

# The moderating effect of problem difficulty on the sleep role on insight problem problem

**Ut Na Sio**

Psychology of Department, Lancaster University, Lancaster, United Kingdom

**Padraic Monaghan**

Psychology of Department, Lancaster University, Lancaster, United Kingdom

**Tom Ormerod**

Psychology of Department, Lancaster University, Lancaster, United Kingdom

**Abstract:** Current findings show that sleep facilitates problem solving through restructuring of the problem representation. Theories on insight suggest that such representational change occurs only if an individual has reached an impasse. Accordingly, the effects of sleep should be found only on difficult insight problems that can induce an impasse. To test this prediction, participants attempted easy and difficult verbal insight problems. After a period of 12 or 24 hours including sleep, or 12 hours awake, participants returned to solve problems that were previously-unsolved as well as novel problems. The sleep group solved more previously-unsolved difficult problems than the awake group. No sleep-induced improvement was found for easy and novel problems. This suggests that the effects of sleep on insight are not absolute, but depend on whether the insight problem induces an impasse and requires representational restructuring.