

Sound of music: How melodic alarms could reduce morning grogginess

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Beep beep beep or Beach Boys? The sounds you wake up to could be affecting how groggy and clumsy you are in the morning, according to new research.

A study by RMIT University suggests melodic alarms could improve alertness levels, with harsh alarm tones linked to increased levels of morning grogginess.

The surprising finding, published in *PLoS One*, could have important implications for anyone who needs to perform at their peak soon after waking, such as shift workers and emergency first responders.

Lead author, RMIT doctoral researcher Stuart McFarlane, said morning grogginess—or sleep inertia—was a serious problem in our 24-hour world.

"If you don't wake properly, your [work performance](#) can be degraded for periods up to four hours, and that has been linked to major accidents," McFarlane said.

"You would assume that a startling 'beep beep beep' [alarm](#) would improve alertness, but our data revealed that melodic alarms may be the key element. This was unexpected.

"Although more research is needed to better understand the precise combination of melody and rhythm that might work best, considering that most people use alarms to wake up, the sound you choose may have important ramifications.

"This is particularly important for people who might work in [dangerous situations](#) shortly after waking, like firefighters or pilots, but also for anyone who has to be rapidly alert, such as someone driving to hospital in an emergency."

The research involved 50 participants, using a specially designed [online survey](#) that enable them to remotely contribute to the study from the comfort of their own home.

Each person logged what type of sound they used to wake up, and then rated their grogginess and alertness levels against standardised sleep inertia criteria.

Co-author Associate Professor Adrian Dyer, from RMIT's School of Media and Communication and Digital Ethnography Research Centre, said the research could help contribute to the design of more efficient interventions for people to use on their own devices to wake up properly.

"This study is important, as even NASA astronauts report that sleep inertia affects their performance on the International Space Station," Dyer said.

"We think that a harsh 'beep beep beep' might work to disrupt or confuse our brain activity when waking, while a more melodic sound like the Beach Boys 'Good Vibrations' or The Cure's 'Close to Me' may help us transition to a waking state in a more effective way.

"If we can continue to improve our understanding of the connection between sounds and waking state, there could be potential for applications in many fields, particularly with recent advancements in sleep technology and artificial intelligence."

The study, 'Alarm tones, music and their elements: Analysis of reported waking sounds to counteract [sleep inertia](#)', with co-authors Dr Jair Garcia (School of Media and Communication) and Dr Darrin Verhagen (School of Design), is published in *PLoS ONE*.

More information: Stuart J. McFarlane et al, Alarm tones, music and their elements: Analysis of reported waking sounds to counteract sleep inertia, *PLOS ONE* (2020). [DOI: 10.1371/journal.pone.0215788](#)

Provided by RMIT University

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