Sleepiness and the effect on driving - Professional drivers vs. non-professional drivers

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Background

- Driver fatigue causes incidents and crashes
- Large differences between individuals
- Is one explanation to this that humans learn how to fight sleepiness and how to drive without decreased performance under high levels of sleepiness?

Aim

Investigate whether professional drivers are more resistant to sleep deprivation than non-professional drivers.

Both sleepiness development and performance under high level of sleepiness were investigated.

Method

- 11 professional and 15 non-professional drivers

(Professional drivers were defined as those driving a heavy vehicle as a profession.)

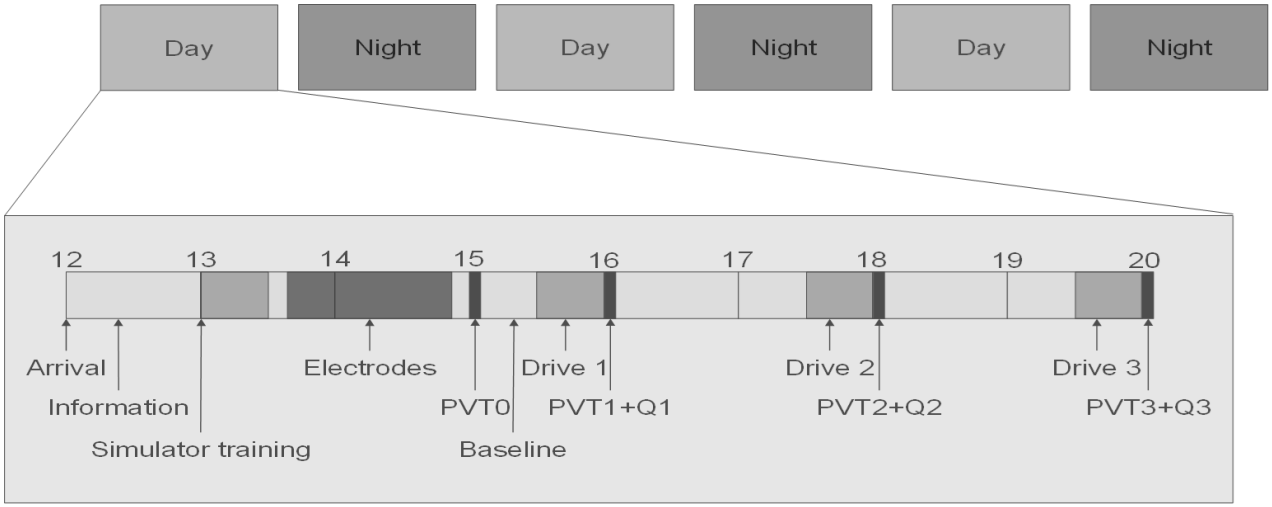
- Homogenous group of drivers

(18-25 years old males, self-reported evening persons, BMI < 30, no sleep disorders, no extremes in terms of self-reported personalities (extrovert or introvert), and self-reported normal sensitivity to stressful situations.)

VTIs Driving simulator III

Design

Participants were prepared 72 hours before each visit.
6 visits: 3 days and 3 nights – at each visit they drove 3 times in a balanced order

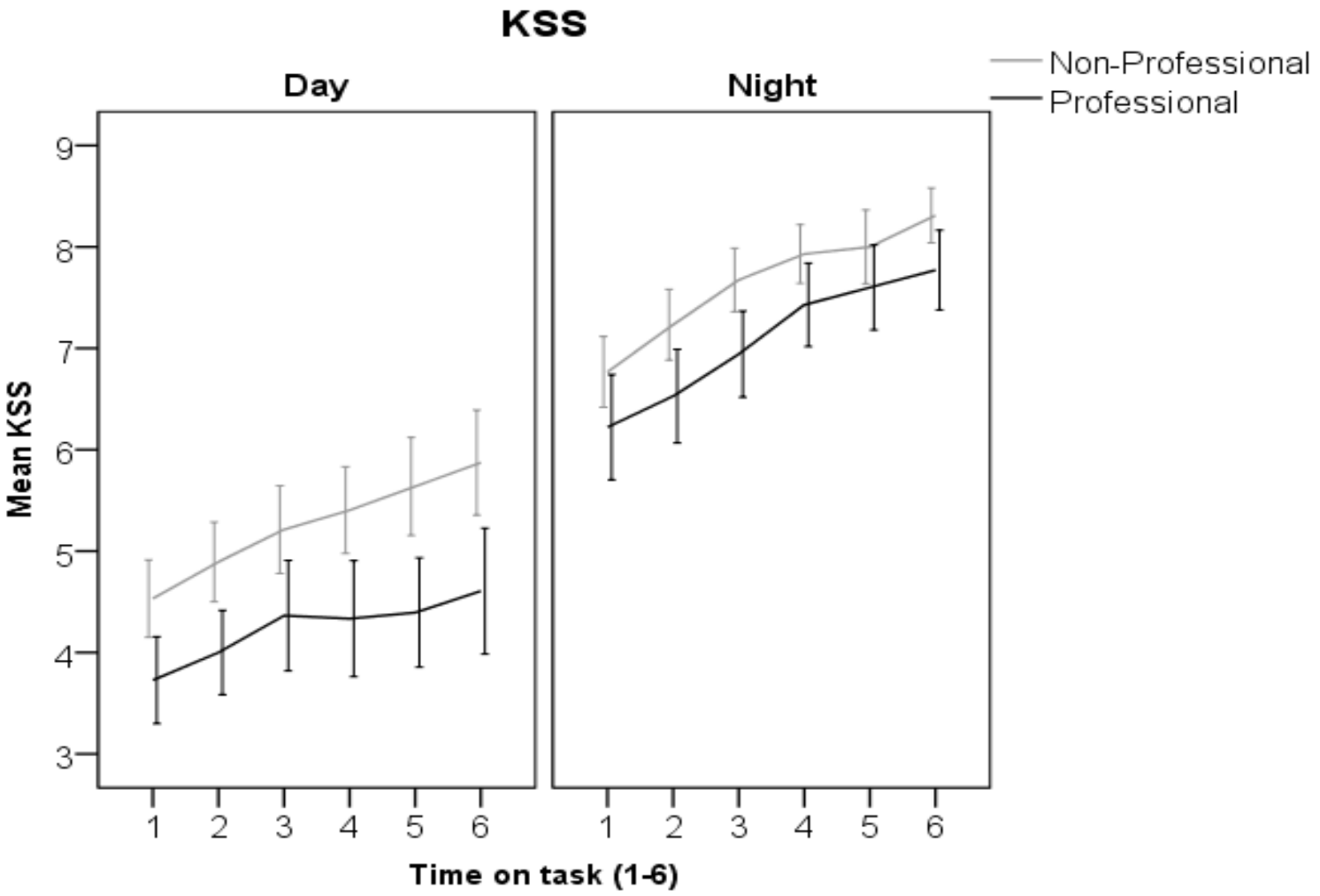


The first daytime and night-time visits were excluded and considered as training.

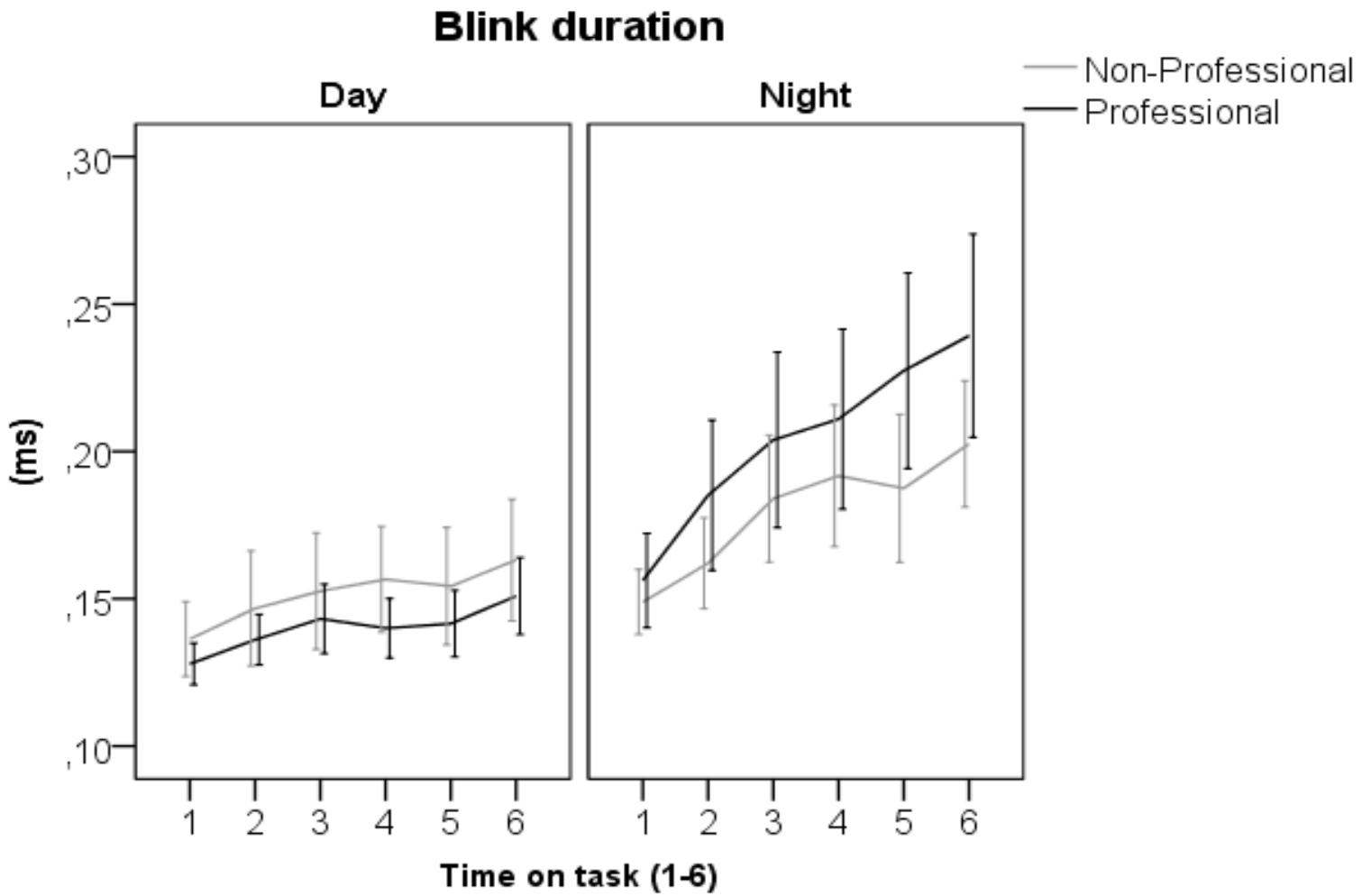
Scenario

Rural road with a speed limit of 80 km/h
Daylight daytime and darkness night-time

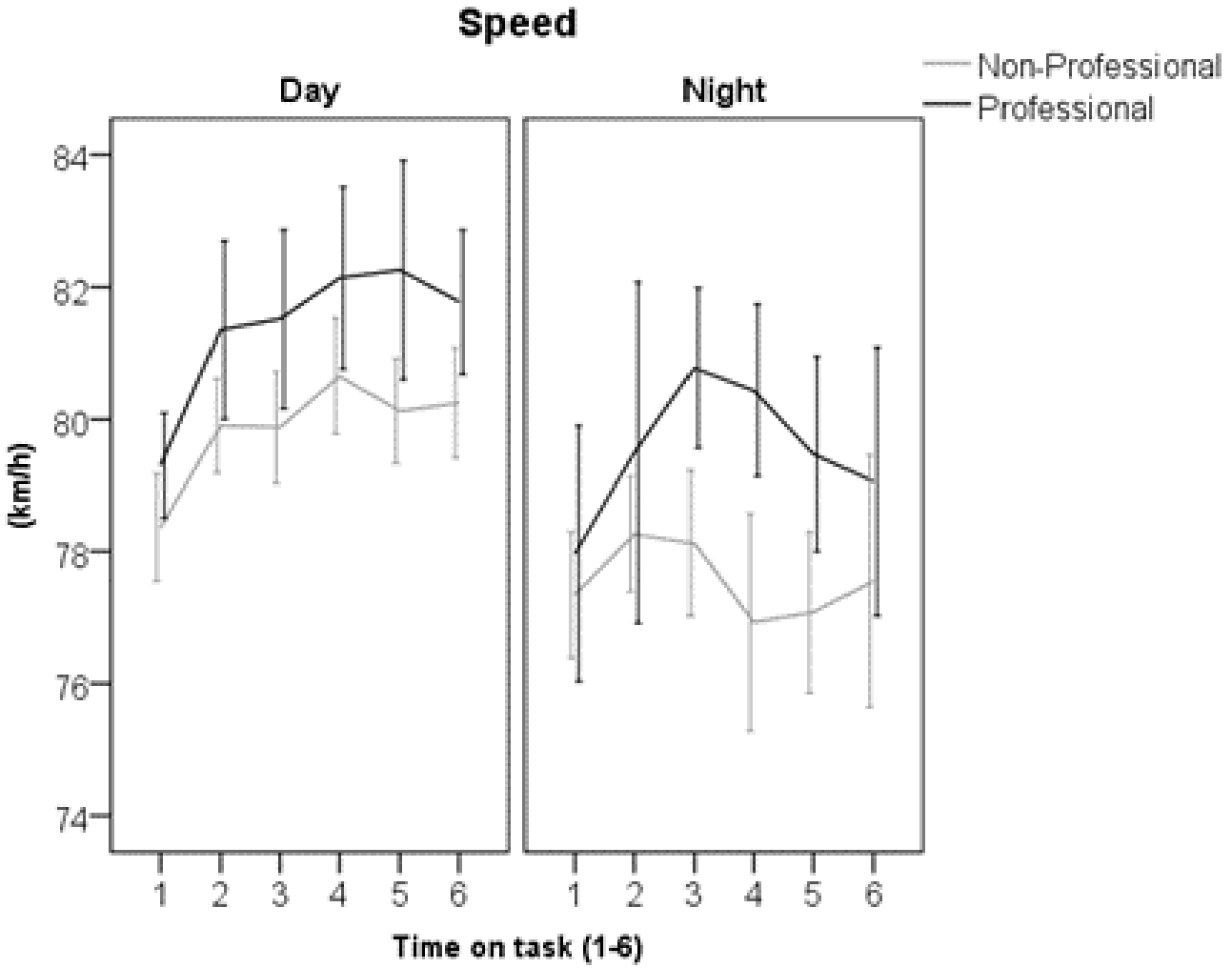
KSS


KSS
Day
Night
Non-Professional
Professional
Mean KSS
9
8
7
6
5
4
3
1
2
3
4
5
6
Time on task (1-6)

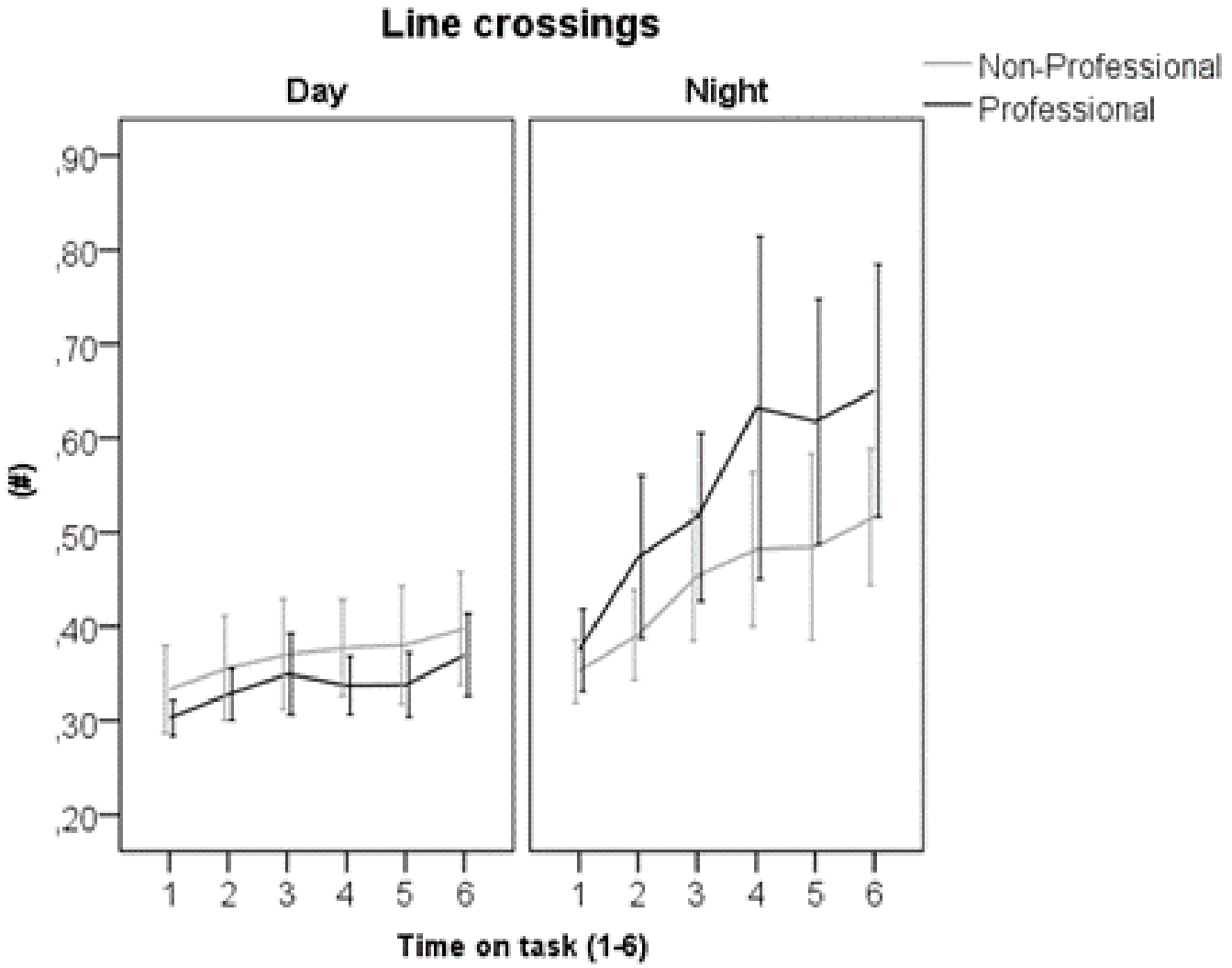
Blink duration

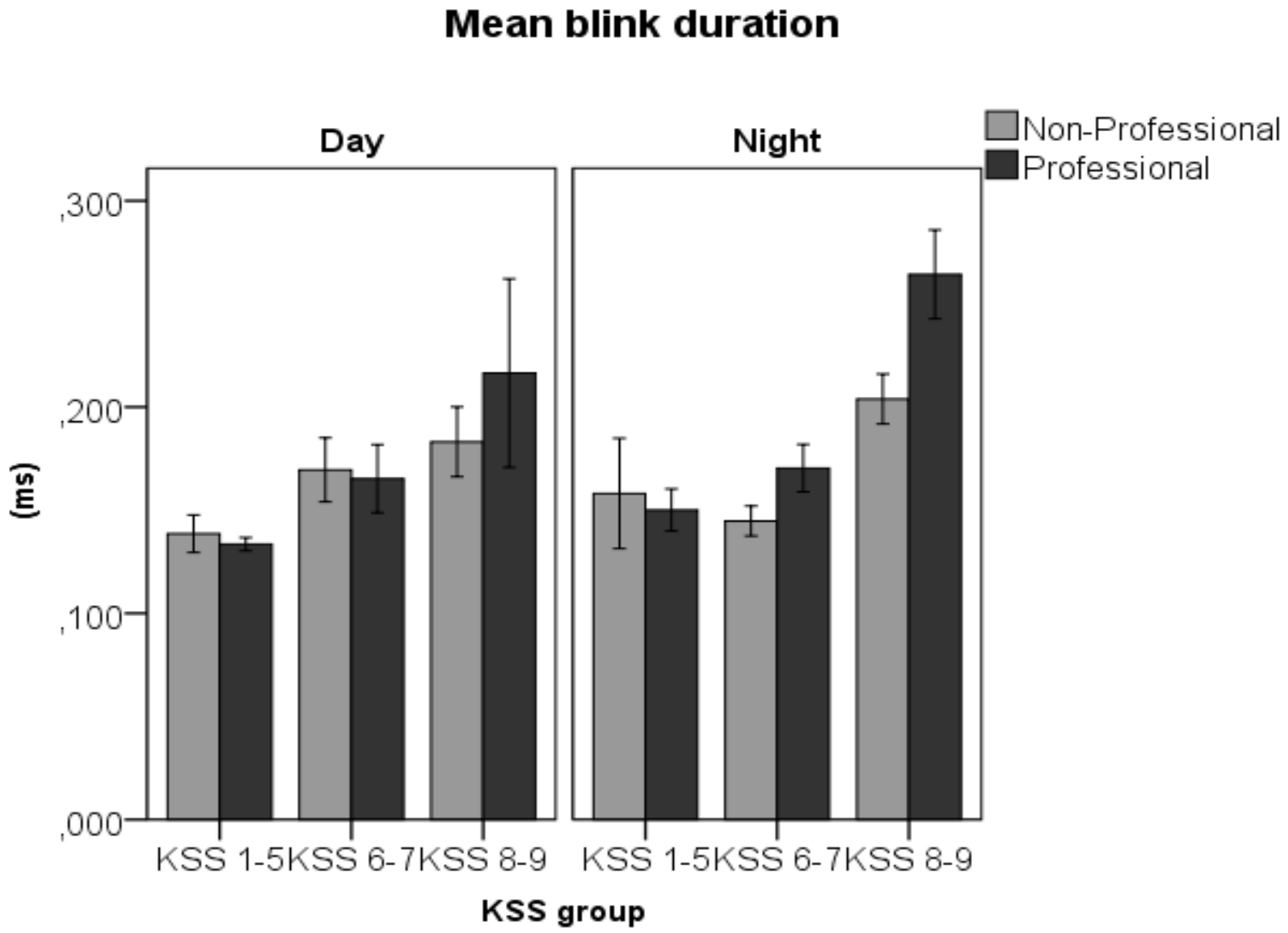


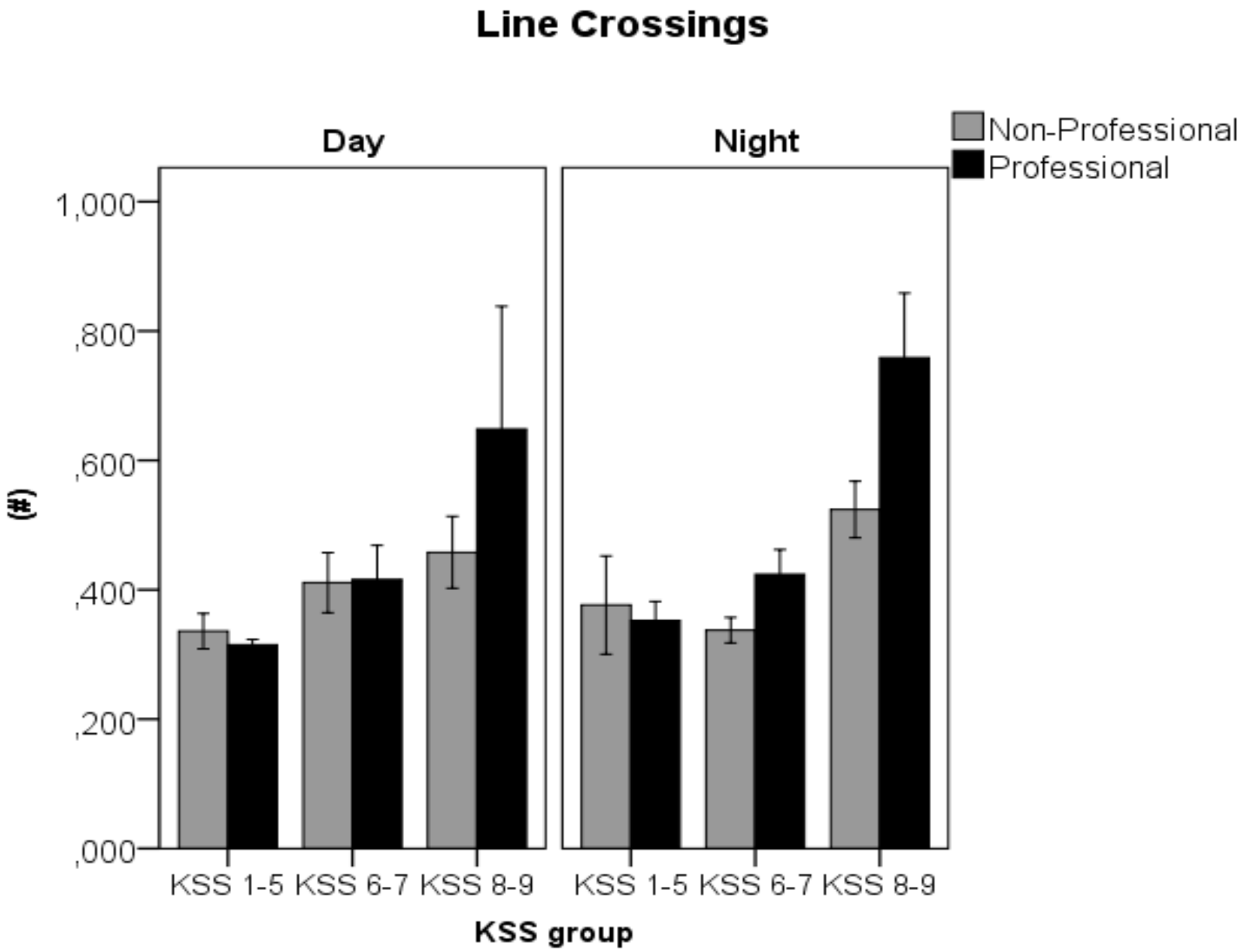
Speed


Speed
Day
Night
Non-Professional
Professional
84
82
80
78
76
74
(km/h)
1
2
3
4
5
6
Time on task (1-6)

Line Crossing




Mean blink duration
Day
Night
Non-Professional
Professional
,300
,200
,100
,000
(ms)
KSS 1-5
KSS 6-7
KSS 8-9
KSS 1-5
KSS 6-7
KSS 8-9
KSS group


Line Crossings
Day
Night
Non-Professional
Professional
1,000
,800
,600
,400
,200
,000
(#)
KSS 1-5
KSS 6-7
KSS 8-9
KSS 1-5
KSS 6-7
KSS 8-9
KSS group

Conclusion

Professional drivers seem to **underestimate their sleepiness** by reporting less subjective sleepiness than passenger car drivers while **having longer blink durations and more line crossings, especially during night-time driving**.

There is no reason to believe that professional drivers are able to learn how to stay awake while driving in a better way than less experienced drivers.

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