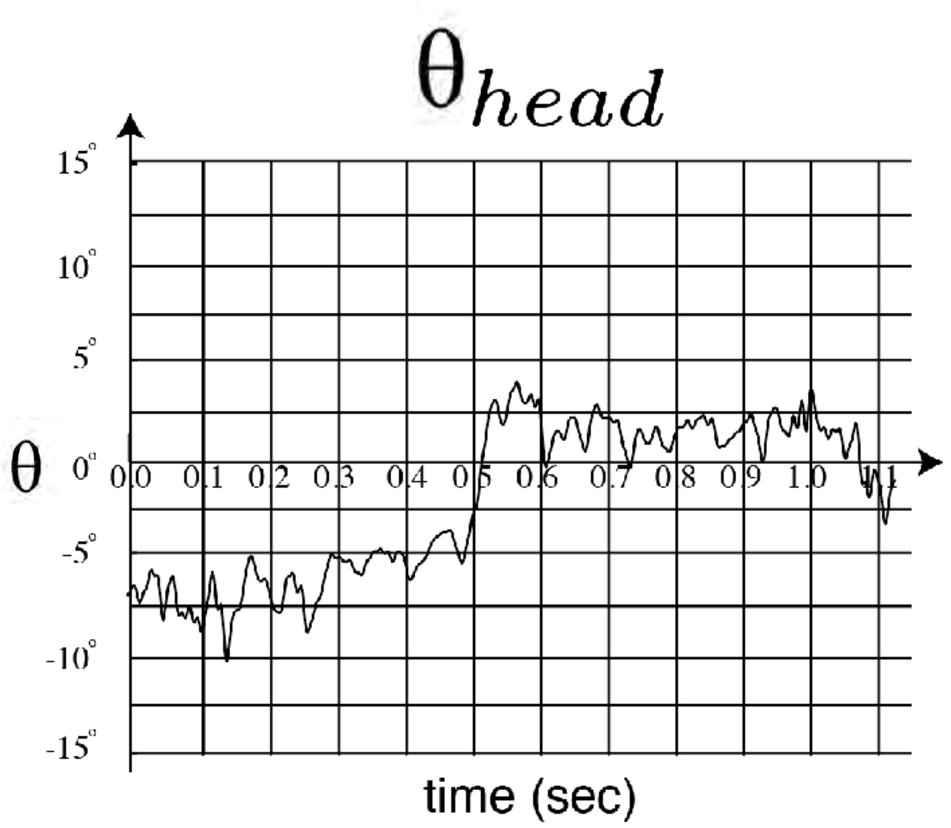
Results


θ body
-10°
-15°
-20°
-25°
θ
-30°
-35°
-40°
-45°
-50°
0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0 1.1
time (sec)

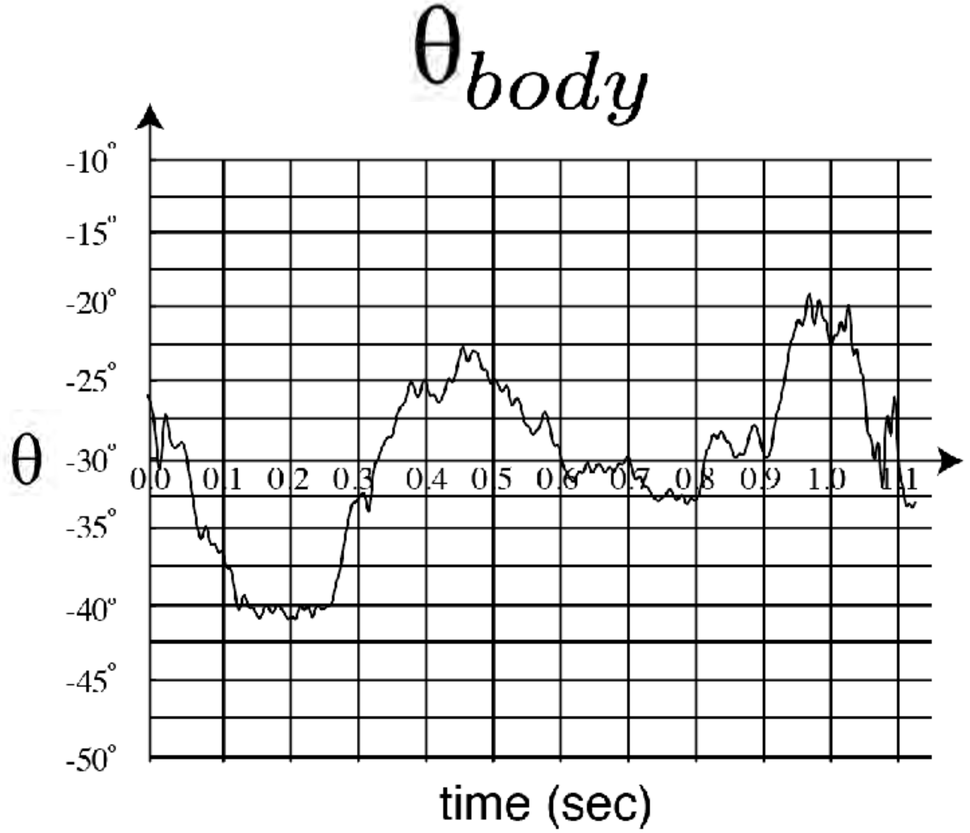

θ head
15°
10°
5°
θ
0°
-5°
-10°
-15°
0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0 1.1
time (sec)

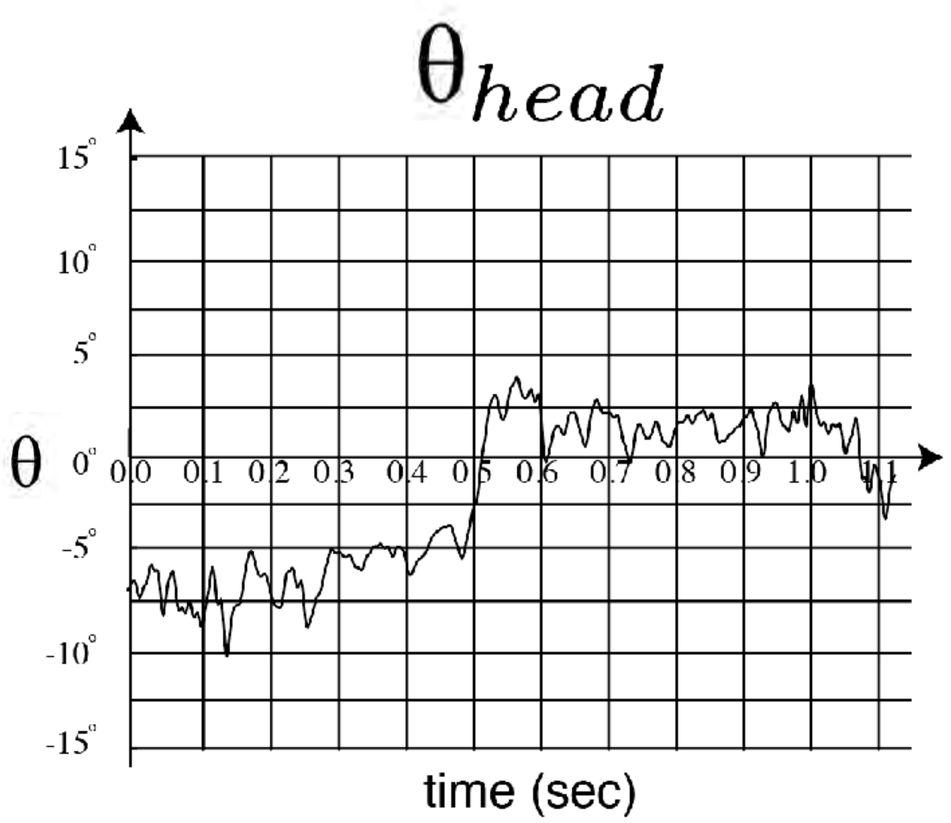
Lovebird body and head kinematics





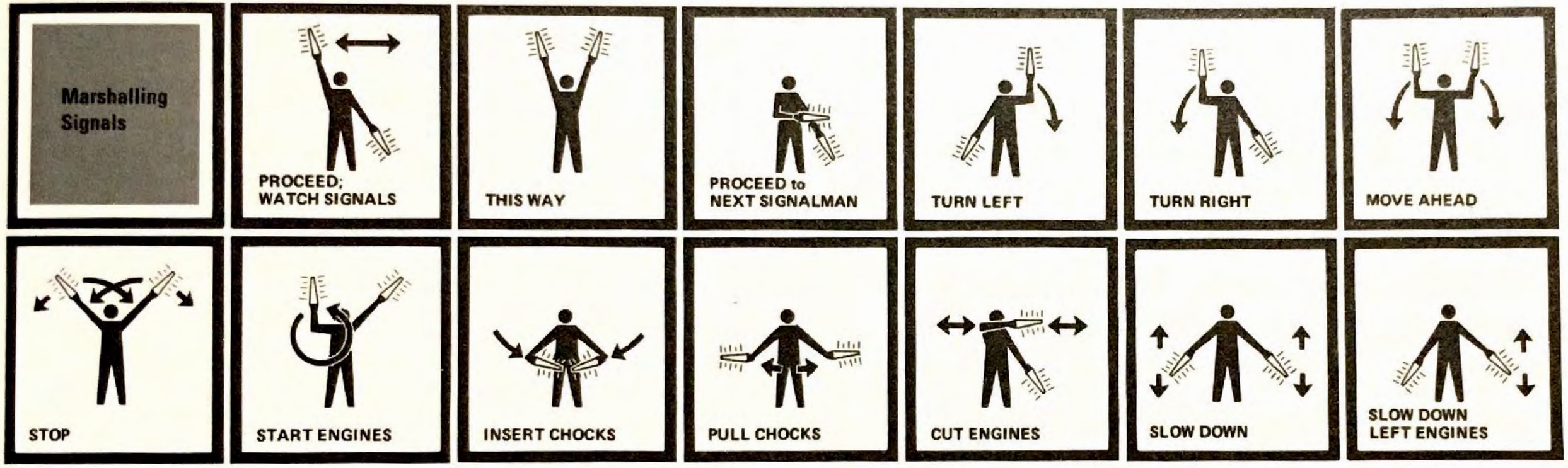
Lovebirds use their neck to stabilize their head mid-flight





Guideline 1:

Title should be a short sentence that summarizes the key takeaway.

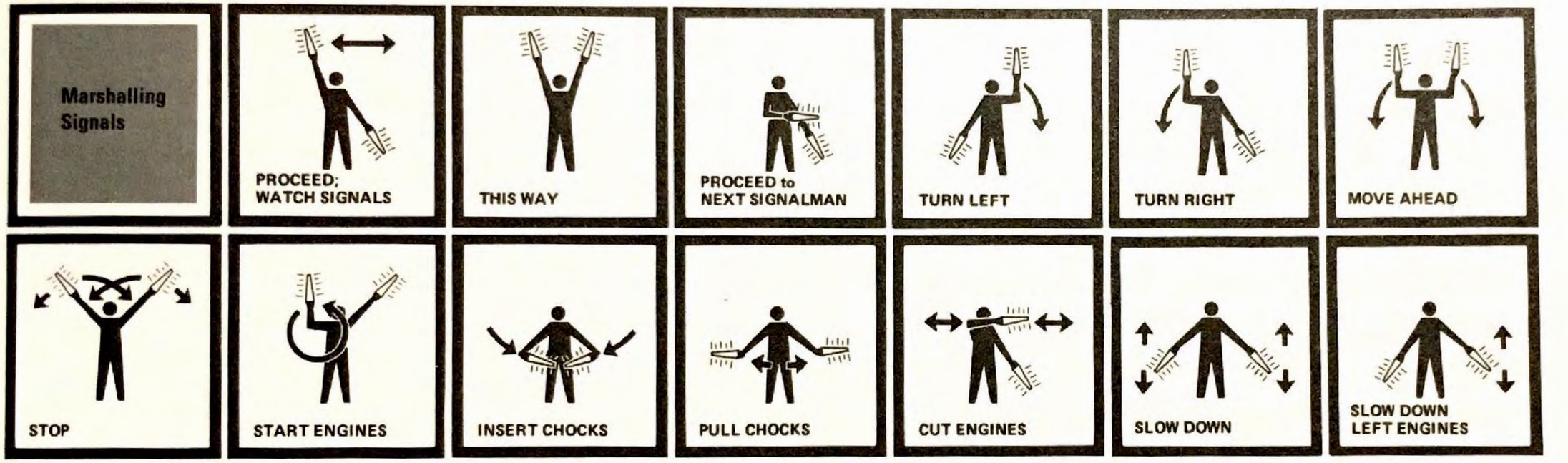

Marshalling Signals
PROCEED; WATCH SIGNALS
THIS WAY
PROCEED to NEXT SIGNALMAN
TURN LEFT
TURN RIGHT
MOVE AHEAD
STOP
START ENGINES
INSERT CHOCKS
PULL CHOCKS
CUT ENGINES
SLOW DOWN
SLOW DOWN LEFT ENGINES

Tufte, 1983

Dataless Ink:

Data Ink:

Tufte, 1983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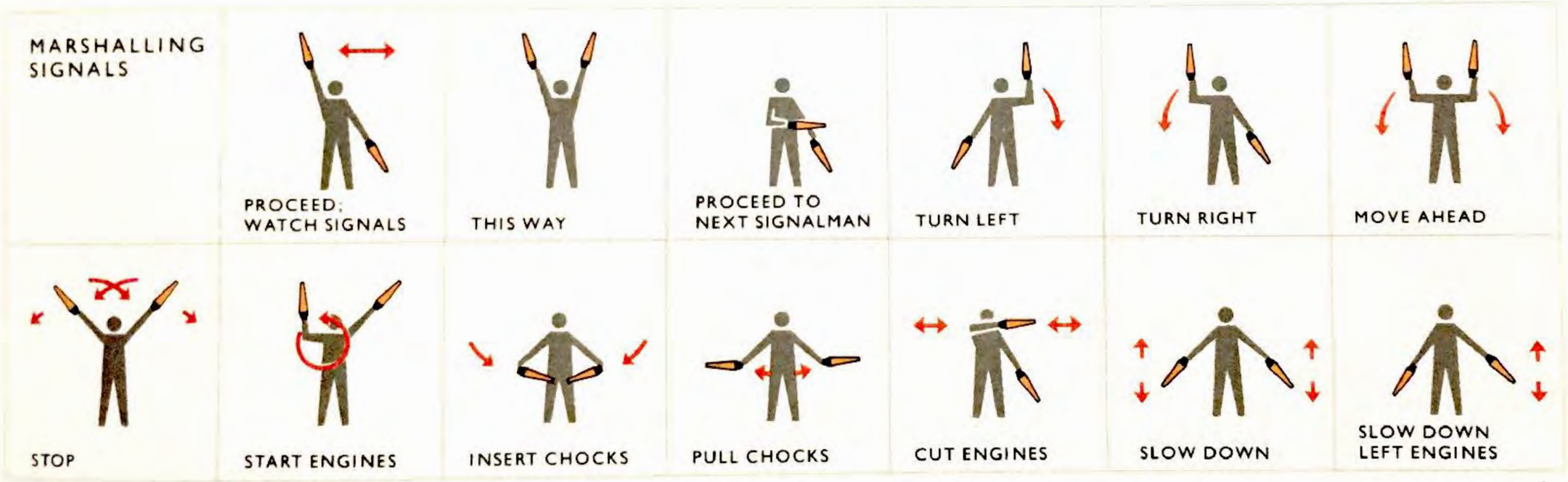
MARSHALLING SIGNALS
PROCEED; WATCH SIGNALS
THIS WAY
PROCEED TO NEXT SIGNALMAN
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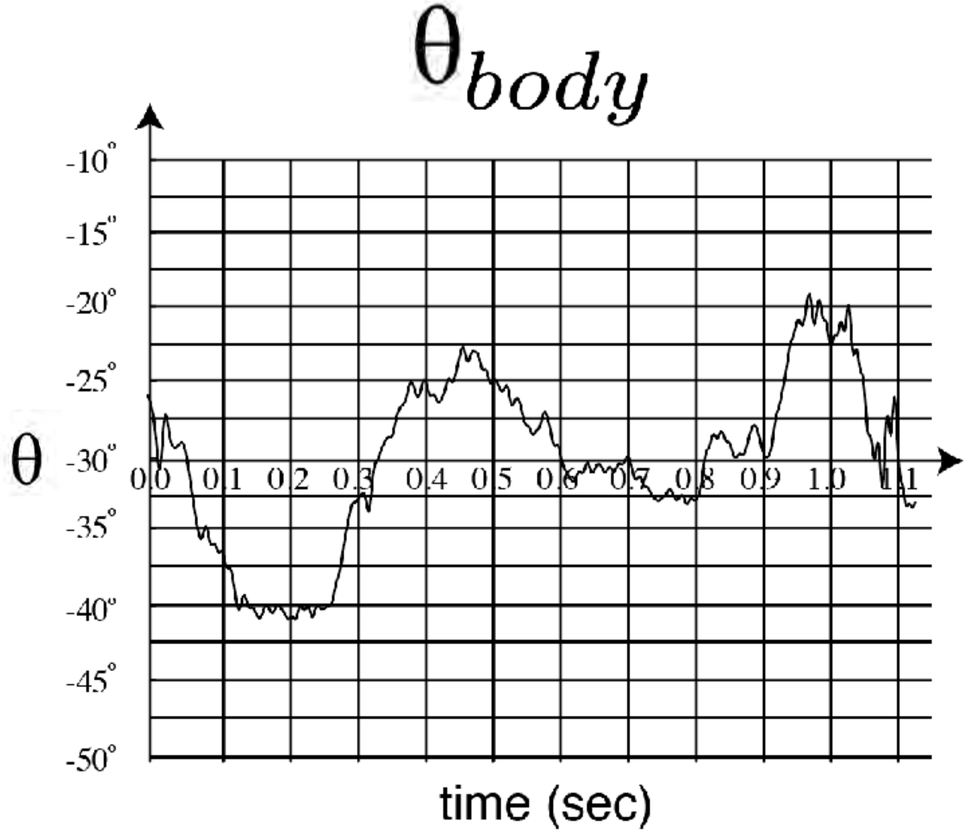
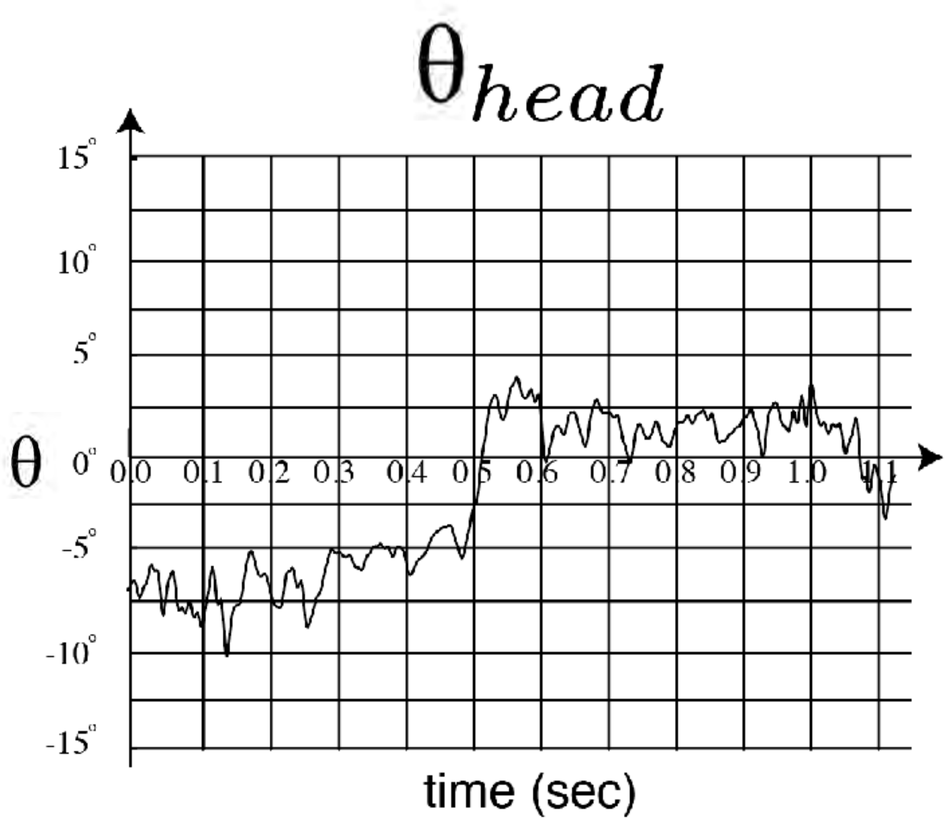
TURN RIGHT
MOVE AHEAD
STOP
START ENGINES
INSERT CHOCKS
PULL CHOCKS
CUT ENGINES
SLOW DOWN
SLOW DOWN LEFT ENGINES

Tufte, 1983

Lovebirds use their neck to stabilize their head mid-flight





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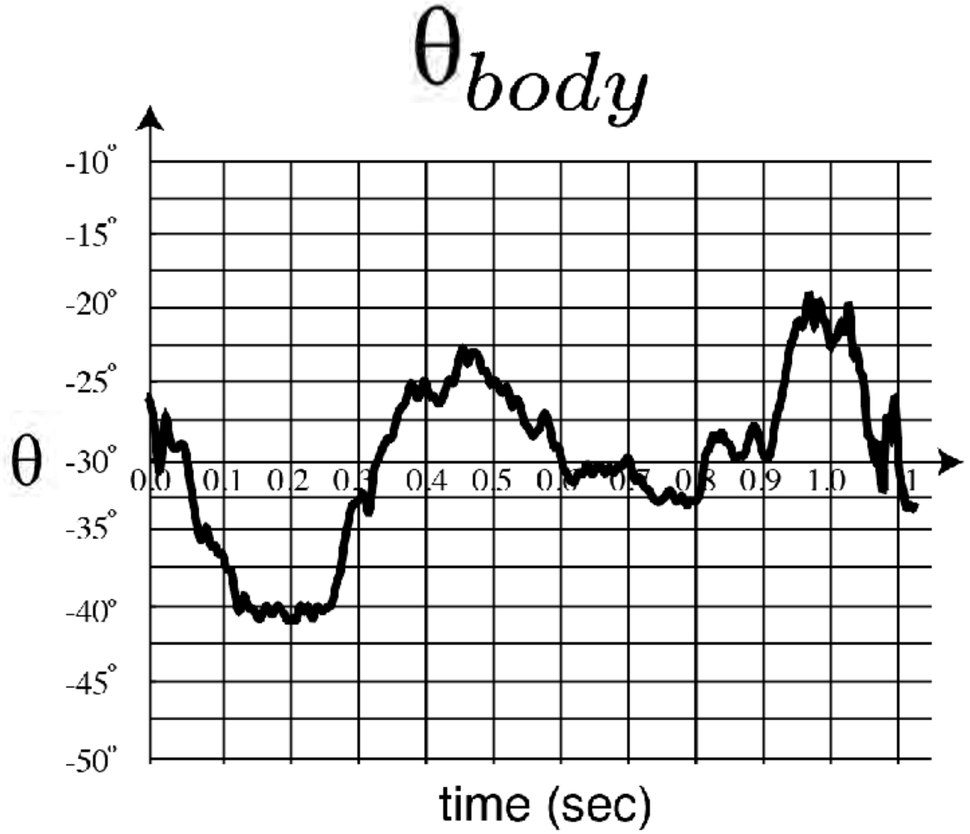

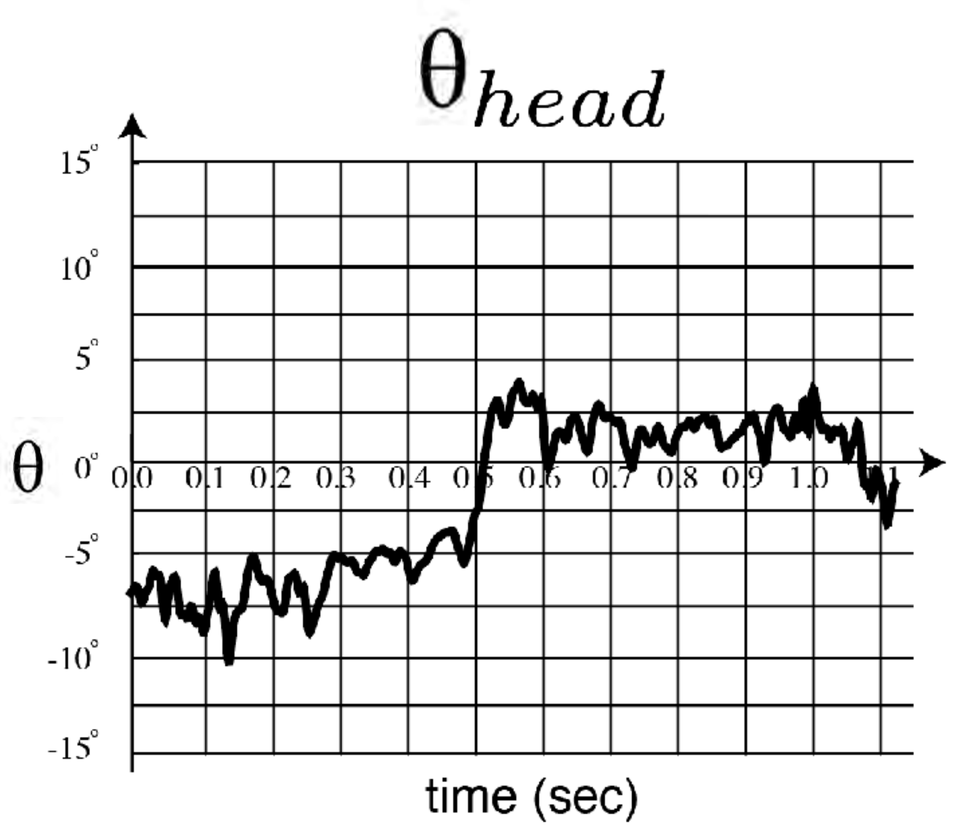

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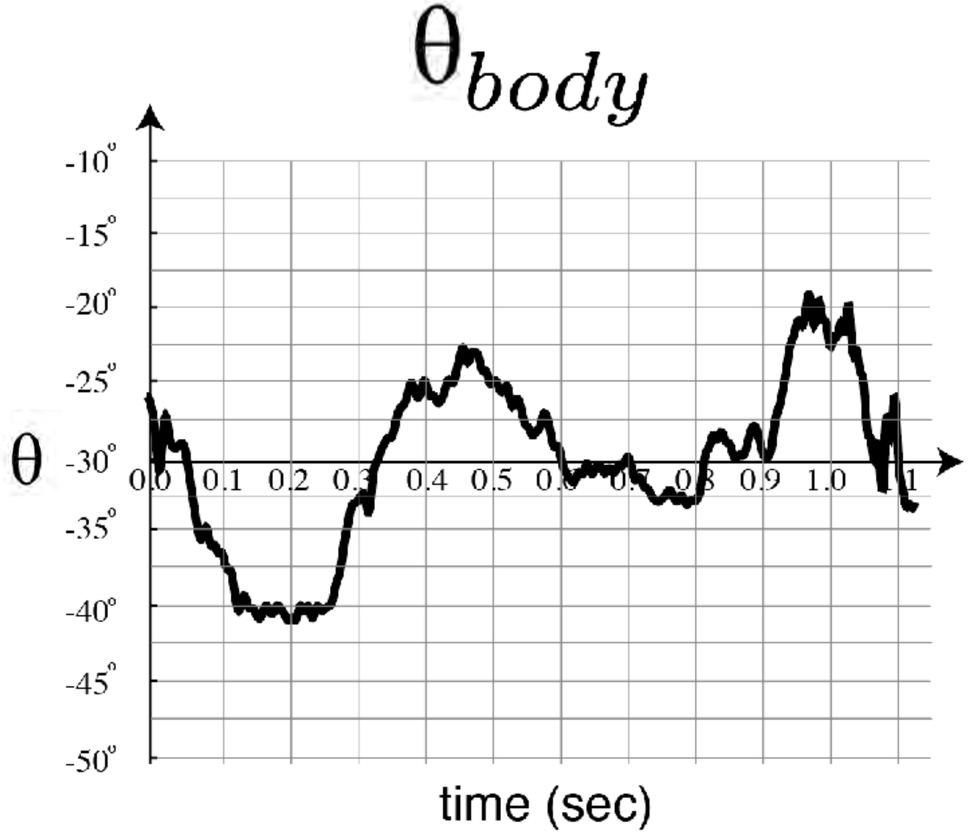

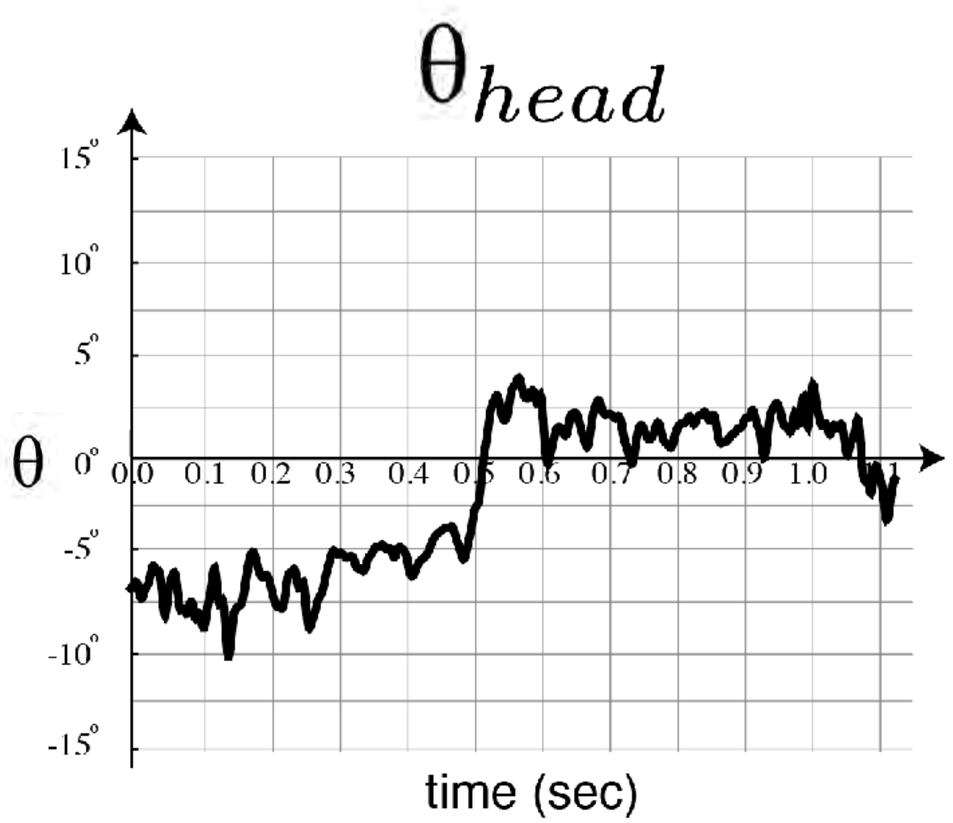

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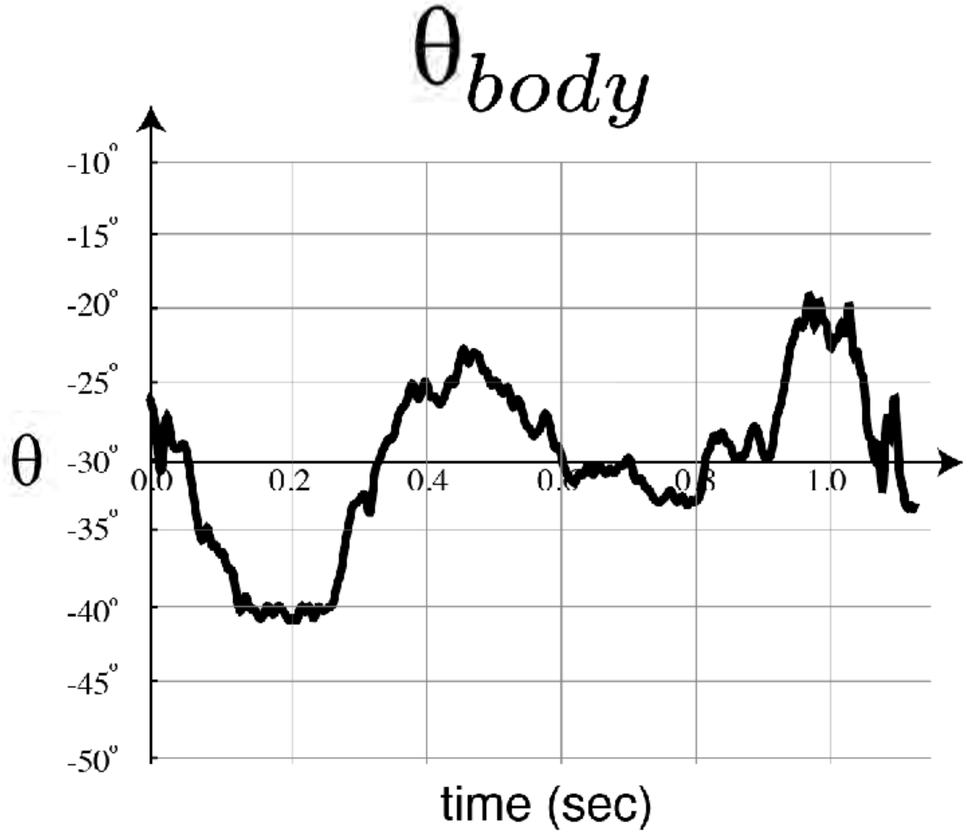

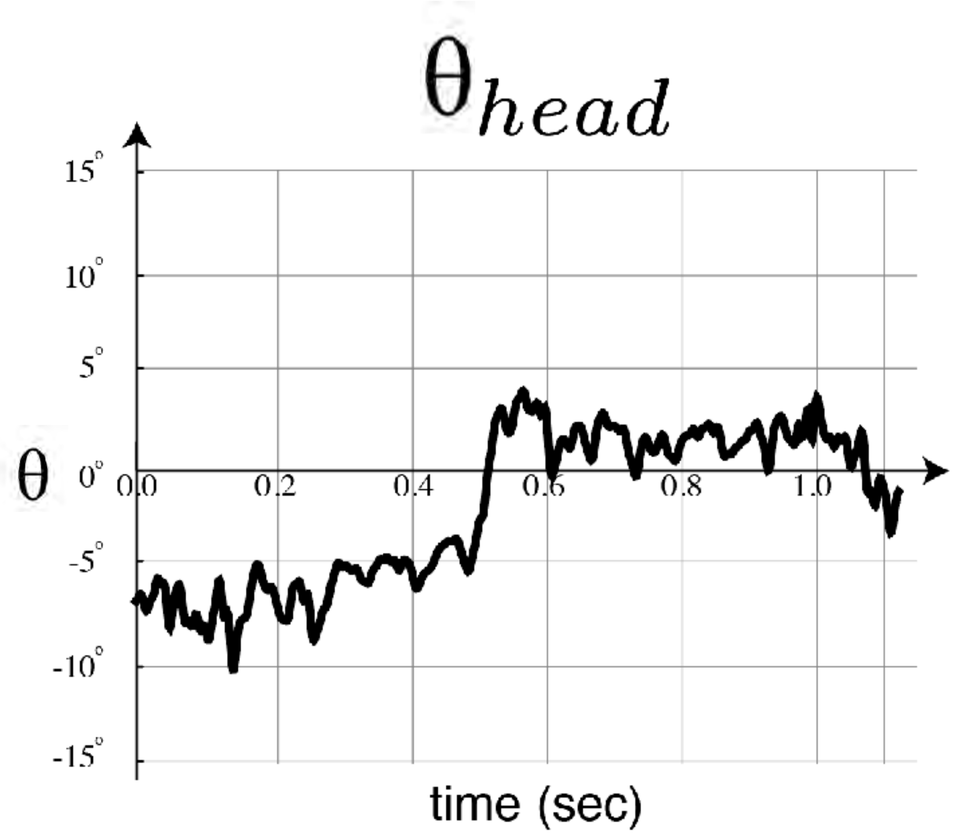

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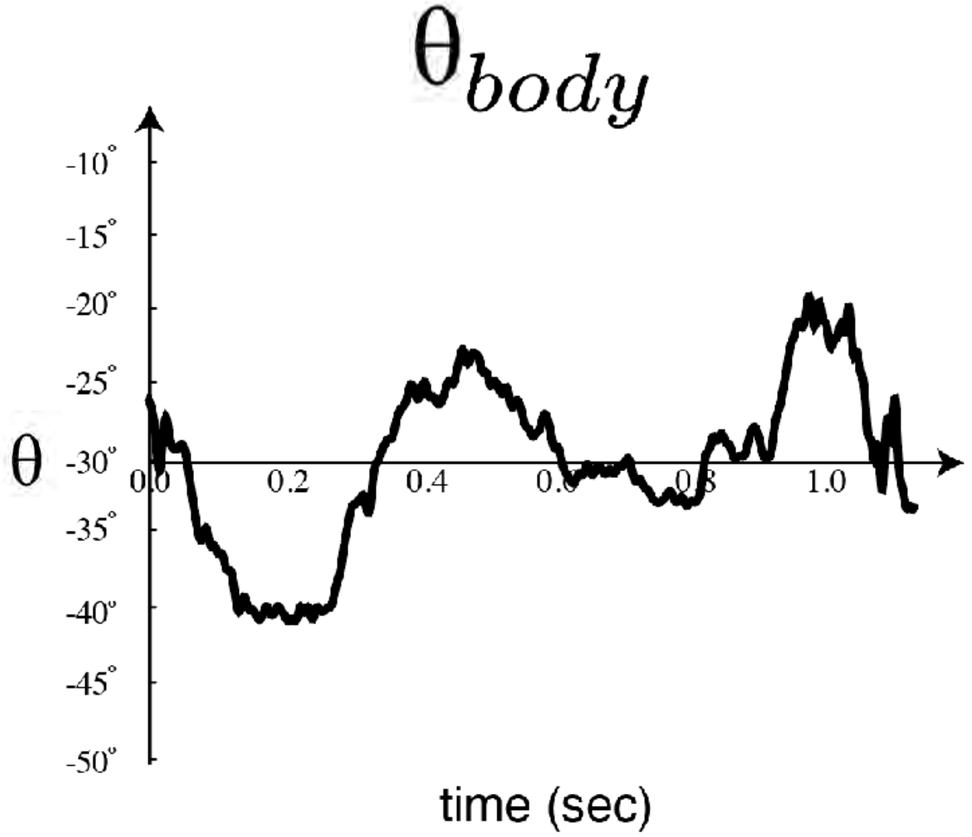
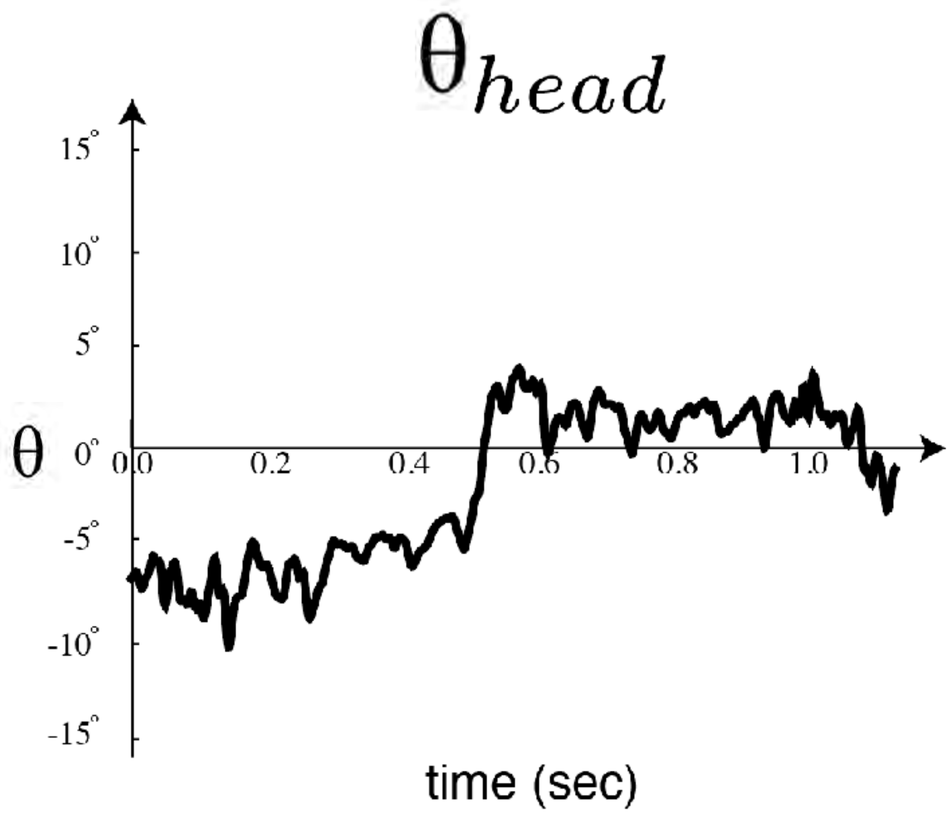




Guideline 2:

Scrutinize every drop of dataless ink

200 pt

150 pt

100 pt

80 pt

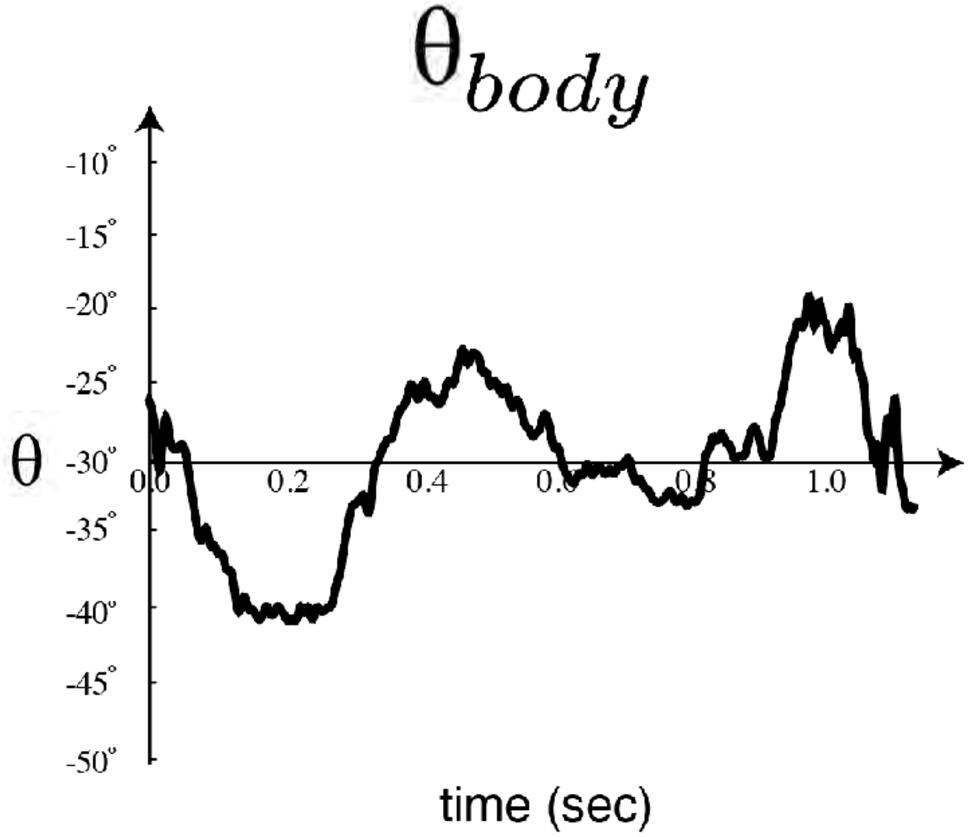
60 pt

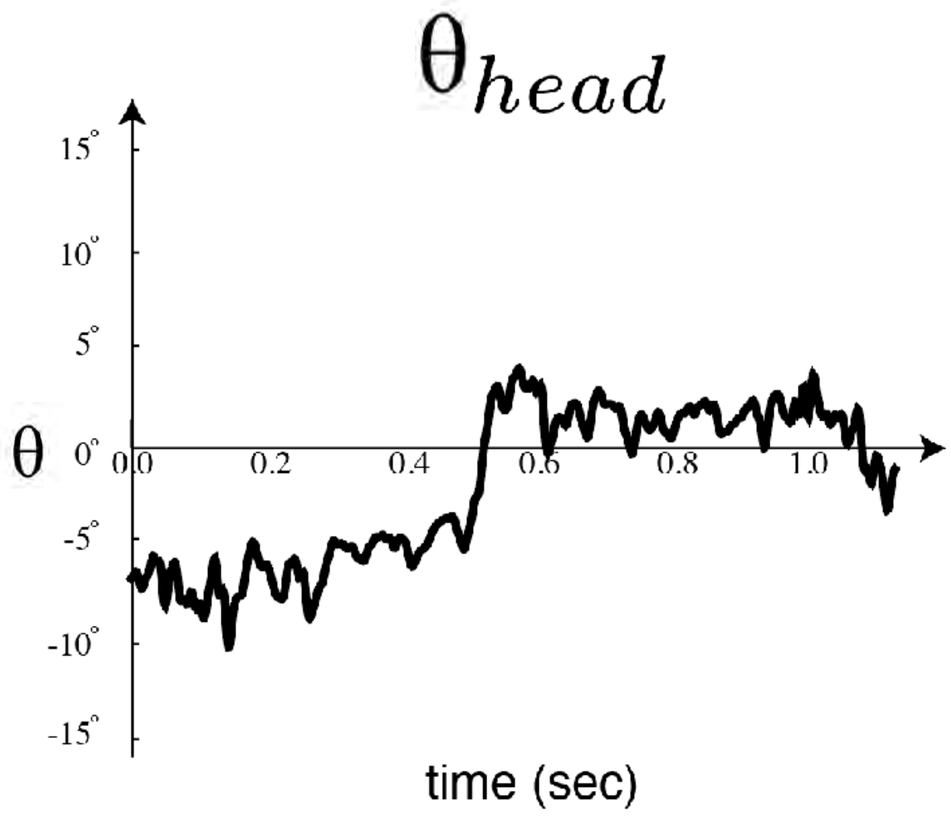
40 pt

20 pt

10 pt

Lovebirds use their neck to stabilize their head mid-flight





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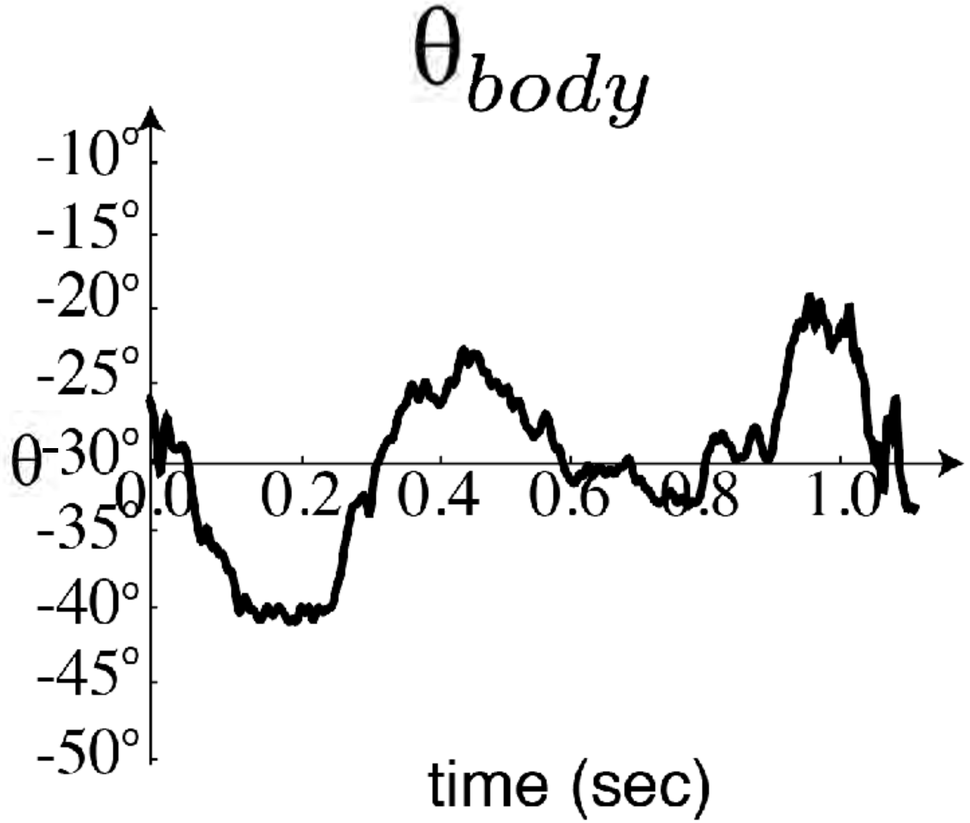

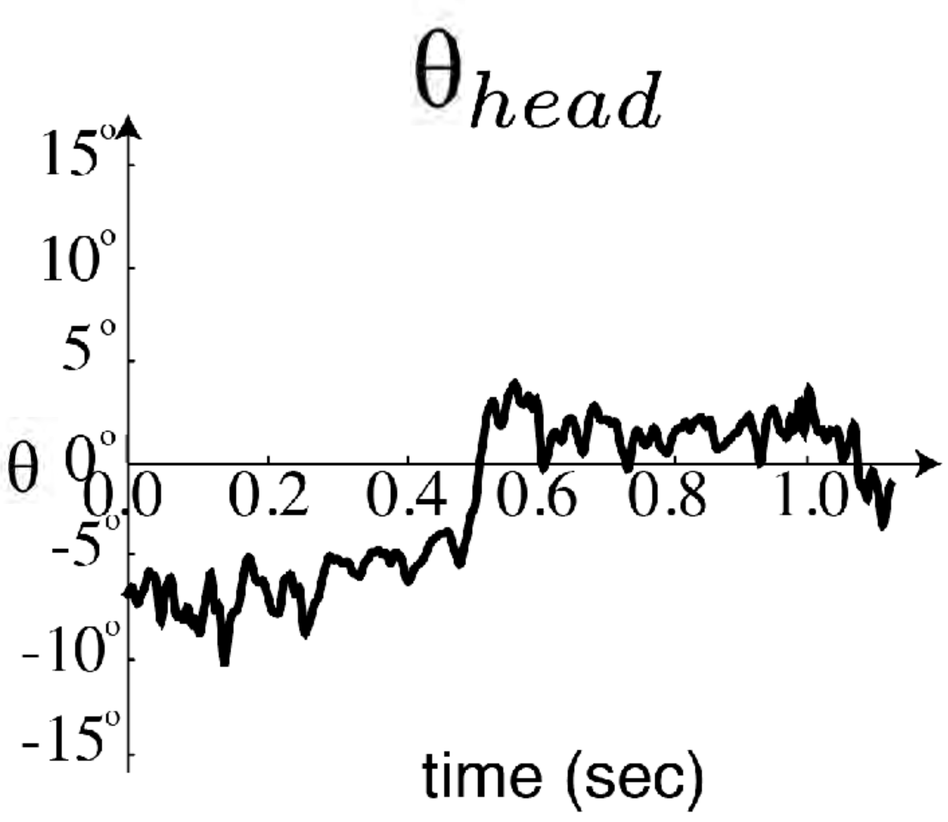

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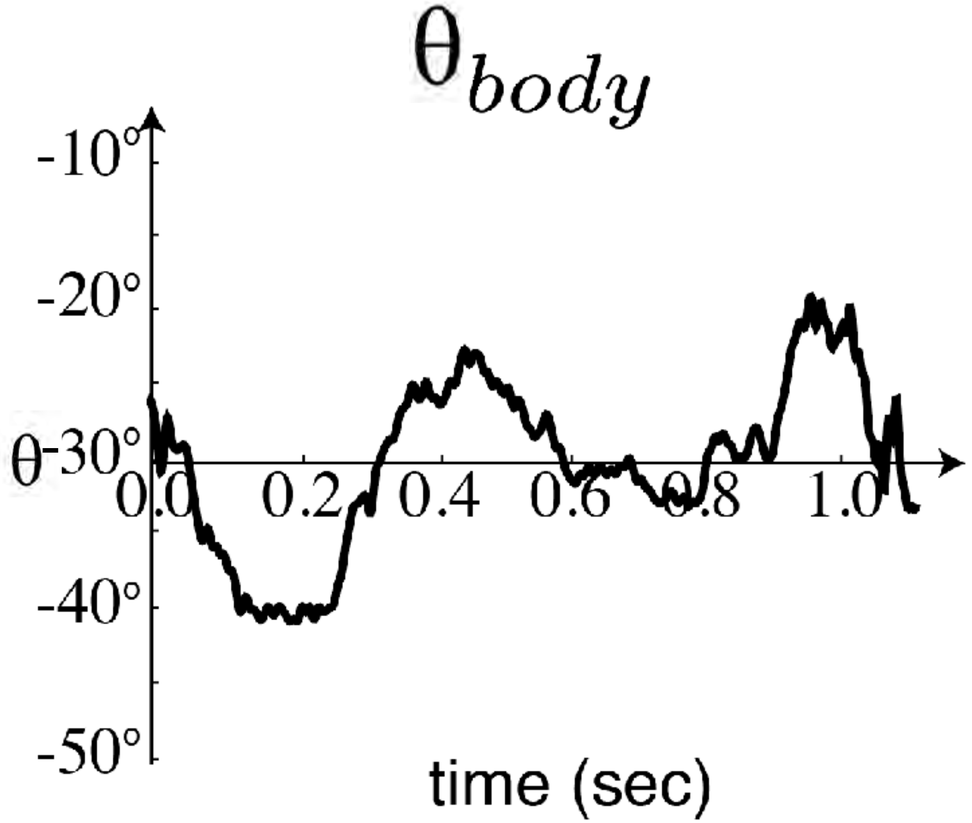

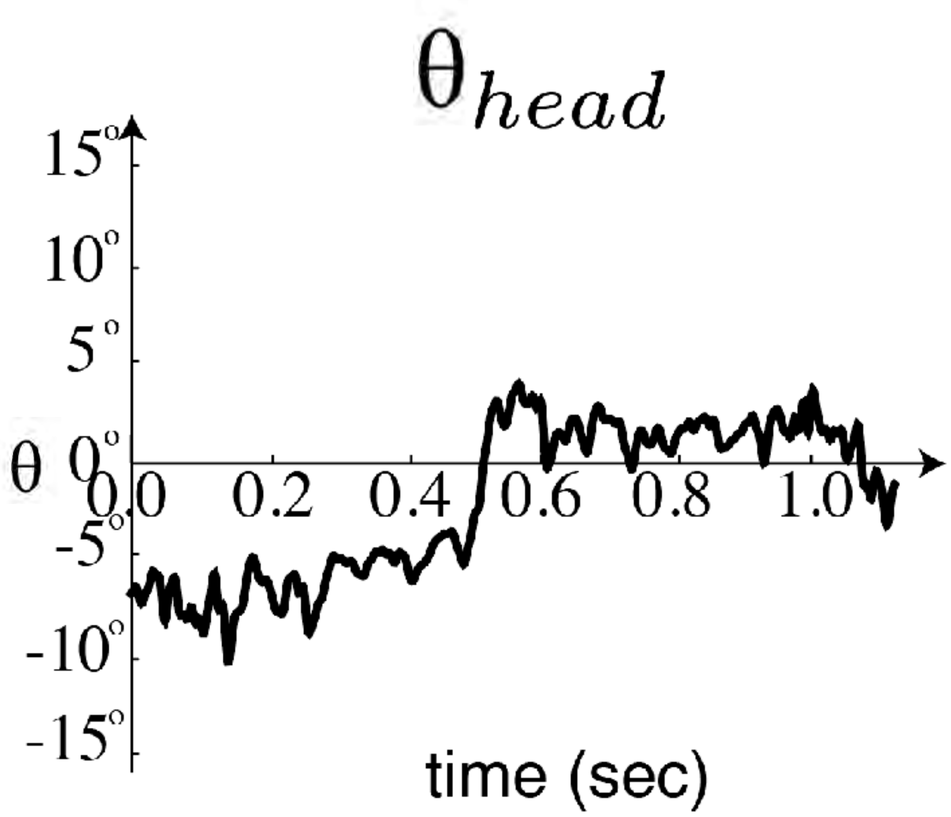

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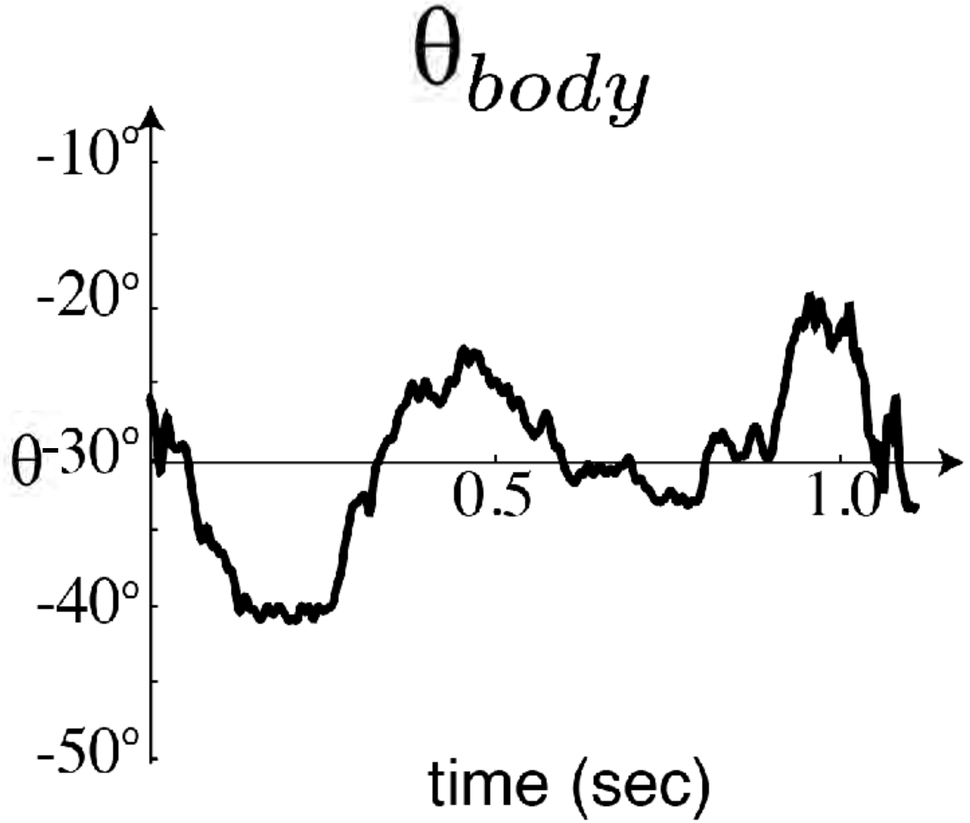
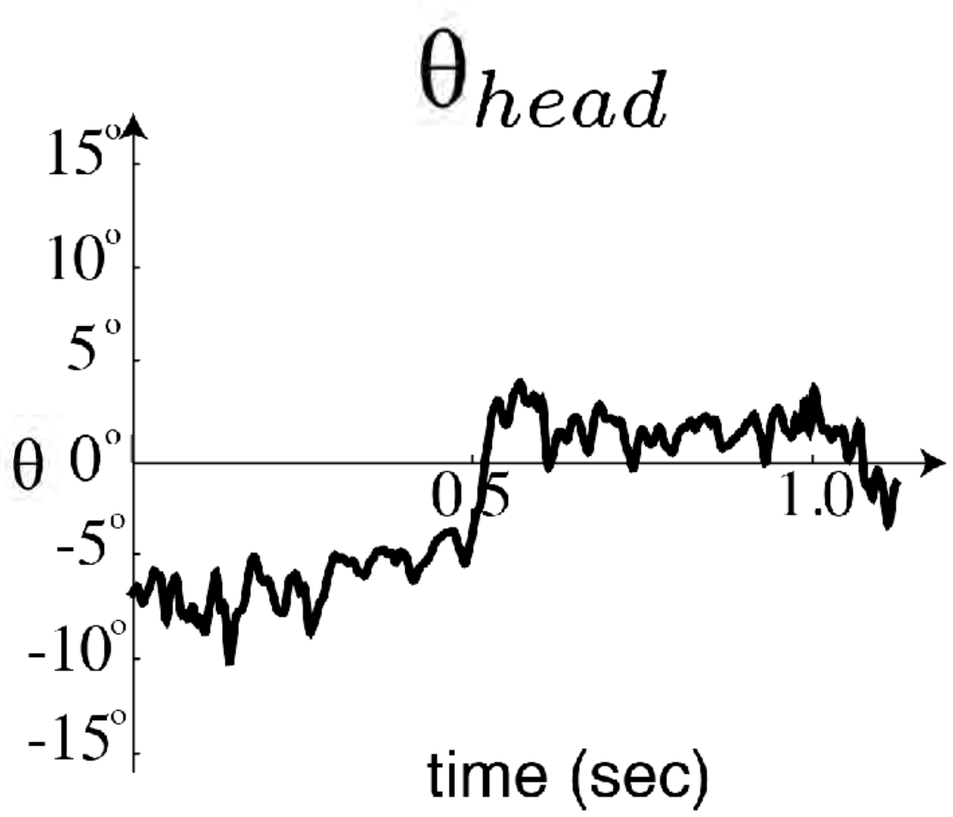
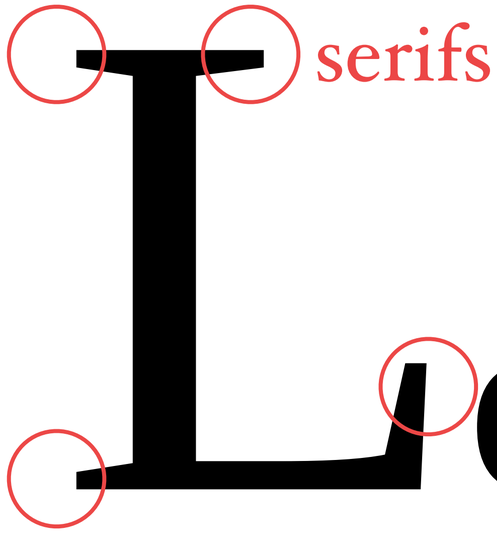
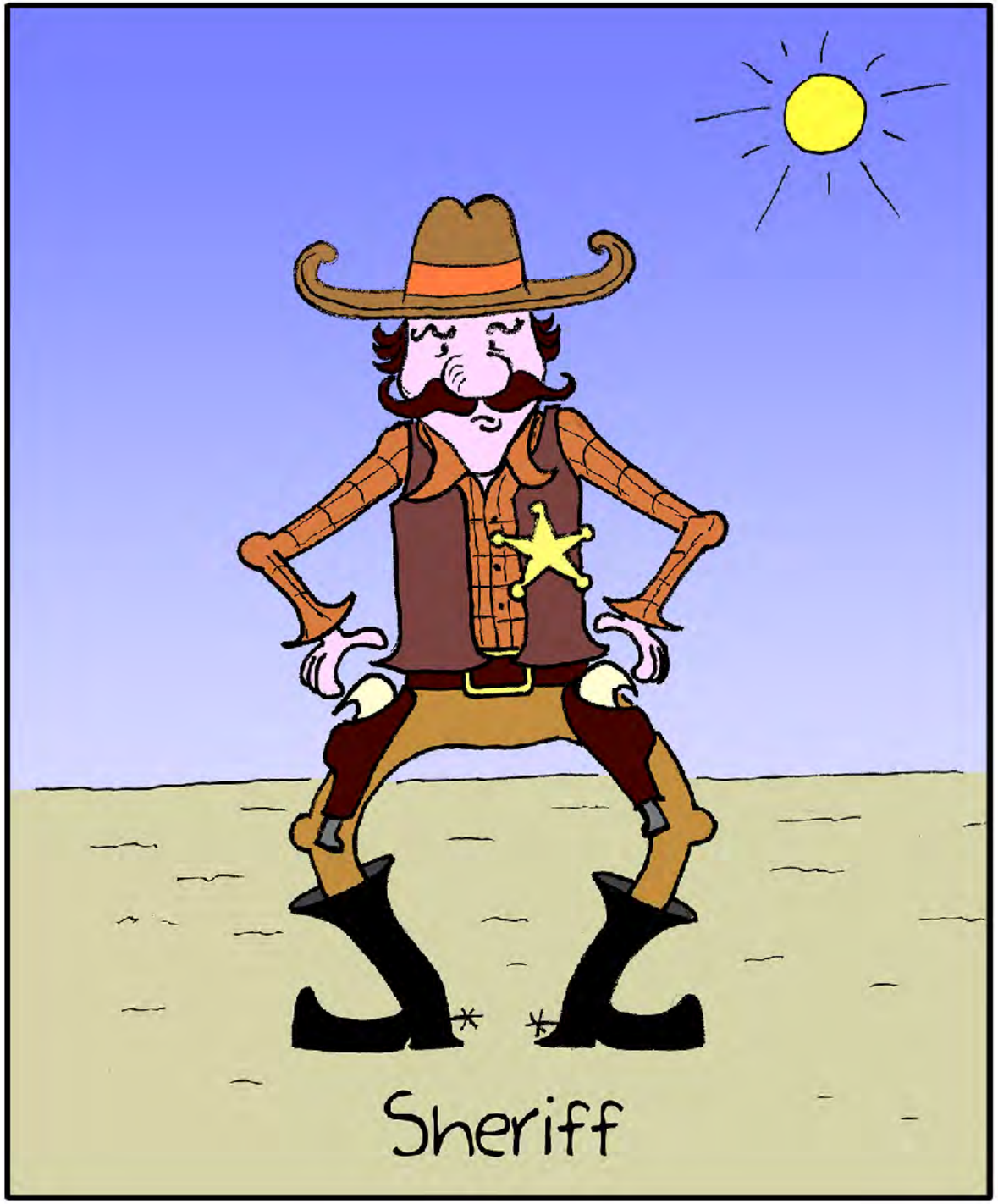


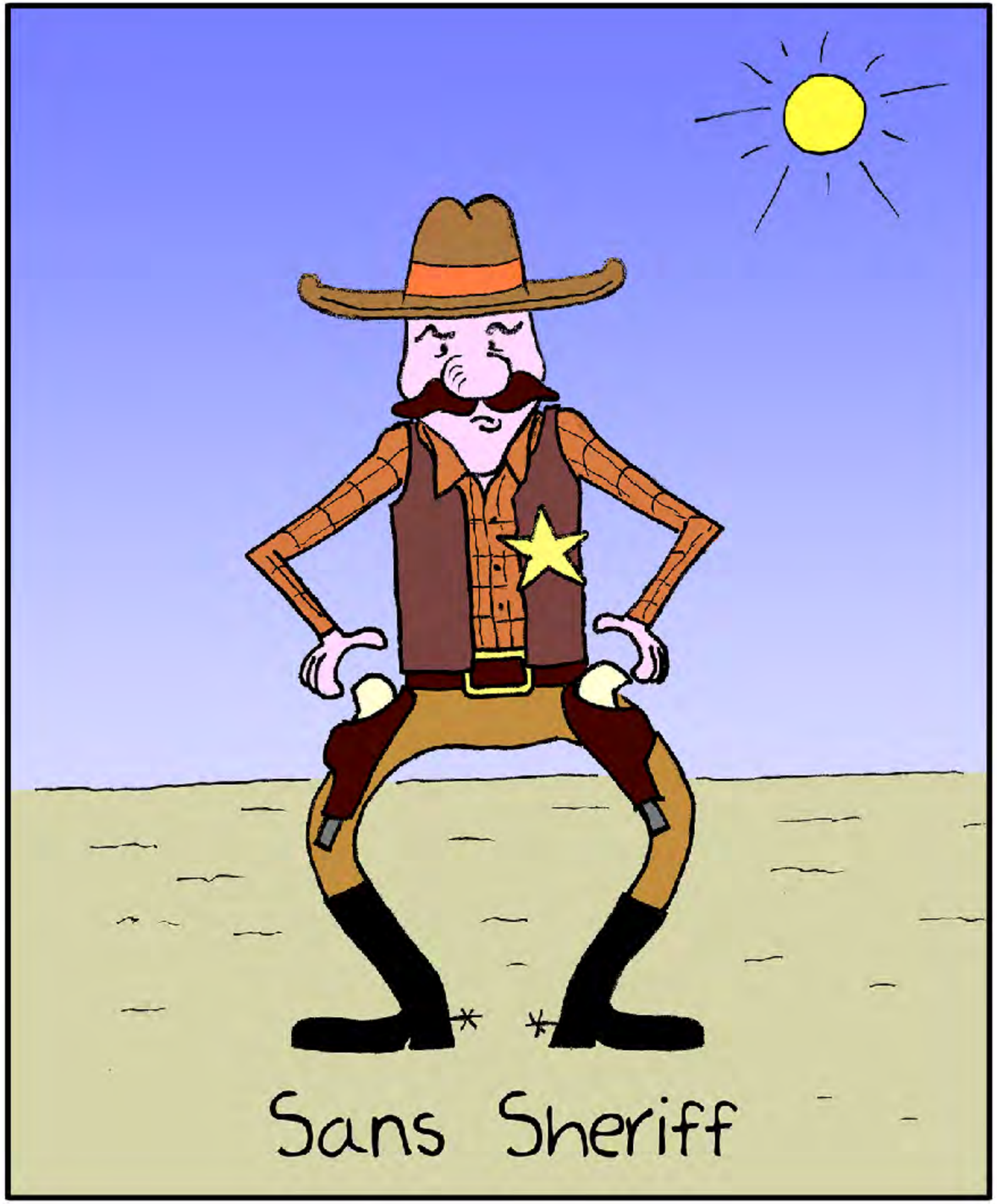




Lovebirds

Lovebirds


Sheriff


Sans Sheriff

Serif Think: print	Sans Serif Think: screen
Times	Helvetica
Palatino	Arial
Georgia	Avenir
Baskerville	Verdana

J. Fluid Mech. (2014), *vol.* 742, *pp* 152–170. © Cambridge University Press 2014
doi:10.1017/jfm.2013.659

Unsteady propulsion near a solid boundary

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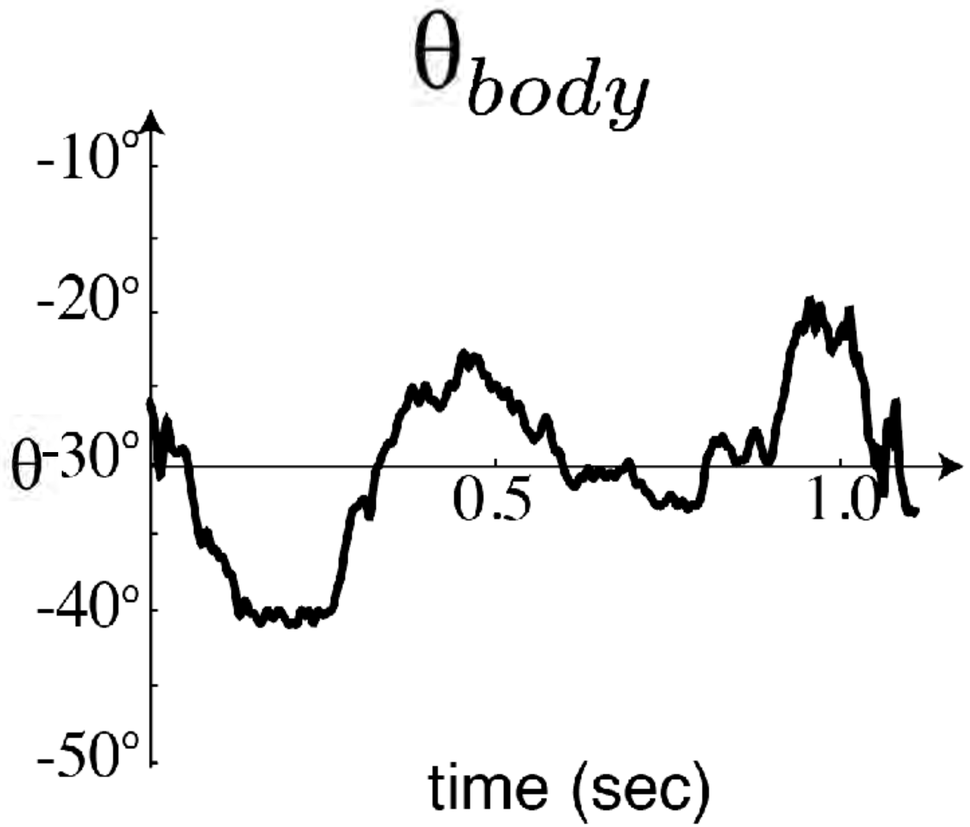
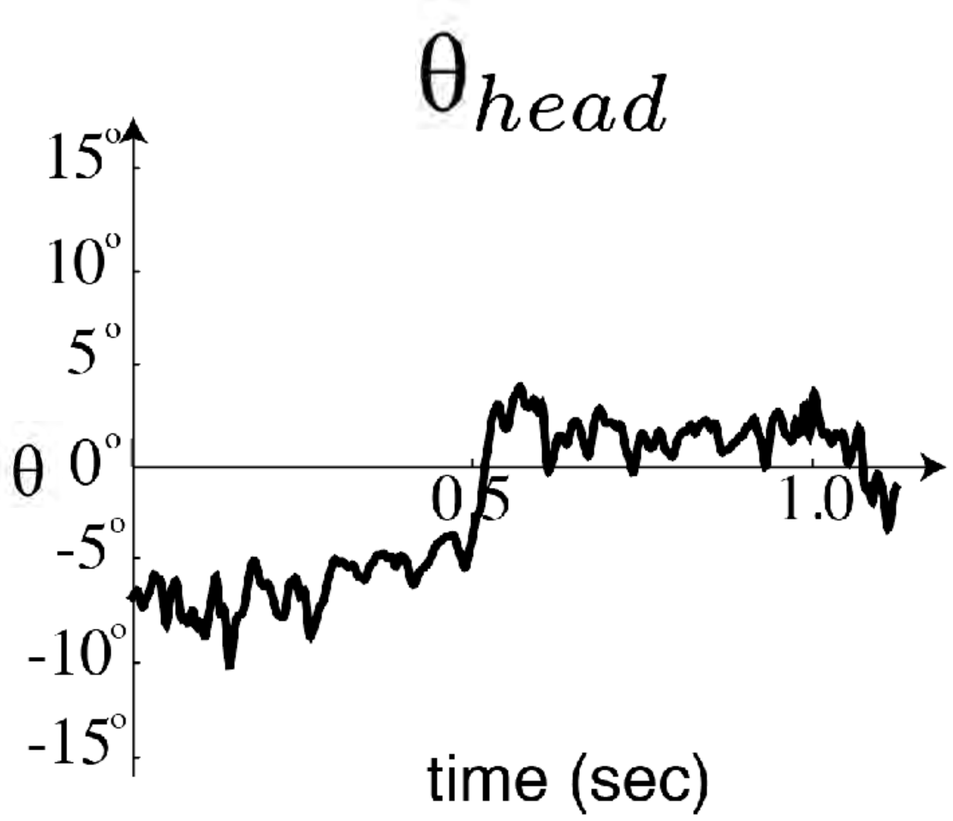
A new low-turbulence wind tunnel for animal and small vehicle flight experiments

Lovebirds use their neck to stabilize their head mid-flight





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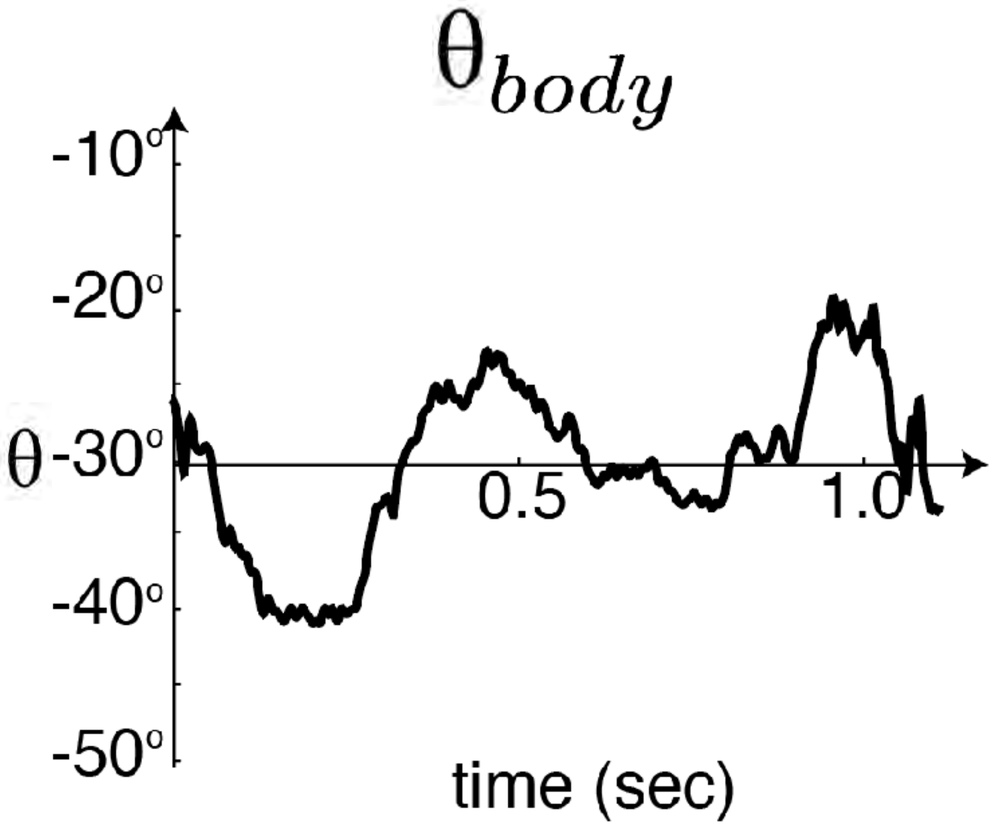

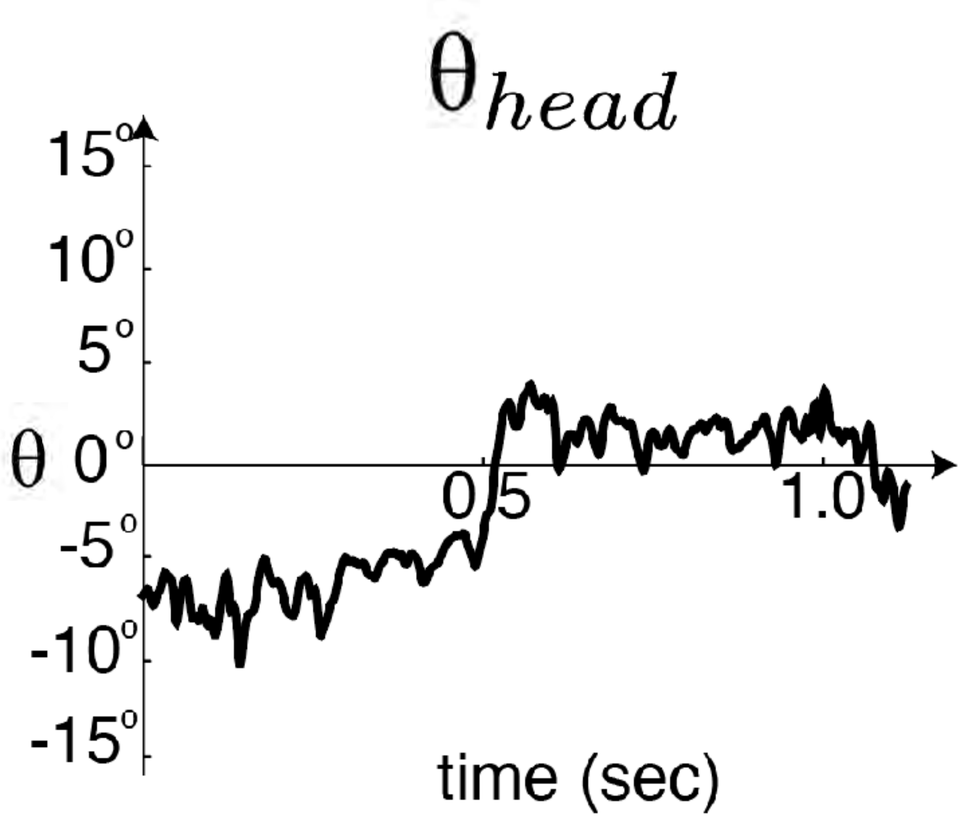

Lovebirds

Lovebirds

Roman

Think: permanent

$2.8\ \mathrm{m/s}$

$\mathrm{i}\ \ \pi\ \ \mathrm{e}$

$\dfrac{\mathrm{d}y}{\mathrm{d}x}$

θ_{neck}

Italic

Think: variable

n elements

depth d

viscosity μ

$\sum_{i=1}^{n} x_i$

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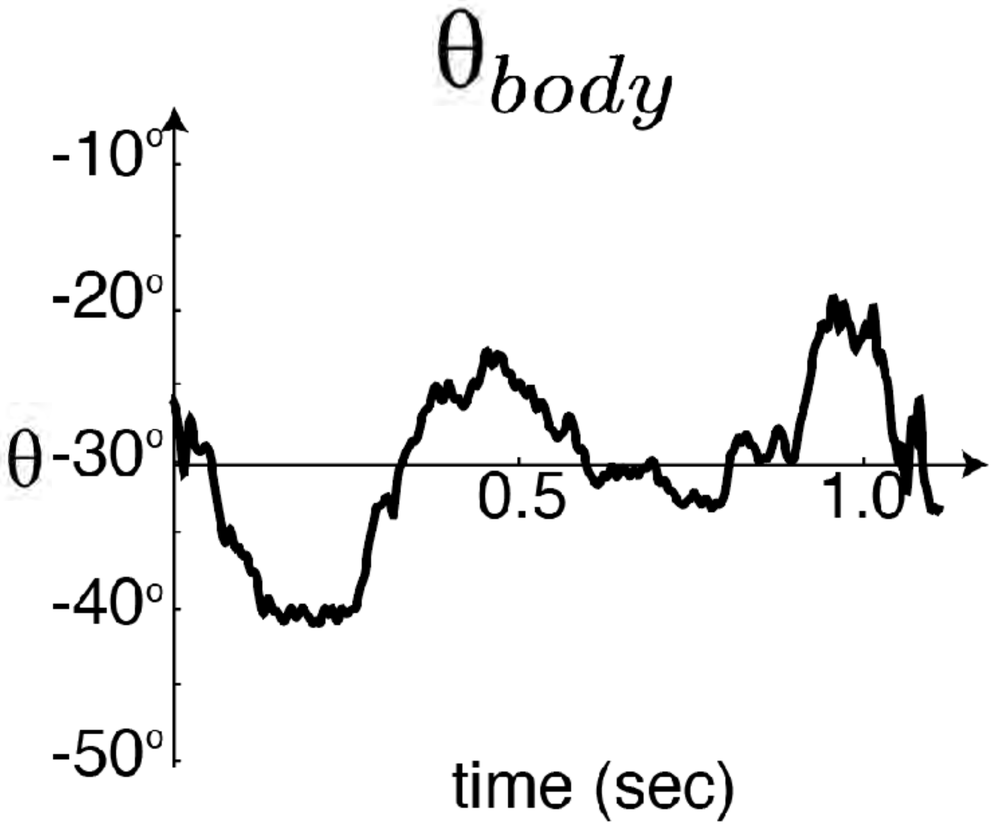

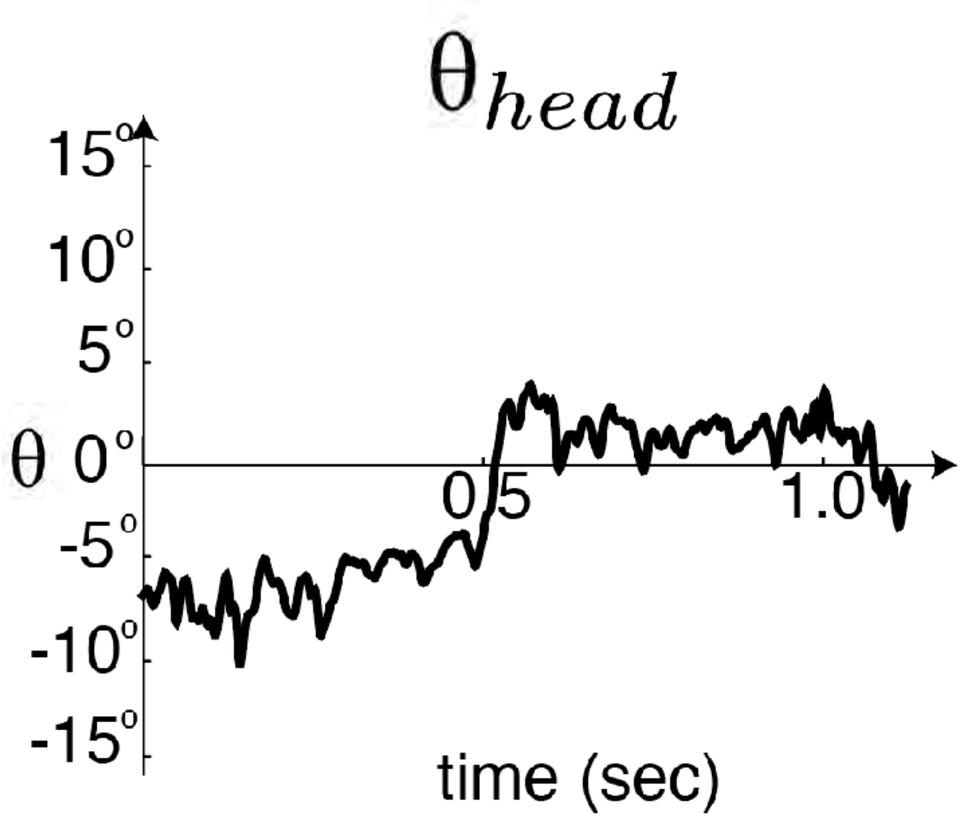

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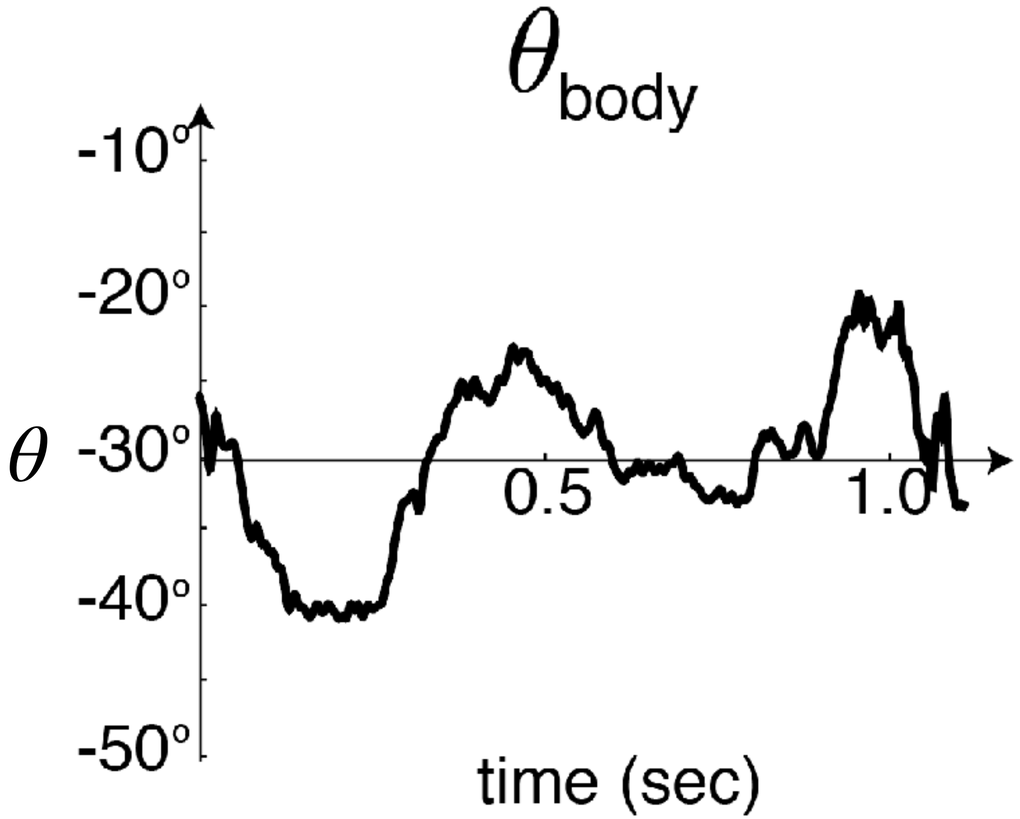

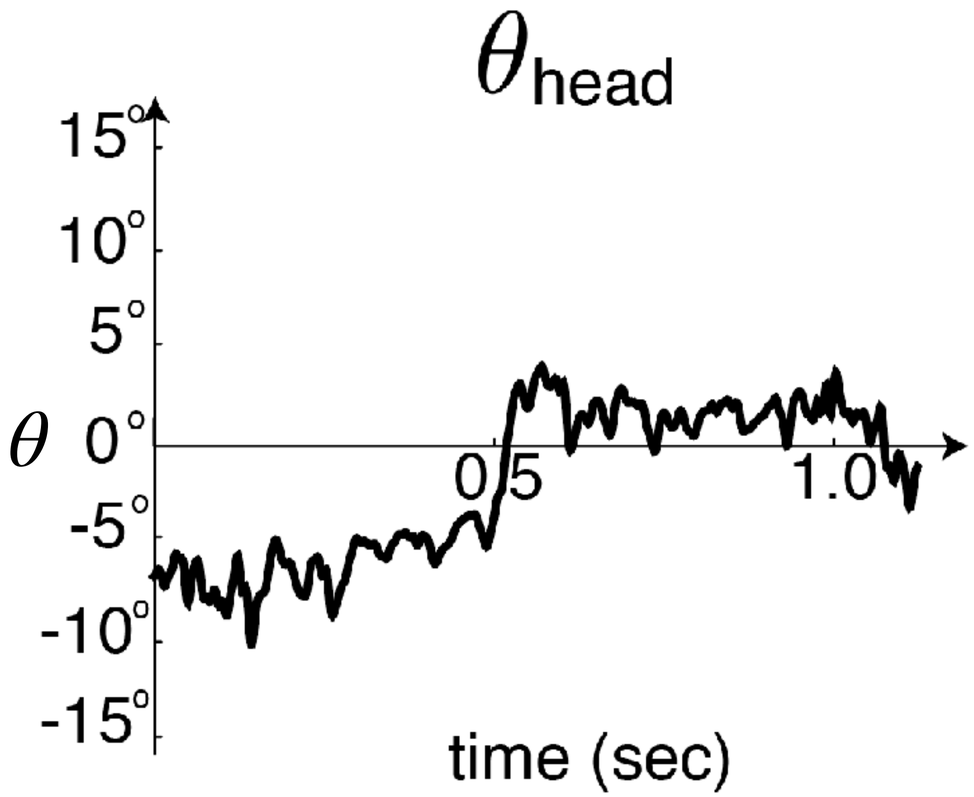

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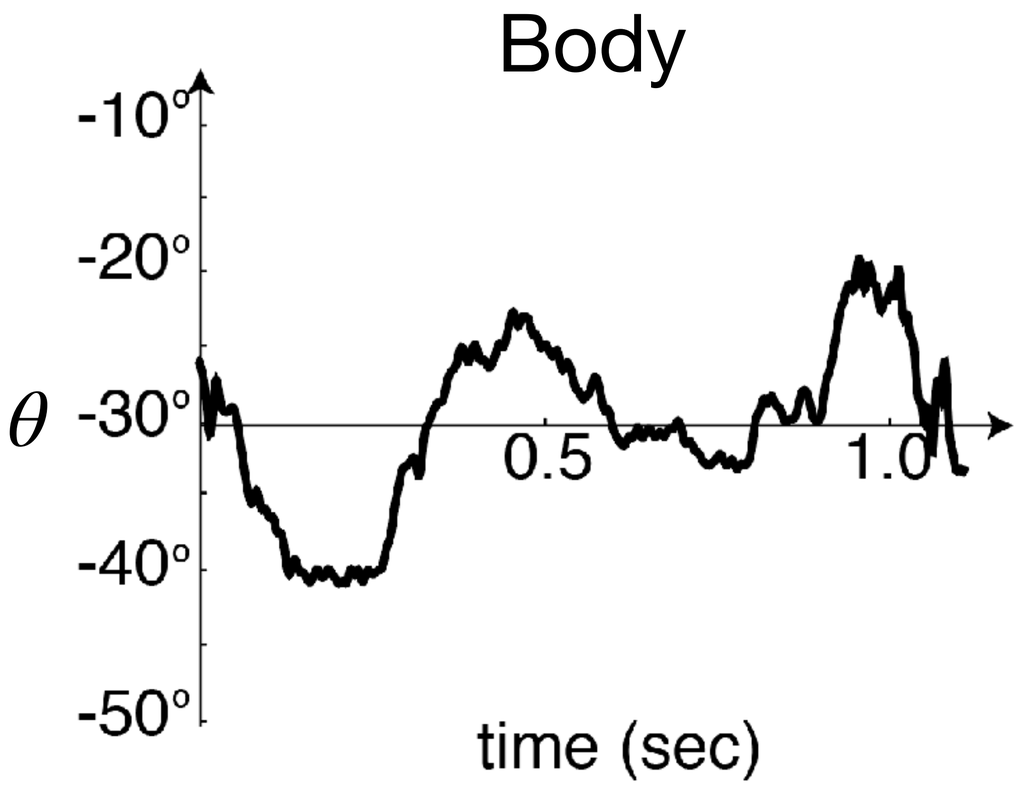
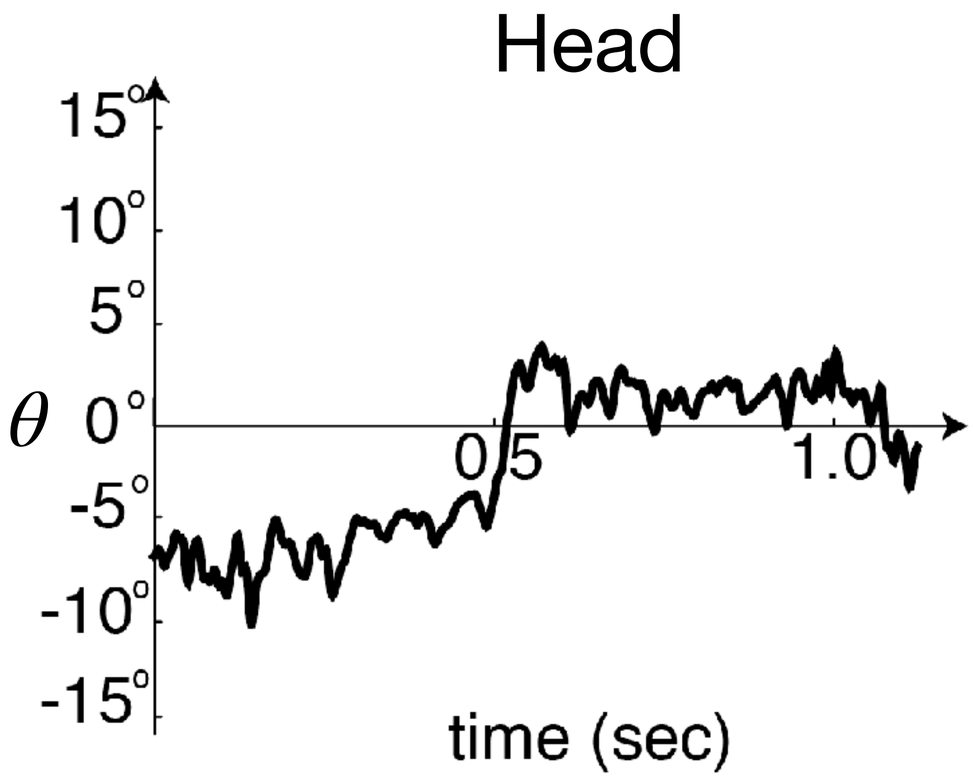
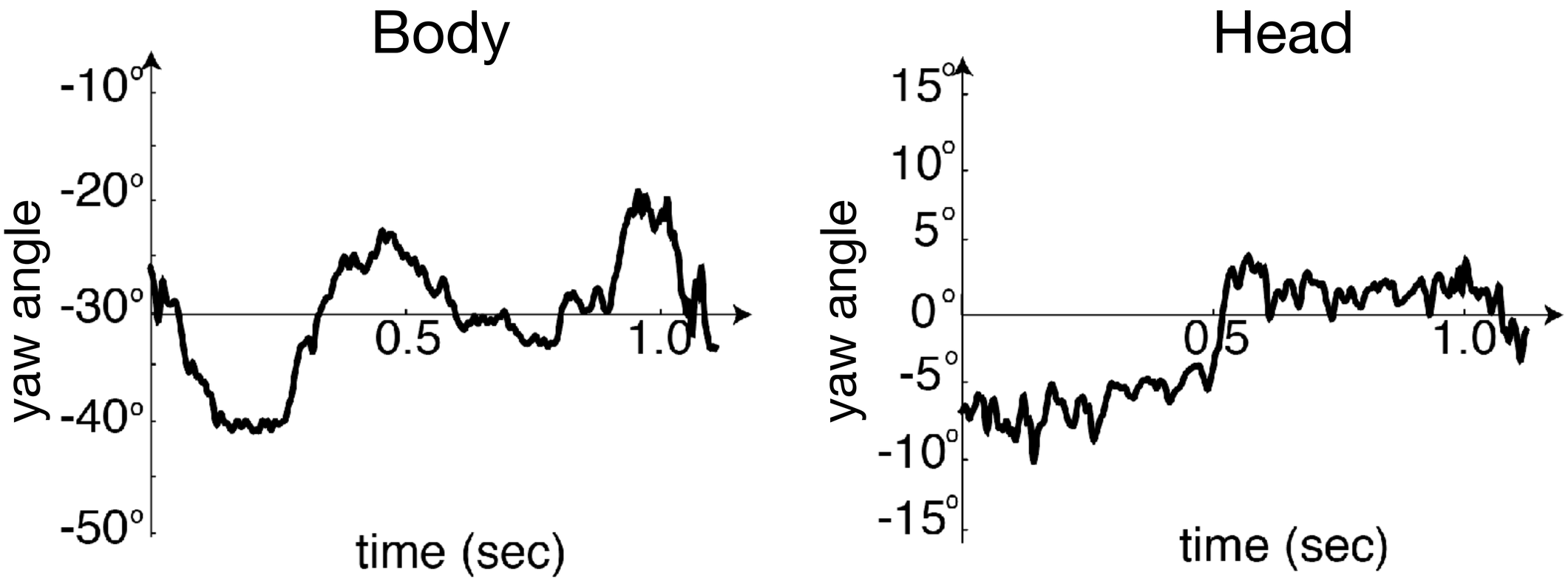
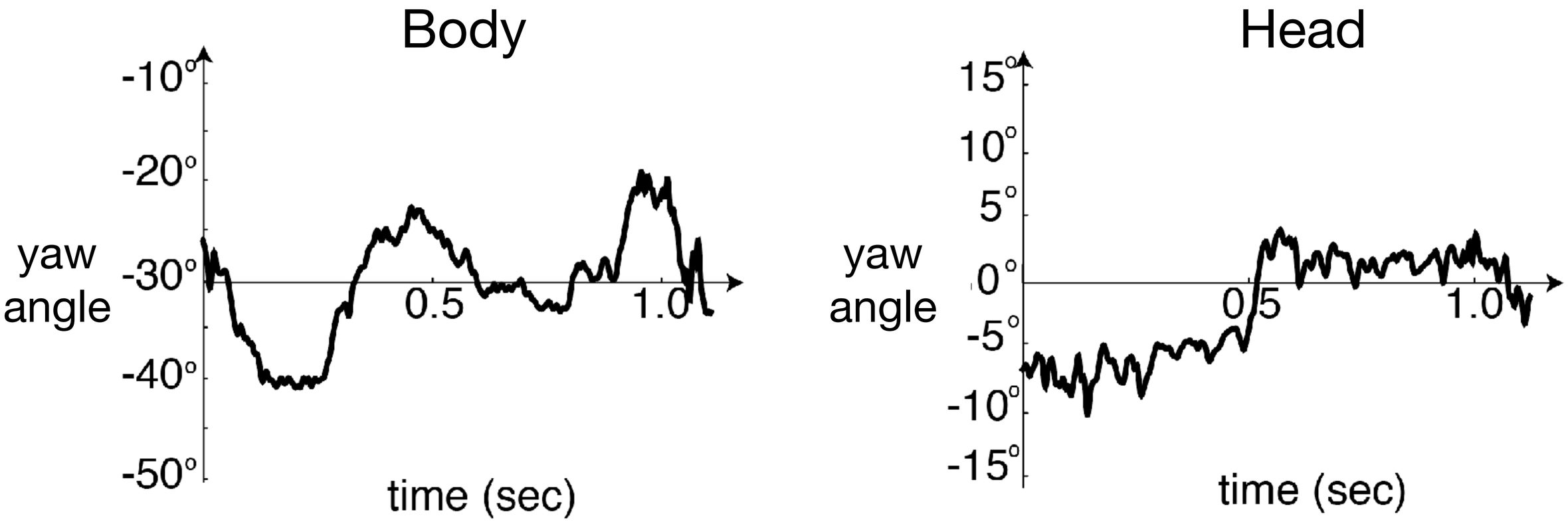




Lovebirds use their neck to stabilize their head mid-flight



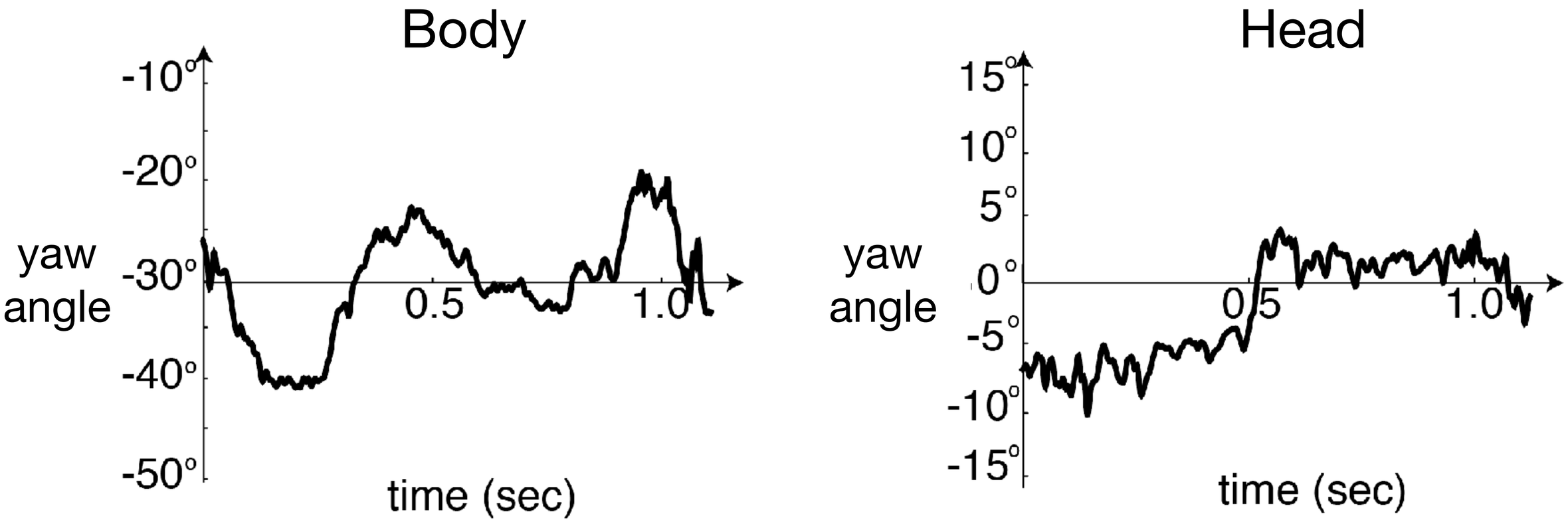
Lovebirds use their neck to stabilize their head mid-flight

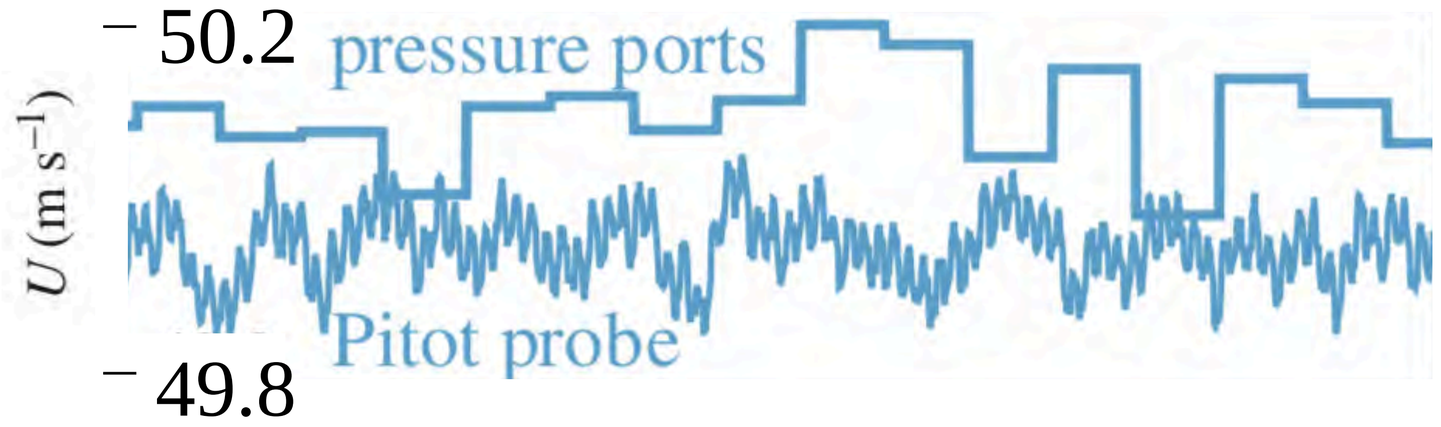


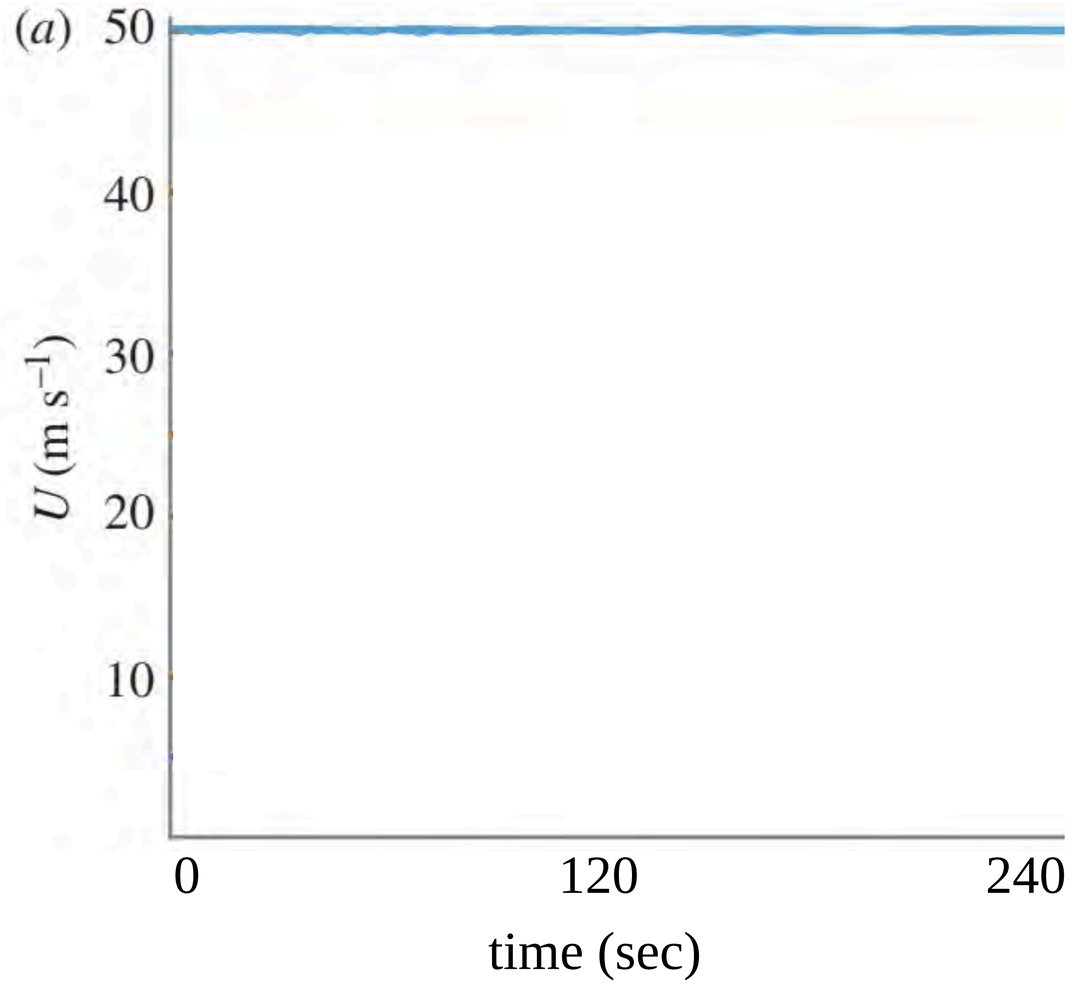
Guideline 3:

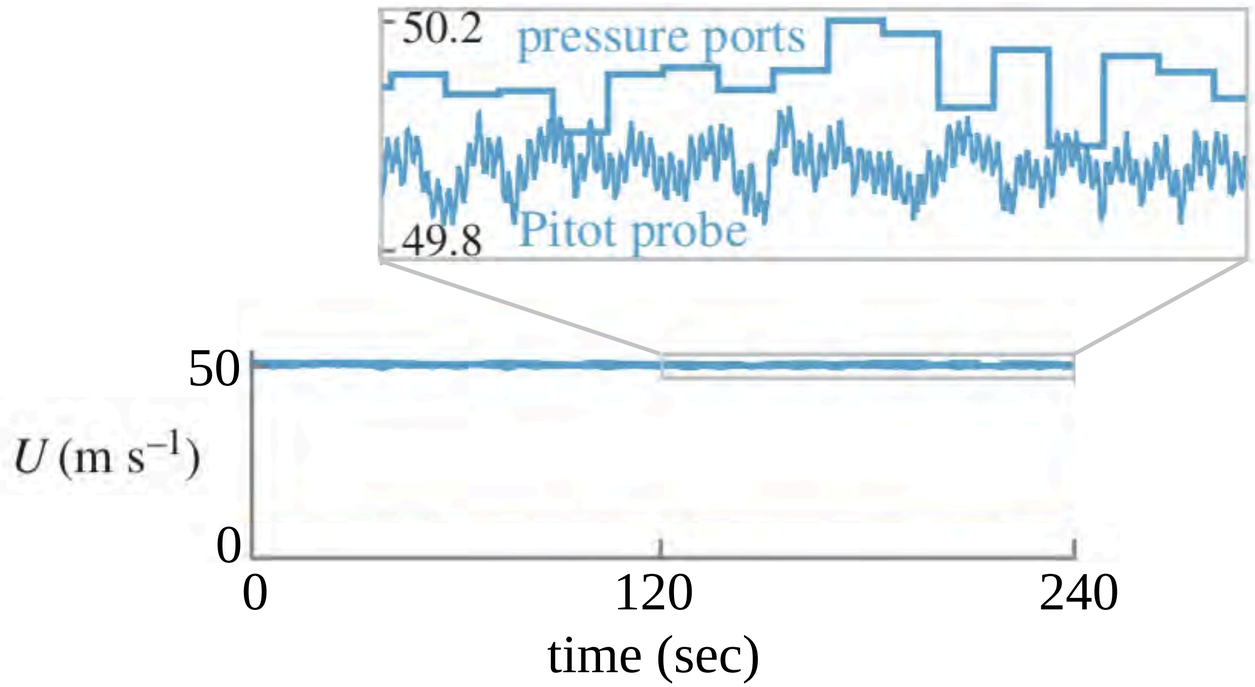
Text should be big, stylized deliberately, consistent, variable-lean, & horizontal

Lovebirds use their neck to stabilize their head mid-flight

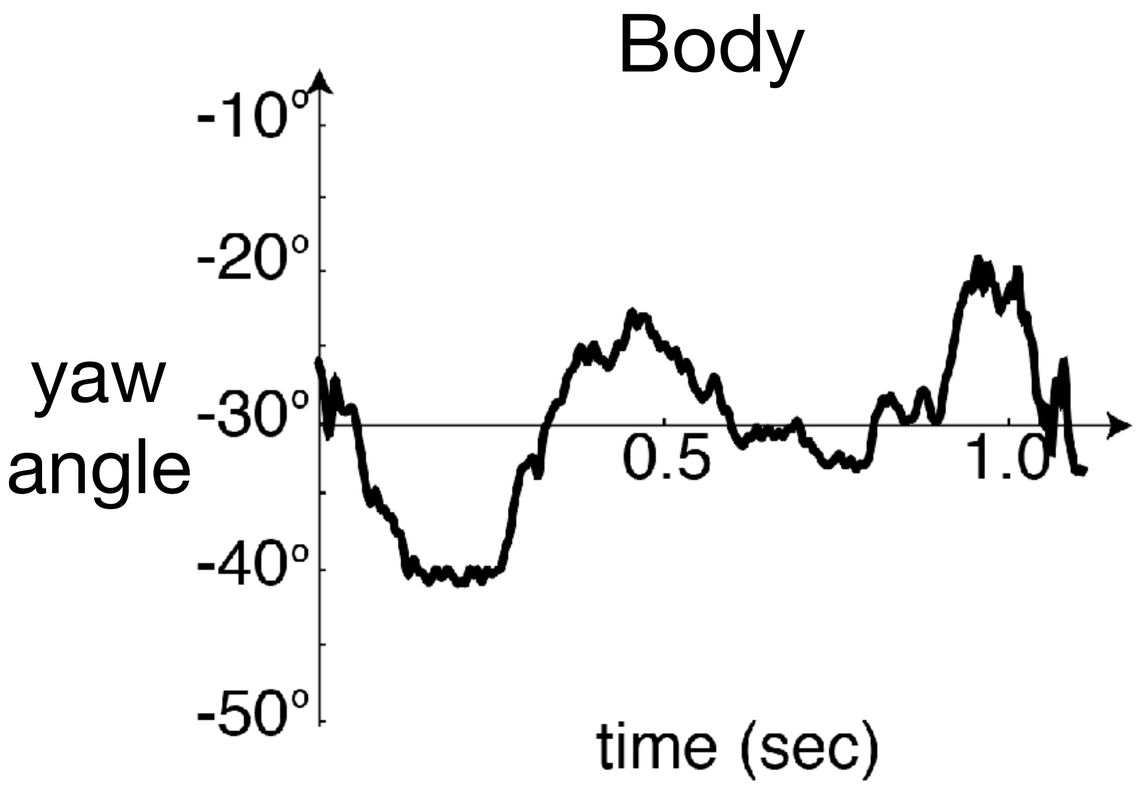


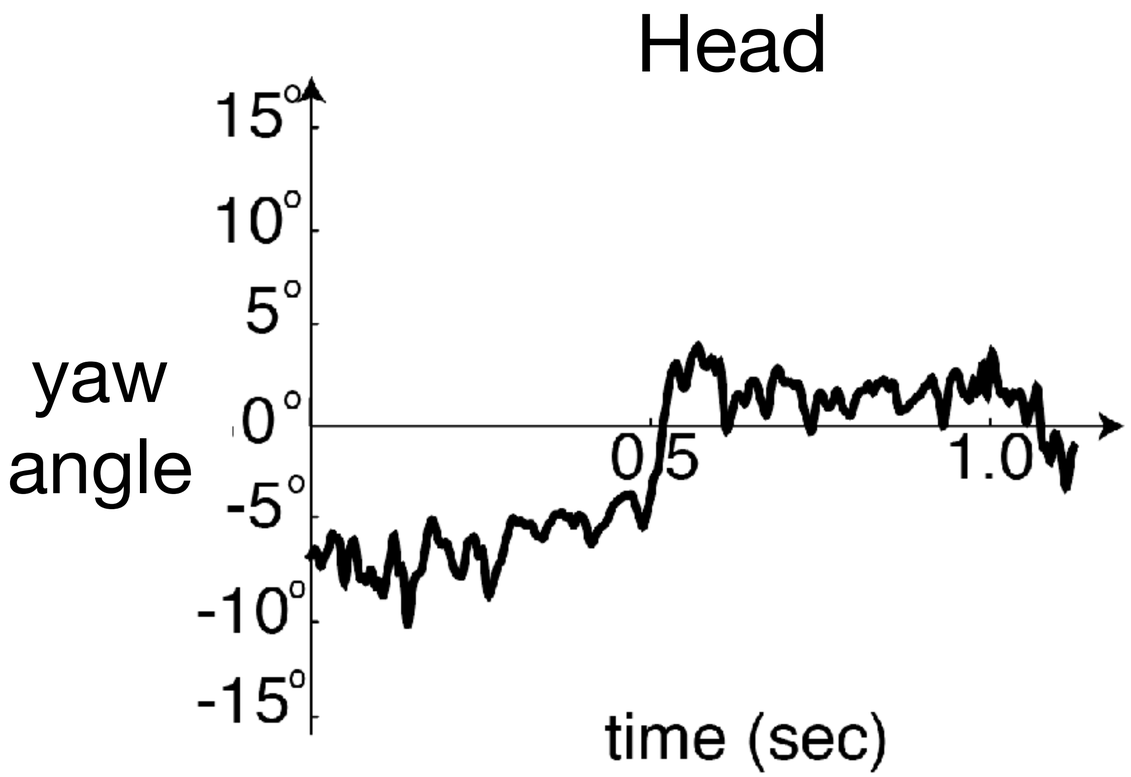

50.2
pressure ports
U (m s^{-1})
Pitot probe
49.8


(a)
50
40
30
20
10
U (m s−1)
0
120
240
time (sec)

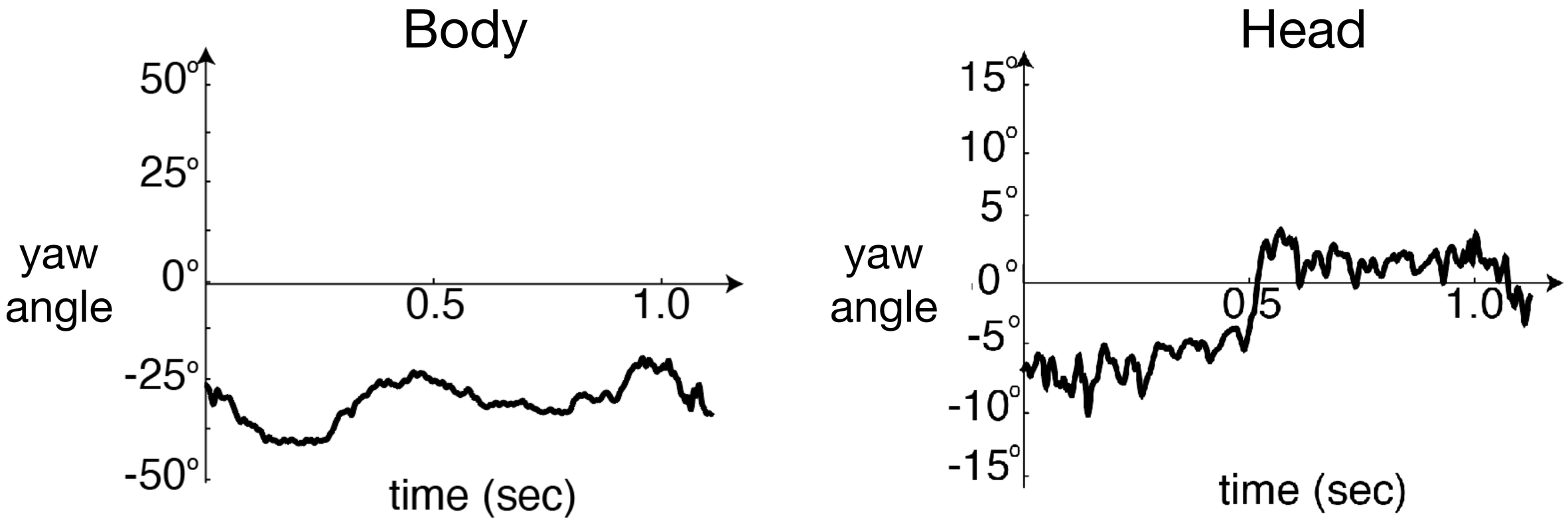

50.2
pressure ports
49.8
Pitot probe
50
U (m s^{-1})
0
0
120
240
time (sec)

Lovebirds use their neck to stabilize their head mid-flight

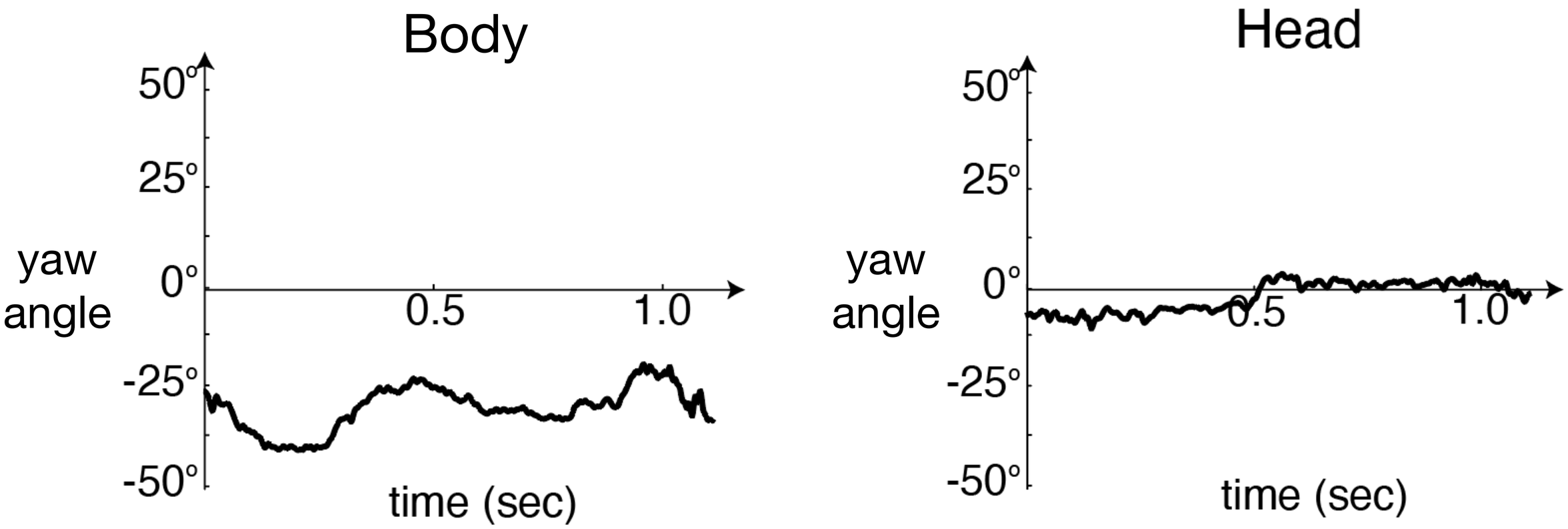




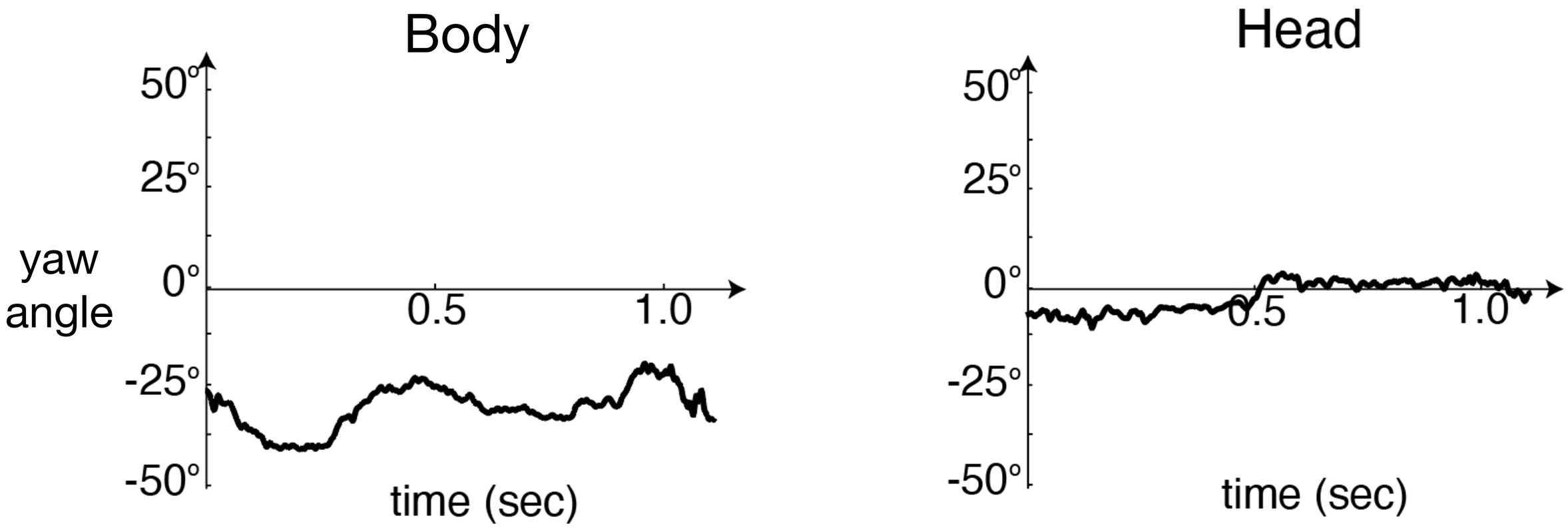
Lovebirds use their neck to stabilize their head mid-flight



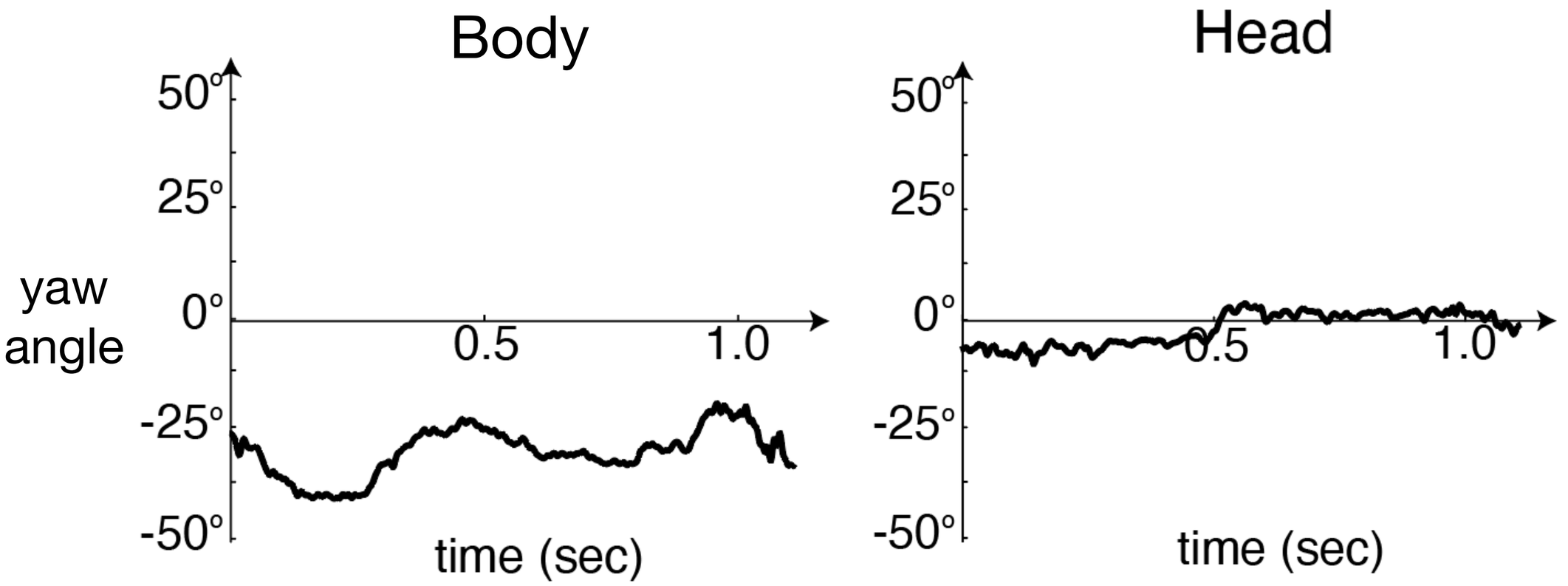
Lovebirds use their neck to stabilize their head mid-flight



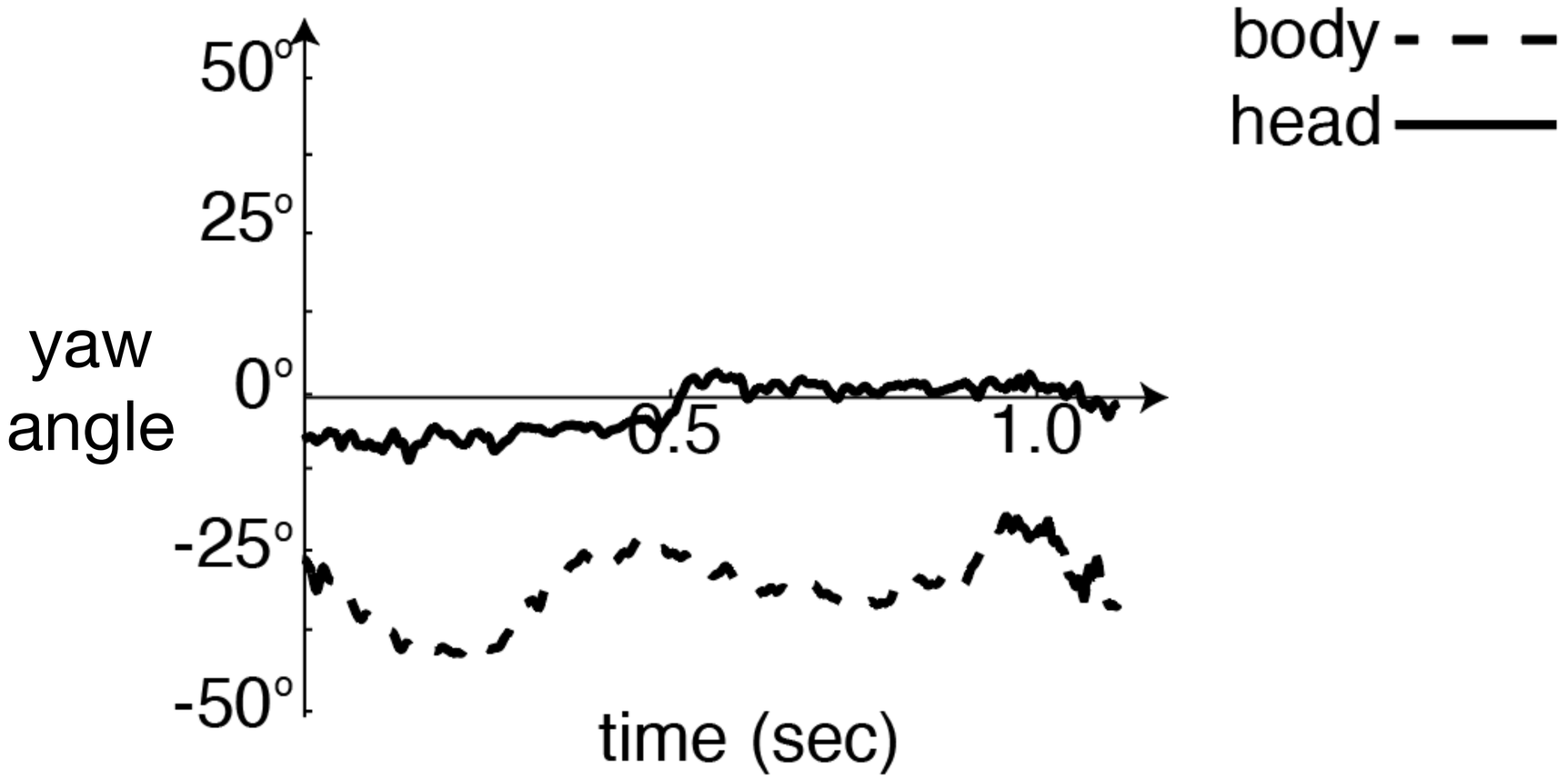
Lovebirds use their neck to stabilize their head mid-flight



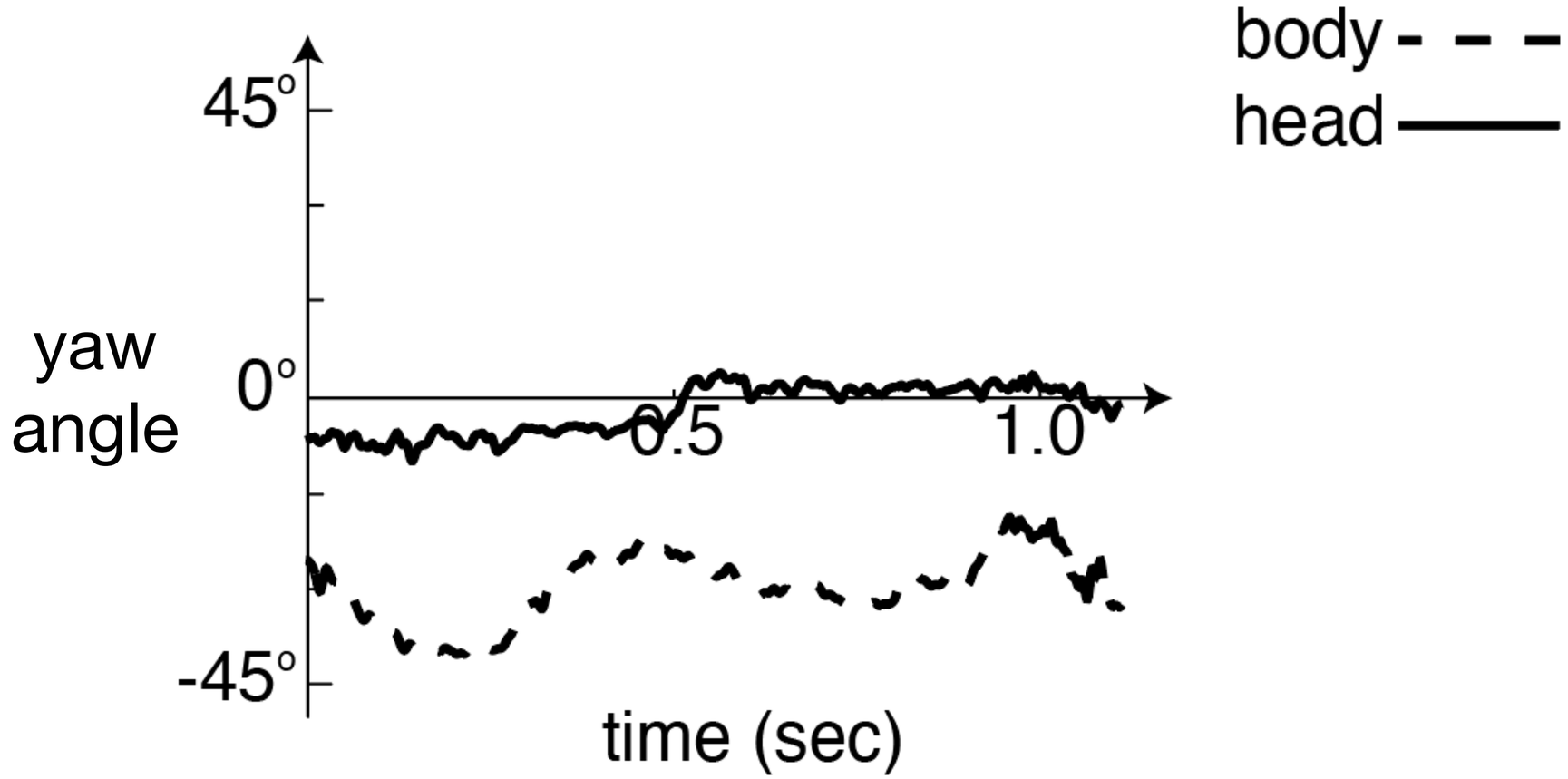
Lovebirds use their neck to stabilize their head mid-flight



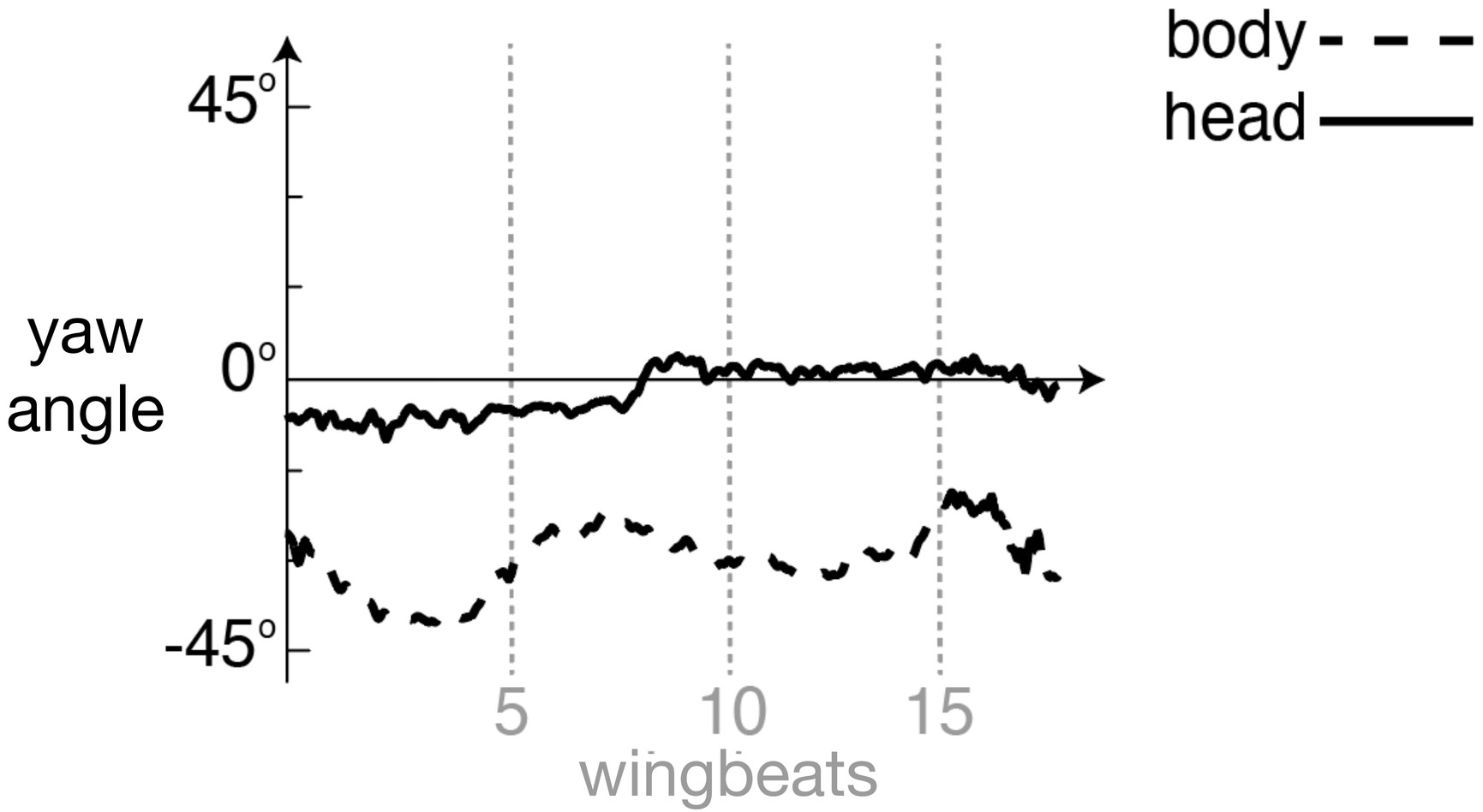
Lovebirds use their neck to stabilize their head mid-flight



Lovebirds use their neck to stabilize their head mid-flight

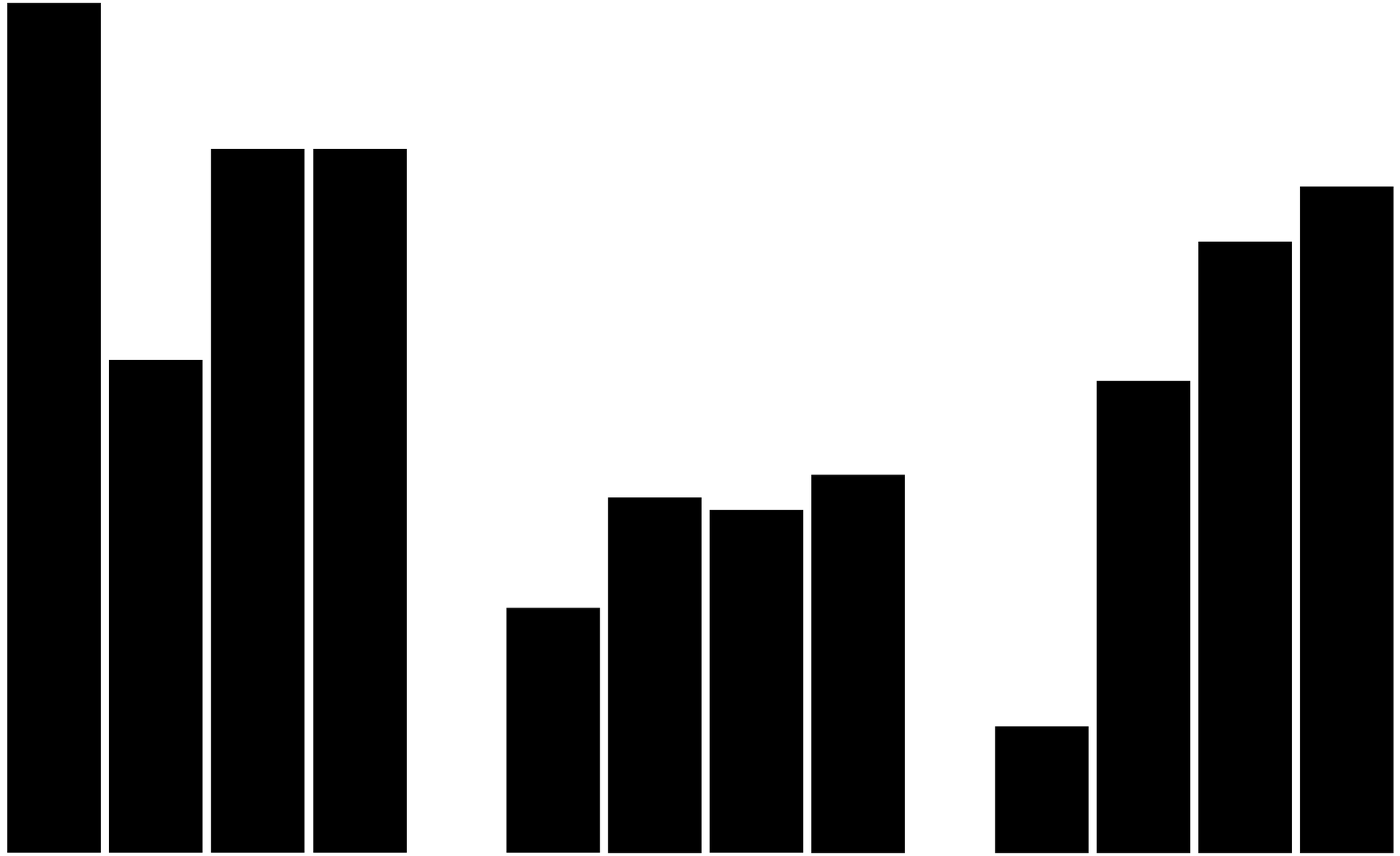


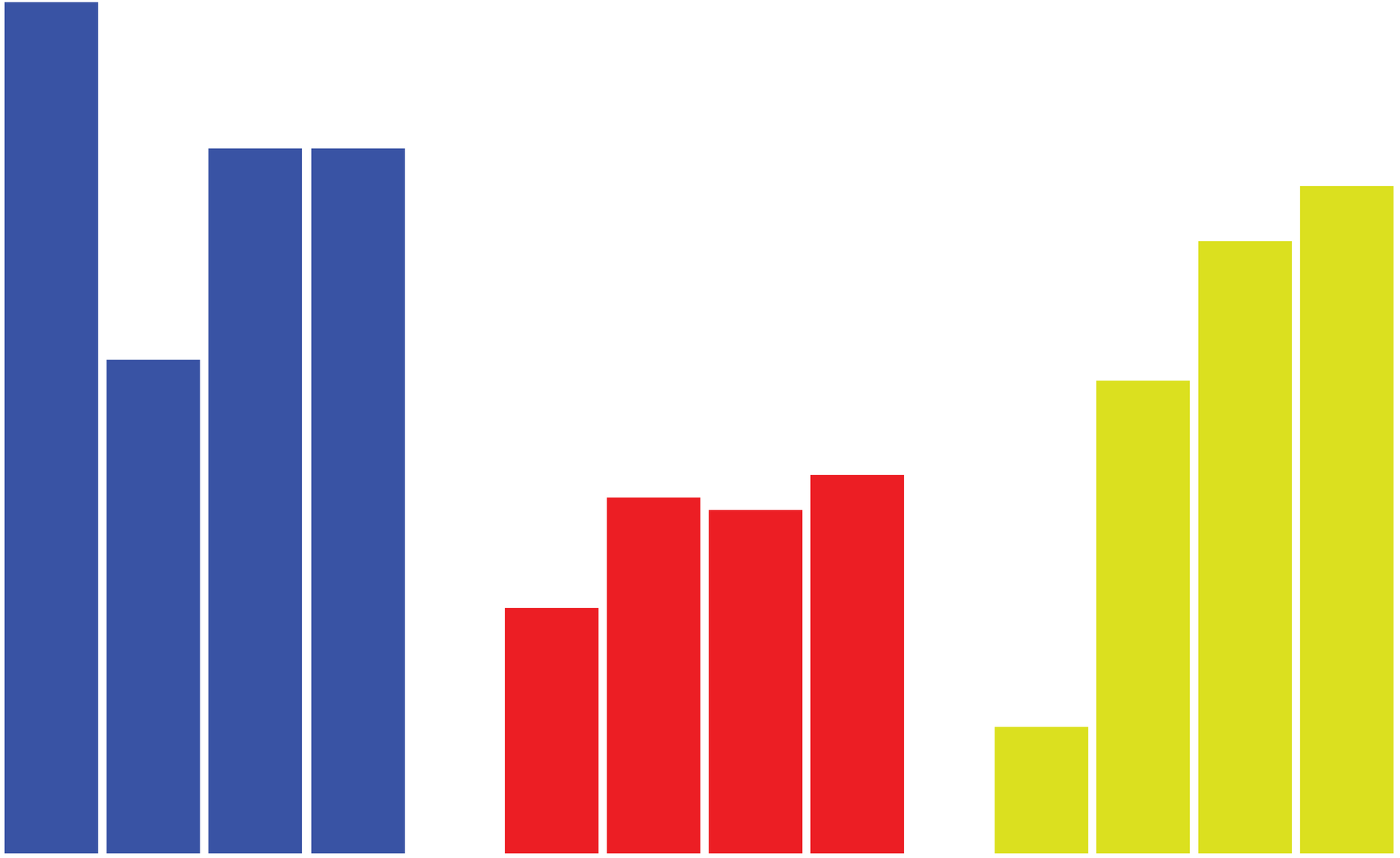
Lovebirds use their neck to stabilize their head mid-flight

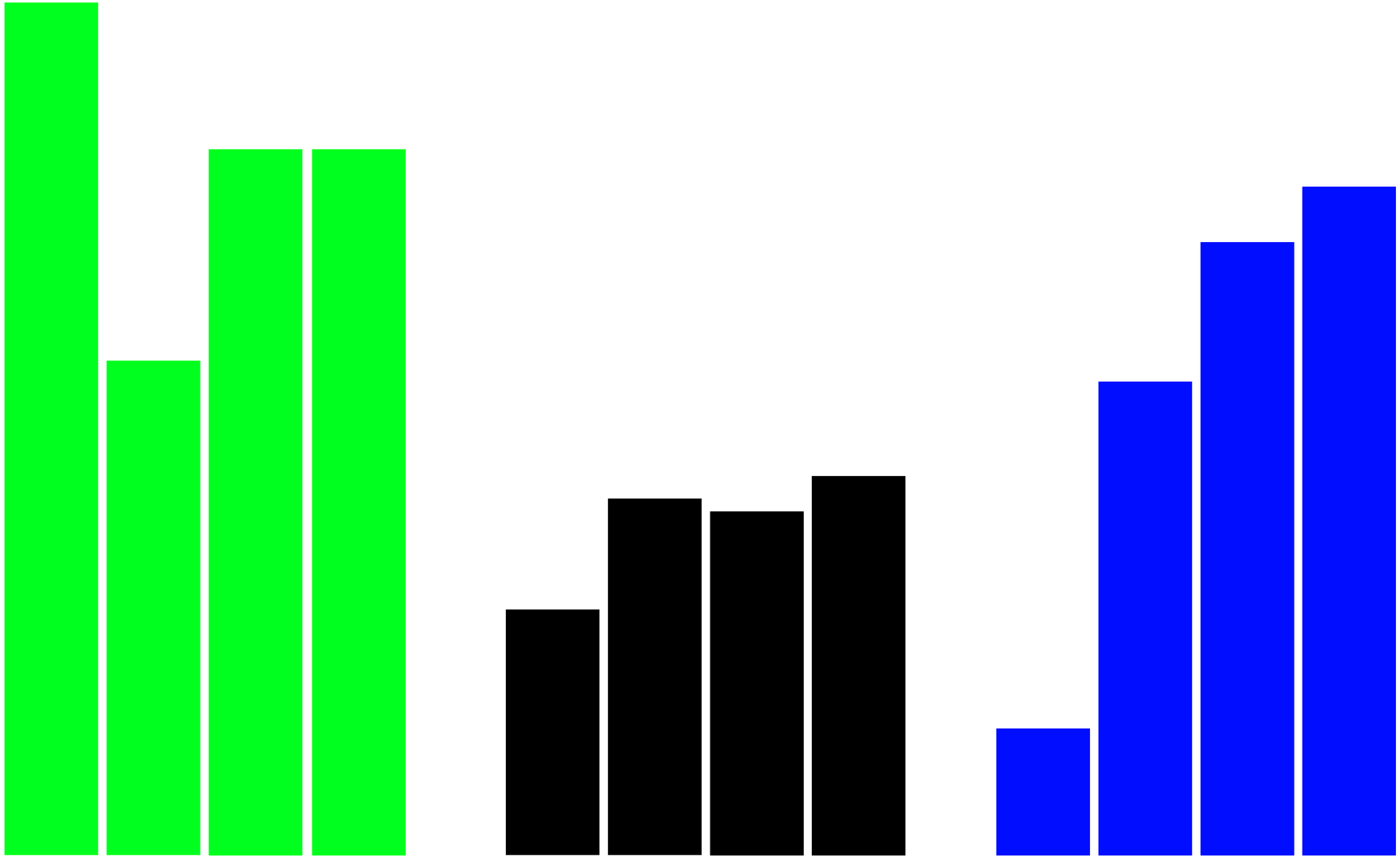


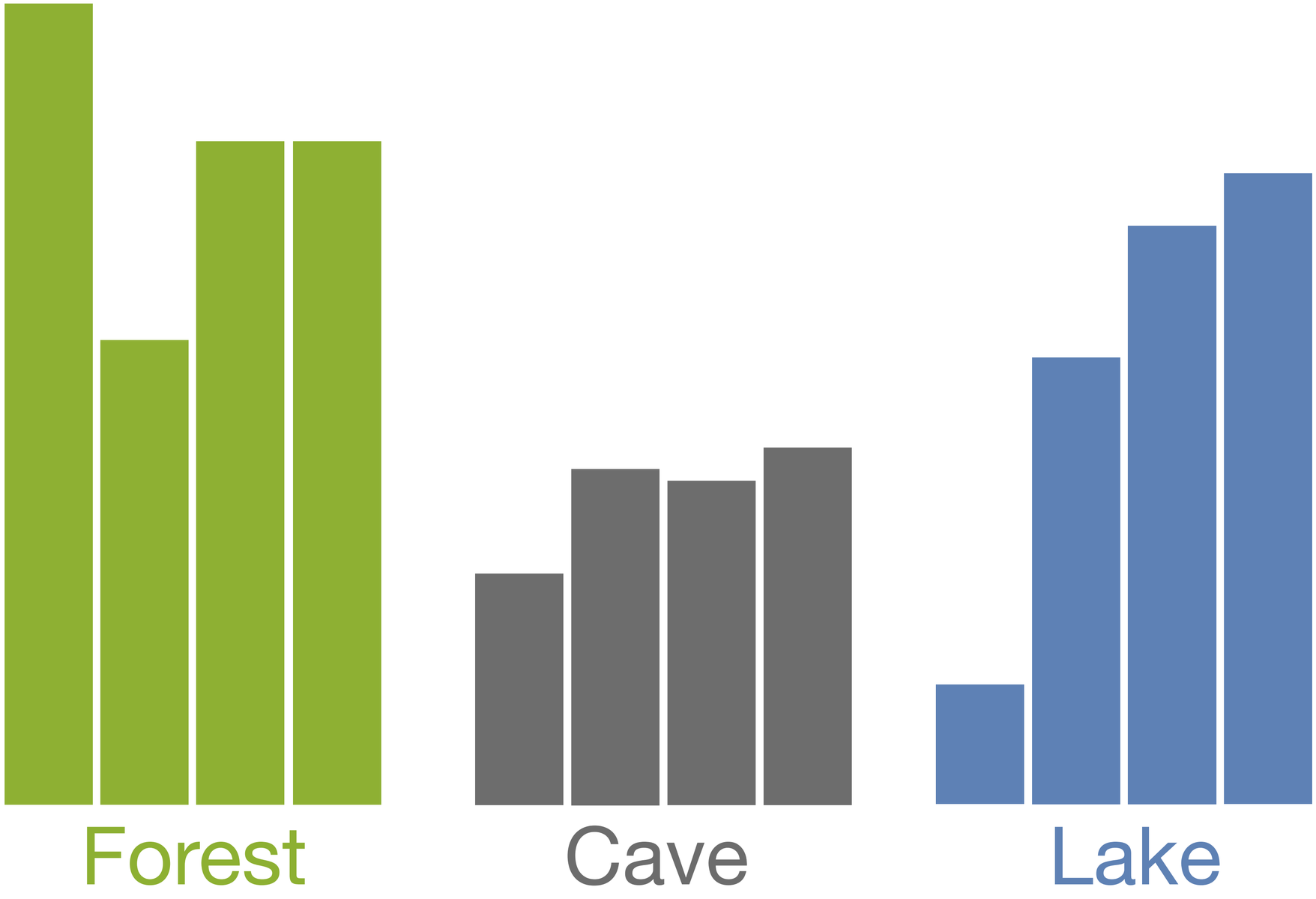
Guideline 4:

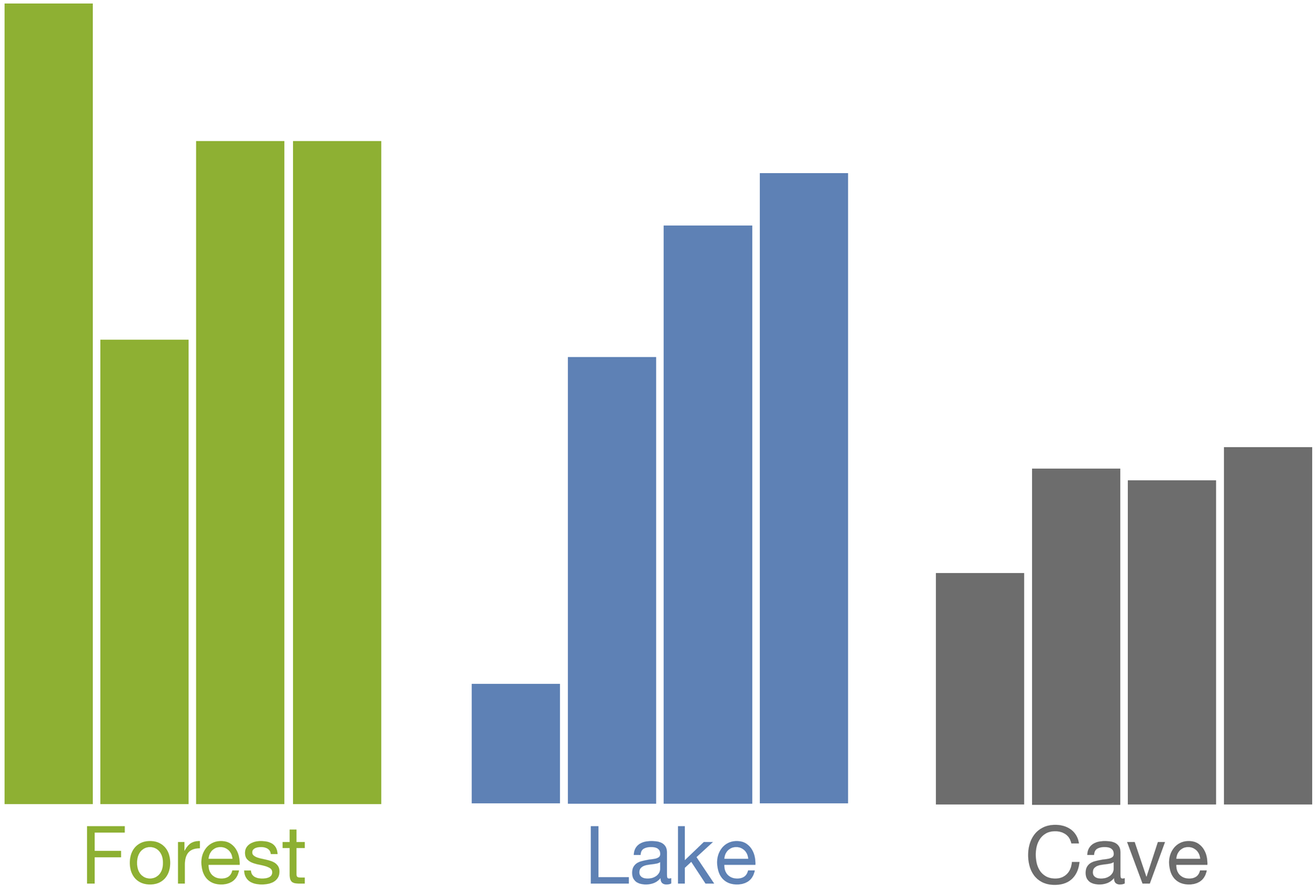
Axes should be zeroed, aligned/overlapped, and intuitively ticked

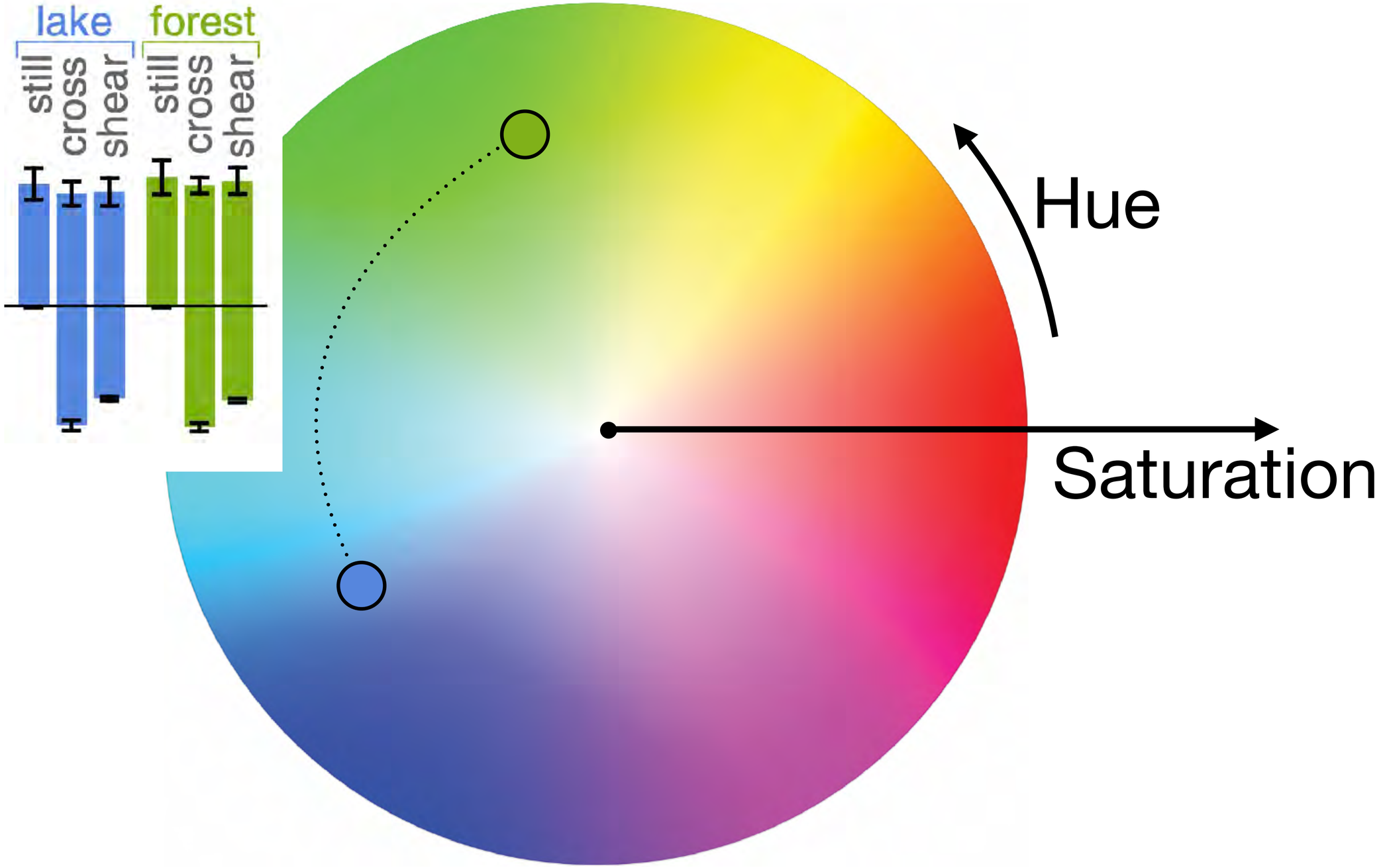

Forest
Cave
Lake

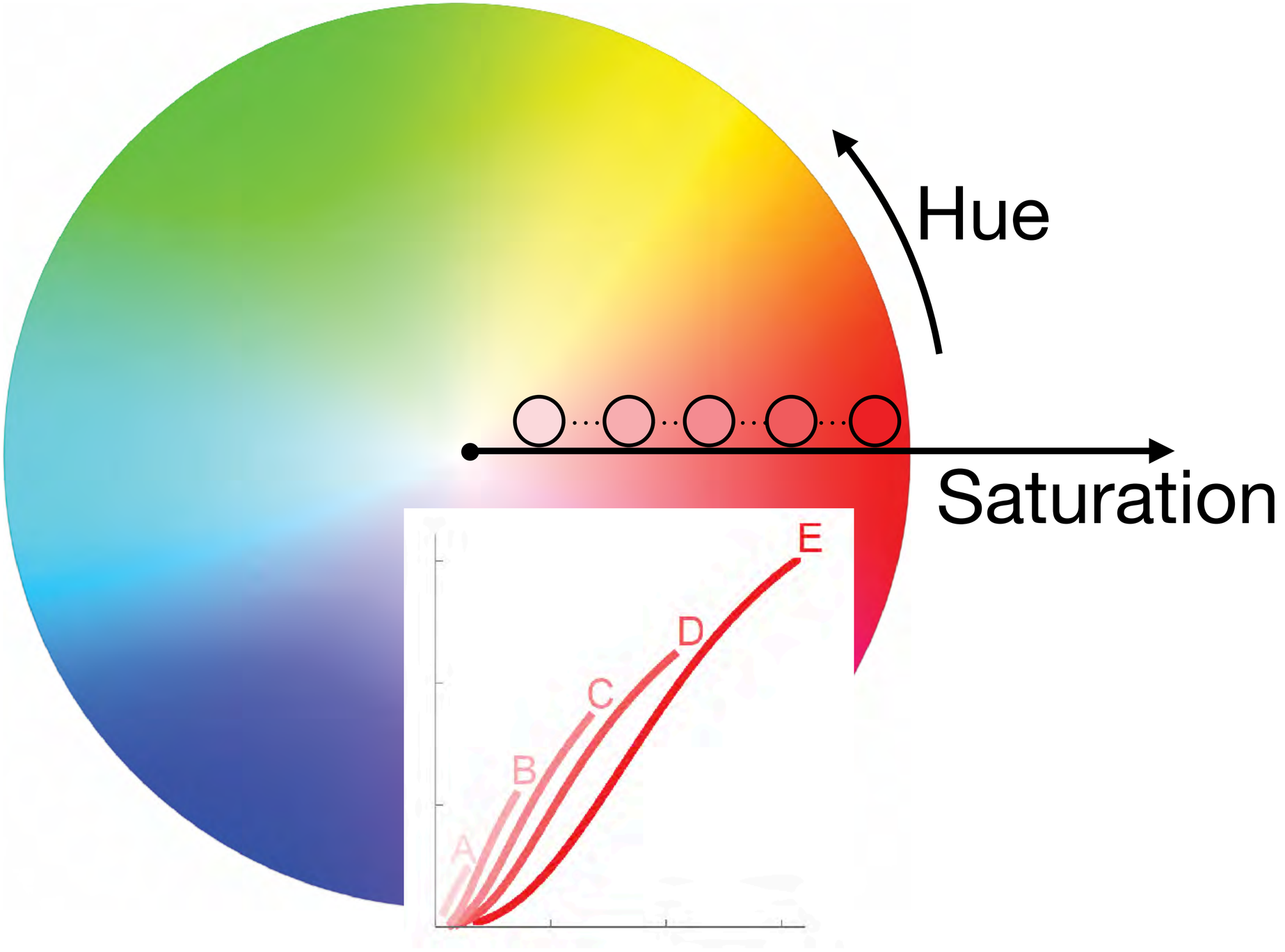

Forest
Cave
Lake


Forest
Cave
Lake


Forest
Cave
Lake


Forest
Lake
Cave


lake
forest
still
cross
shear
still
cross
shear
Hue
Saturation


Hue
Saturation
A
B
C
D
E