The effect of sleep loss on emotional working memory

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Main aim
To examine the effect of sleep loss on working memory using positive, negative and neutral pictures and manipulating level of complexity.

Background
• Emotional stimuli differently affect working memory (WM) performance.
• Sleep deprivation has a known impact on both emotion and WM.

Methods
• 61 subjects (26 women), age: 23.4 (3.4)
• Non sleep deprived (n=31)
• Total sleep deprivation (n=30)
• Sleep deprived ≈ 32 hours without sleep
• Emotional (1 & 3)-back task (Figure 1)

Results
Accuracy (d’) (Figure 2)
• Sleep deprived less accurate (p = .02)
• 3-back more difficult than 1-back (p < .001)

Response time (figure 3)
• Slower responses for 3-back than 1-back (p < .001)
• Responses to positive pictures faster (p = .01), especially for sleep deprived (p = .004)

Conclusion
• Working memory accuracy is overall negatively affected by sleep loss.
• Emotional content moderates the effect of sleep loss on working memory in terms of response time.