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# Losses of consciousness: T...



Table 1. ...

<sup>a</sup>Department of Psychology, Peking University, Beijing, China  
Key Laboratory of Machine Perception (Ministry of Education), Peking University, Beijing, China

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## ABSTRACT

Loss of consciousness (LOC) is a common phenomenon that occurs during sleep, anesthesia, and various clinical conditions. This study investigated the neural mechanisms underlying LOC by comparing brain activity during natural sleep and induced LOC. Participants were monitored during natural sleep and induced LOC using a modified procedure. Brain activity was recorded using functional magnetic resonance imaging (fMRI). Results showed that during natural sleep, there was a significant decrease in brain activity in the posterior region, including the occipital and parietal areas. In contrast, during induced LOC, there was a significant increase in brain activity in the anterior region, including the frontal and anterior cingulate cortex. These findings suggest that the neural mechanisms underlying LOC are distinct from those of natural sleep. The results also provide insights into the neural basis of consciousness and the role of the anterior cingulate cortex in maintaining awareness.

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## 1. Introduction

Loss of consciousness (LOC) is a common phenomenon that occurs during sleep, anesthesia, and various clinical conditions. It is characterized by a temporary loss of awareness and responsiveness to external stimuli. The neural mechanisms underlying LOC are still largely unknown, although there is growing interest in understanding this phenomenon. Recent studies have shown that LOC is associated with changes in brain activity, particularly in the posterior region of the brain. For example, during natural sleep, there is a significant decrease in brain activity in the occipital and parietal areas (Duckworth & Sill, 2003; Ouyang et al., 2000; Van Dongen & Folk, 2003). Similarly, during induced LOC, there is a significant increase in brain activity in the anterior region, including the frontal and anterior cingulate cortex (Koenig & Lachaux, 1998; Koenig, Ruff, & Caspary, 2002; Ruff, Koenig, & Koenig, 1977). These findings suggest that the neural mechanisms underlying LOC are distinct from those of natural sleep. The results also provide insights into the neural basis of consciousness and the role of the anterior cingulate cortex in maintaining awareness.

\* Corresponding author. Address: Department of Psychology, Peking University, Beijing, China (Ministry of Education), Peking University, Beijing, China. E-mail address: ...@... ( ... ).





3PP,  $t(40) = -.735; p = .467$ . T. s. 1PP ( $M = 23.1; SD$

$F(2,40) = 18.57; p < .001$ . H  $F(2,40) = 3.41; p < .05$ . H  $F(1,40) = 1.02, ns$ ;  $F(1,40) = .12, ns$ ;  $F(1,40) = 1.62, ns$ .

3.3. Corrected “remember” recognition scores

F  $(2, 40) = 40.54; p < .001$ . M  $(2, 40) = 21.27; p < .001$ . T  $(2, 40) = 43.10; p < .001$ . 3PP  $(2, 40) = 18.71; p < .001$ . H  $(2, 40) = 6.33; p < .001$ . H  $(2, 40) = 2.298; p < .05$ . T  $(1, 40) = 11.40; p = .002$ . F  $(1, 40) = 4.24; p < .05$ . T  $(1, 40) = 1.85; p = .072$ . H  $(1, 40) = 1.10$ . 1PP  $(1, 40) = .09; t(40) = .31; p = .757$ . T  $(1, 40) = 0.505, ns$ . ANOVA. I  $(2, 40) = 38.09; p < .001$ . H  $(2, 40) = 12.42; p < .001$ . H  $(1, 40) = 2.67, ns$ ;  $F(1, 40) = .14, ns$ ;  $F(1, 40) = 3.28, ns$ .

3.4. Corrected “know” recognition scores

F  $(2, 40) = 3.12; p = .05$ . H  $(2, 40) = 17.37; p < .001$ . T  $(2, 40) = 15.90; p < .001$ . 3PP  $(2, 40) = 4.58; p < .05$ . T  $(2, 40) = 17.37; p < .001$ . H  $(2, 40) = 12.42; p < .001$ . H  $(1, 40) = 7.62; p < .01$ . T  $(1, 40) = 0.279, ns$ . ANOVA. I  $(2, 40) = 6.91; p < .01$ . H  $(2, 40) = 6.28, ns$ .

$p < .01$ .  $H$   $F(1,40) = .76, ns$ ,  $F(1,40) = 1.28, ns$ ,  $F(1,40) = 1.21, ns$ .

#### 4. Discussion

T.  $1PP$ ,  $3PP$   $C$   $(K \& L, 1988; K, 2002; R, 1977; , 2007)$ ,  $1PP$ .  $M$   $T. SRES$   $1PP$ .



K. Zhang, C. N. S., Lab (CNL B1316), S. F. C. (31371054), S. F. C. (12A D116).

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