

# Monitoring advertising to improve children's health

In a world-first, Deakin researchers are creating an automated tool to monitor how products that increase the risk of cancer are marketed to children

The cross-disciplinary project combines wearable eye-tracking technology, artificial intelligence and public health research to examine the visual factors that cause children to take up harmful habits such as consumption of junk food, alcohol and cigarettes.

This work will result in a low-resource tool that allows data to be gathered in a setting outside of the laboratory in a 'natural state' environment. This information can be used by researchers, practitioners, and policy makers in governments around the world in the development of policies to protect children from the harmful impacts of unhealthy advertising.

## Understanding visual influences

As a public health researcher with an interest in cross-disciplinary methods, lead researcher Associate Professor Kathryn Backholer says understanding how children engage with various forms of advertising and marketing strategies will support future policies that protect the health of children and the wider public through healthier advertising environments.

"Essentially, we're creating an urgently-needed, low-resource tool to provide a rigorous and ethically-sound way of monitoring exposure to harmful advertising in physical and digital environments," she says.

The eye-tracking device, iPupilX, that supports this data-gathering is unique in that it can be worn during normal activities and routines, allowing researchers to gather data in settings outside of a laboratory. Information is gathered through changes in the wearer's pupil, disclosing attention and focus levels.

"Previously this sort of work has been done in controlled experimental settings where children aren't in their natural state. That can affect how they concentrate on what's presented to them," explains Associate Professor Asim Bhatti, an expert in cognition and performance assessment.

"Now we'll be able to get a true sense of the impact of junk-food advertising on children as they go about their regular activities."



## Key Facts

- Deakin's world-first research tool will monitor children's exposure to, and engagement with, junk food, alcohol and tobacco advertising.
- The data produced will ultimately contribute to decreasing cancer cases by minimising influential risk factors from an early age by providing the next generation with a healthier advertising environment.
- Evidence shows that poor diet, being overweight, reduced physical activity and excessive alcohol consumption collectively contribute to nearly the same number of cancer cases as smoking.
- The cross-disciplinary Deakin team from public health, policy, complex systems and artificial intelligence have addressed the WHO-identified need for an ethical, adaptable tool to monitor unhealthy advertising.



## A preventable problem

According to Cancer Council Australia, 1 in 3 cases of cancer in Australia is preventable – the equivalent of 44,000 cases per year. Evidence now shows that a poor diet, being overweight, minimal physical activity and excessive alcohol consumption collectively contribute to nearly the same number of cancer cases as smoking.

We already know that exposure to advertising influences children's attitudes, perceptions, expectations and purchasing behaviour across their life course. In a rapidly changing, digital world where young people's exposure to advertising for cigarettes (including e-cigarettes), alcohol and unhealthy foods is unprecedented, reducing that exposure is critical for the prevention of cancer.

"Children have never been as engaged with digital and social media platforms as they are now, and with this comes an exposure to high volumes of junk food and alcohol marketing that's increasingly sophisticated in targeting children and those susceptible to the messaging," Associate Professor Backholer says. "This project is responding to an urgent need that's threatening the health of children around the world."

## A cross-disciplinary solution

Although the World Health Organisation has identified a critical need for effective, ethical and adaptive tools to monitor unhealthy advertising to children, no such tools currently exist. This is largely due to the highly complex and ethically-sensitive task of collecting data from children as they go about their daily lives. The Deakin team is aiming to overcome these barriers by creating a cross-disciplinary solution that brings together the expertise of researchers across public health, policy, complex systems and artificial intelligence.

The research program consists of several development milestones over two years, with each milestone contributing to research challenges beyond this program's scope.

The first – developing a cloud-based library of images used to advertise products known to increase risk of cancer such as alcohol, tobacco and junk food - is almost complete. This will allow advertising images to be captured anywhere and at any time by multiple users using a mobile phone or tablet and uploaded to the image library. The next step uses machine learning algorithms to develop an image recognition system that automatically identifies and classifies these images according to alcohol, tobacco and junk-food advertising. This system will then be applied to the iPupilX eye-tracking devices to validate the system's ability to monitor advertising in the non-digital environment, before it's applied to advertising in the digital environment.

The final milestone is a pilot study. This study, involving approximately ten children aged 14 -18 years, will show that the research tool is feasible and ethically appropriate for use in the collection of data. If successful, this will provide the evidence for funding for further work in monitoring unhealthy advertising to children, with the goal of improving safety standards in Australia and overseas, and sharing the tool with researchers around the world.

## Grants and Funding

This project is funded under a Cancer Council Victoria Venture Grant.

## Collaboration

Collaborators include [Cancer Council](#), [University of Sydney](#), [University of Wollongong](#) and the [Obesity Policy Coalition](#).

## More Information

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