

Psychological interventions can reduce engine idling and improve air quality

March 31 2021



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New research by the University of Kent has found that using low-cost psychological interventions can reduce vehicle engine idling and in turn improve air quality, especially when there is increased traffic volume at

railway level crossings.

A team of psychologists led by Professor Dominic Abrams, Dr. Tim Hothrow and Dr. Fanny Lalot at the University's School of Psychology, found that using carefully worded road signage can decrease the number of drivers leaving engines idling during queues at crossing barriers.

The research, which was funded by Canterbury City Council following a successful grant bid to the Department for Environment, Food and Rural Affairs (DEFRA), observed 6,049 drivers' engine idling at the St Dunstan's and St Stephen's level crossings in Canterbury, Kent. The researchers tested the effects of three intervention signs fixed to lampposts, which amplified existing signs to request drivers to switch off their engines. These were:

- 'Join other responsible drivers in Canterbury. Turn off your engine when the barriers are down' (Social norm messaging).
- 'Turn off your engine when the barriers are down. You will improve air quality in the area' (Outcome efficacy messaging).
- 'Think about your actions. When the barriers are down please turn off your [engine](#)' (Self-regulation messaging).

The social norm and outcome efficacy messages successfully increased the proportion of drivers who turned off their engines, by 42% and 25%, respectively. This reduction in vehicle idling significantly reduced concentrations of atmospheric particulate matter (PM2.5) two meters above ground level.

The presence of larger numbers of other drivers boosted the impact of the social norm road signage. These findings demonstrate that drivers may feel a stronger urge to conform to the norm of turning their engines off when those ahead of them in traffic do too. This reduces harmful emissions when it is most urgent to do so.

This research, published by the *Journal of Environmental Psychology*, is the first of its kind to show that behavioral change induced by persuasive messages translates into observable changes in air quality and pollutant concentration levels.

As a result of the research, Canterbury City Council has installed permanent road signage at the St Dunstan's, St Stephen's and Sturry railway level crossings.

Professor Abrams said: 'People have many creative ideas about how to improve air quality, but how do we know which will work? This research used a [scientific method](#) that enabled us to design effective messages to change people's behavior, improving the air quality for themselves and others. Just as importantly, we have also discovered types of messages that do not work so well. This approach should also work when planning ways to encourage other behaviors that can improve air quality, health and quality of the environment.'

Kelly Haynes, Environmental Health Officer—Air Quality at Canterbury City Council, said: 'Improving air quality in the district is a major focus of the council and research like this is vital to that work.'

'The results clearly show the right messages in the right locations can be really effective in reducing the number of people leaving their engines running which is one of the main contributors to poor air quality in our city.'

'These signs are just one of many things we're doing to tackle [air quality](#) including the introduction of a new hybrid car club in Canterbury and plans to install more electric vehicle charging points across the district.'

More information: Dominic Abrams et al, Cleaning up our acts: Psychological interventions to reduce engine idling and improve air

quality, *Journal of Environmental Psychology* (2021). [DOI: 10.1016/j.jenvp.2021.101587](https://doi.org/10.1016/j.jenvp.2021.101587)

Provided by University of Kent

Citation: Psychological interventions can reduce engine idling and improve air quality (2021, March 31) retrieved 27 April 2024 from <https://phys.org/news/2021-03-psychological-interventions-idling-air-quality.html>

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