

# Sleep technique improves creative thinking

December 9 2021, by Bob Yirka

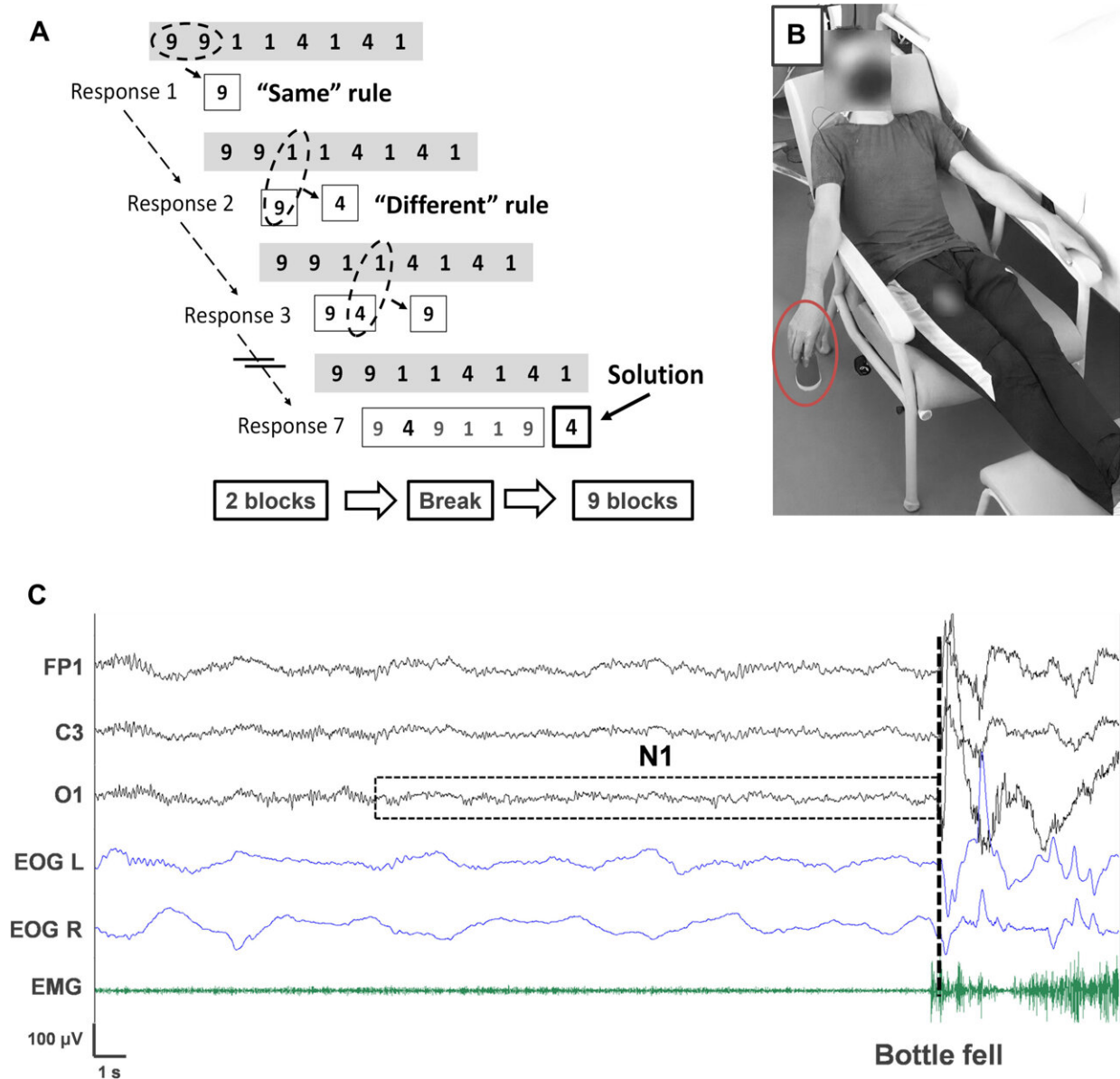


Fig. 1. Experimental paradigm.(A) Top: An illustrative NRT trial. Subjects were presented with an eight-digit sequence (composed of 1, 4, and 9) and instructed

to find the final solution as quickly as possible by applying two rules in a stepwise manner: Report the same digit if the previous and next digits are identical (same rule) and the remaining third digit if they are different (different rule). Unbeknownst to them, the second response was always the final solution (hidden rule allowing them to answer much faster). Adapted from (1). Bottom: Protocol timeline. Subjects completed two blocks (30 trials each) of the NRT and then had a 20-min break followed by nine additional blocks. (B) Break period. Participants rested in a chair, eyes closed, in a dark room while holding a bottle (circled in red) in their right hand. They were told to report out loud any mental content if the object fell. (C) Illustrative polysomnographic recording. In this example, the participant was in N1 when the bottle fell (dashed line), waking him up. He then reported a hypnagogic experience [“I saw a big cliff and I was climbing it. Then boom, it (the bottle) fell and brought me back to reality”]. Credit: DOI: 10.1126/sciadv.abj5866

A team of researchers working at Sorbonne Université, reports that people may be more creative if awoken just after falling asleep. In their paper published in the journal *Science Advances*, the group describes experiments they conducted with sleeping volunteers.

Thomas Edison and Salvador Dali were both known to use a certain sleep technique to increase their creativity. It involved thinking about a problem or set of circumstances and then placing an object in their hand as they lay down for a nap. As they drifted off, their hand relaxed and allowed the object to fall to the floor rousing them from their sleep. It was at that point, they both claimed, that inspiration came to them. In this new effort, the researchers tested this idea.

Prior research has shown that in addition to REM sleep and [deep sleep](#), most [people](#) experience a type of sleep known as N1—the short interval between being fully awake and fully asleep, a sort of twilight zone. It was this interval that the researchers set out to test. They recruited 103

healthy people who promised they had little difficulty falling asleep given the chance.

Each of the volunteers were given sequences of eight numbers and were then asked to apply two math principles to figure out the next one in the sequence. Volunteers were not told that there was another, much easier way to figure out the next number. It was always the same as the second number in the sequence. The volunteers were then asked to take a short nap while holding a cup that would fall and wake them if they dozed off. Each of the volunteers was fitted with probes to measure their brain waves to determine if they truly fell asleep. After the nap, the volunteers were asked to solve the same type sequence problem.

After the second go at the sequence problem, the researchers found that those people who had entered and exited N1 were likelier to determine the secret way to solve the number problem—83% of them figured it out, compared to just 30% of those who did not fall asleep during their nap time. Since figuring out the secret solution involved thinking creatively, the researchers suggest that people can improve their creativity by interrupting their own N1 sleep.

**More information:** Célia Lacaux et al, Sleep onset is a creative sweet spot, *Science Advances* (2021). [DOI: 10.1126/sciadv.abj5866](https://doi.org/10.1126/sciadv.abj5866)

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