

# To nap, perchance to learn

Napping can be as good as a night's sleep for memory consolidation. **TOM STAFFORD**

**W**E know that sleep is important for learning, but new research shows that napping in the day can be as good as a full night's sleep. What's more, the kind of sleep you engage in during your nap is crucial.

Harvard Medical School researcher Sara Mednick and her colleagues trained participants on a texture discrimination task for which performance is known to improve after a few minutes' practice, and then improve again after a night's sleep.

Training was done in the morning, and baseline performance was tested at 9am. Participants were divided into three groups. At 2pm the first group started a 60-minute nap, the second a 90-minute nap. The control group got no nap. Performance was tested again at 7pm and then at 9am the next day, after all participants had got a full night's sleep.

Participants who didn't nap experienced deterioration in performance by the evening. Nappers' performance improved,

with 90-minute nappers improving more than 60-minute nappers.

Suspecting that type of sleep is important to learning, the investigators divided the nappers according to the kind of sleep they experienced during their nap. This revealed that the type of sleep is a more important factor than length of nap alone.

Sleepers from both the 60-minute and 90-minute groups who engaged in slow

wave sleep (SWS), but not REM sleep, retained only their post-training performance. The nap protected them from deterioration through fatigue and forgetting, but didn't give any benefit from memory consolidation.

Nappers who enjoyed SWS and REM sleep had significantly improved performance, whether they were in the 60-minute or the 90-minute group. The difference was that only half of 60-minute nappers went into REM sleep, while nearly 90 per cent of the 90-minute nappers did.

The improvement due to napping with SWS and REM sleep was the same as the improvement enjoyed by the no-nap controls after a full night's sleep.

Napping continued to have an effect when performance was tested the next day. Compared with the controls, nappers' performance was further significantly improved at the 24-hour retest. In fact, the nappers' performance was comparable to that reached by controls after 48 hours (and two nights' sleep).

Although it might be stretching the definition slightly to call 90 minutes' sleep a 'nap', this is good news for all of us who enjoy an afternoon snooze.

Mednick, S., Nakayama, K. & Stickgold, R. (2003). Sleep-dependent learning: A nap is as good as a night. *Nature Neuroscience*, 6, 697-698.

JOHN HARRIS (REPORTDIGITAL.CO.UK)

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## A MESSAGE FROM TOM STAFFORD, OUR NEW ASSOCIATE EDITOR FOR RESEARCH IN BRIEF

'How to deal with too much information will be the great riddle of our age' said philosopher Theodore Zeldin. This looks like becoming all too true within psychology. The number of scientific papers published is rising exponentially, the number of subdisciplines and journals rises year on year. It seems hard enough to keep abreast of your own speciality, let alone the discipline as a whole.

Hopefully, the 'Research in brief' section of *The Psychologist* (along with the Society's free Research Digest service) can be part of the answer to this riddle. 'Research in brief' provides a forum for researchers to highlight and discuss research that they feel has lasting importance, not just to their own field but across subdisciplinary boundaries as well. The diverse archipelagos of psychology will always be connected by their fundamental reference to the mental life of the individual, but we need more theoretical integration too.

So, if you spot a paper in a peer-reviewed journal (or at proof stage) that seems important for your own area, and perhaps beyond, then e-mail me at [tom@idiolect.org.uk](mailto:tom@idiolect.org.uk). You can either nominate the paper or – ideally – write a lively and informative review (up to 400 words) yourself. Journal article authors can also submit reports on their own work. I look forward to hearing from you and to learning a lot about our eclectic discipline.

Tom Stafford

## TO HEAD, OR NOT TO HEAD? WHAT WAS THE QUESTION?

How football heading may affect brain function. **RICHARD STEPHENS**

**A**CCORDING to the Office for National Statistics, half of all UK males are, or have been, regular footballers. Great, then, was the personal interest in last year's coroner's report that repeated heading of wet, heavy leather balls had been a 'significant contributing factor' to the cause of former West Bromwich Albion footballer Jeff Astle's death at the age of 59.

The latest in a series of studies investigating this issue does little to reassure past and present players. Adrienne Witol and Frank Webbe administered a number of standard neuropsychological tests to 60 male soccer players and 12 non-sporting controls in Florida. Players were asked how many headers they make in a typical game, and for how many years they had played football. Four groups were formed (control, low, moderate and high) based on cumulative heading exposure. Significantly poorer performance amongst the high headers compared with the other groups was observed on Trail Making Part A, a test of attention and mental flexibility. High cumulative headers also were more likely to show impaired scores on tests of a number of the cognitive functions including long-term memory.

But it's early doors to consider interfering with the laws of the Beautiful Game – such as restricting or banning heading. The authors acknowledge that players may not be able to estimate accurately the number of headers and games played. Additionally, the study should have controlled for concussion incidence, as concussion reduces neuropsychological test performance. As it stands, the effects reported could just as easily be the result of concussions sustained off the pitch as heading the ball. More research is required.

Witol, A.D. & Webbe, F.M. (2003). Soccer heading frequency predicts neuropsychological deficits. *Archives of Clinical Neuropsychology*, 18, 397–417.

■ Dr Richard Stephens is in the Psychology Department, Keele University.

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## DOES MY HEAD LOOK BIG IN THIS?

Buying hats may well prove troublesome, but having a huge head also brings a key advantage – it means you're less likely to suffer mental decline in old age.

Catherine Gale (MRC Environmental Epidemiology Unit, University of Southampton) and colleagues recruited 215 men and women aged 66–75 years, measured their head circumference (itself an indicator of brain size) and gave them two sets of intelligence tests – first at the head-measuring session and then again, three and half years later. Old records also detailed the participants' head circumference at birth.

People with bigger heads scored more highly on the intelligence tests, and were less likely to show mental decline as indicated by a lower score at the second testing session relative to the first. In fact, the bottom quartile (25 per cent) of the sample for head size were five times more likely to exhibit mental decline than the quartile with the biggest heads.

Head circumference at birth, by contrast, had no relationship with intelligence or mental decline. This has important implications, because as the authors explained, it suggests 'brain development during infancy and early childhood is more important than foetal growth in determining how well cognitive abilities are preserved in old age'.

Gale, C.R., Walton, S. & Martyn, C.N. (2003). Foetal and postnatal head growth and risk of cognitive decline in old age. *Brain*, 126, 2273–2278.

**Weblinks:** Journal: [www.brain.oupjournals.org](http://www.brain.oupjournals.org)  
MRC Environmental Epidemiology Unit:  
[www.mrc.soton.ac.uk/pageone.asp](http://www.mrc.soton.ac.uk/pageone.asp)

**Syllabus advice:** Although this study falls broadly under physiological psychology, it actually has implications for developmental psychology because the evidence suggests interventions that encourage brain growth in early childhood could have benefits later in life.

## BORN TO LEAD

An unusually high proportion of politicians are firstborns. Is this because the first born in a family benefits from the undivided attention of their parents' resources and expectations? Or is it because the firstborn develops leadership skills through dealing with their younger siblings?

Rudy Andeweg and Steef Van Den Berg (Leiden University, Holland) questioned 1200 Dutch individuals due to take government office. To test the parental vs. sibling theories, they took note of how many politicians were 'only children' and how many were 'middle-order children'. Only children would have enjoyed the benefits of their parents' undivided attention but without any younger siblings to boss around. Middle-order children, by contrast, would miss out on parental preference, but would have been able to command their younger siblings.

As expected, relative to the general population,

they found a greater proportion of politicians were firstborns (36 per cent vs. 26 per cent) and fewer were last borns (19 per cent vs. 25 per cent).

In support of the parental explanation, they found a disproportionate number of the politicians were only children. Middle-order children, by contrast, were not overrepresented among the politicians – undermining the importance of the sibling explanation.

Andeweg, R.B. & Van Den Berg, S.B. (2003). Linking birth order to political leadership: The impact of parents of sibling interaction? *Political Psychology*, 24, 605–623.



Churchill – first born

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[www.blackwellpublishing.com/journals/pops](http://www.blackwellpublishing.com/journals/pops)

**Syllabus advice:** This study is relevant to modules on personality development (e.g. AQA spec A (A2) 'personality development'). Note, Alfred Adler wrote a seminal paper on birth-order effects in 1928.