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Summary of Behaviour Change Trials to Reduce Contamination of Household Recycling

An output of the Waste and Circular Economy Collaboration v1.0

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Key points

A series of waste crises from 2018 onwards prompted BehaviourWorks Australia's Consortium partners in state and federal government to try a new approach.

The Waste and Circular Economy Collaboration included reducing household recycling contamination behaviours as the goal of one of three prioritized streams of research.

To learn what could work, BWA coordinated a program of behaviour change trials across multiple local government areas in NSW and Victoria. We believe this is the largest Australian trial to date.

The trials were underpinned by robust evidence and designed according to best-practice principles.

An ambitious, multi-part program was successfully implemented despite an already complex and dynamic environment and Covid-19.

The program identified that there are better and worse ways to undertake waste education and behaviour change. Specifically:

- Focusing on contaminating ('no') items is more effective at getting them out of the bin than highlighting what can be recycled.
- Adding certain messaging designed to capture attention or trigger action can be more effective, but other messages can backfire.
- Behaviourally-informed, personalised feedback is effective in reducing contamination across multiple contexts.

These findings should be incorporated into current waste education and behaviour change efforts. But further investigation is required.

Considering the broader system will also be critical in maximizing the value of behaviour change efforts.

Contents

WHY a behaviour change collaboration on reducing household recycling contamination?

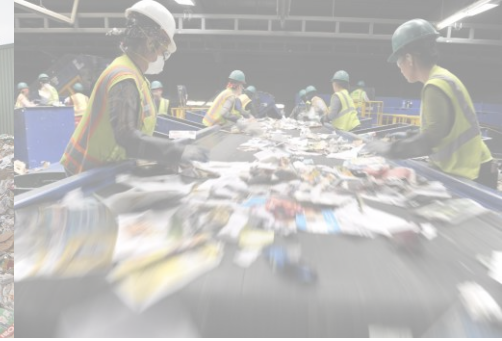
A series of waste crises prompted BWA and its consortium partners to try a new approach.

In 2018, Australia was rocked by a series of waste crises including a series of waste fires, and China's ban on recycling imports. In response, BehaviourWorks Australia's Consortium partners agreed to trial a new, more collaborative way of working.

A collaboration between federal, state and local governments, all 'feeling the same pain' was formed to collectively generate a collection of robust evidence on the problem and possible solutions.

The Waste and Circular Economy Collaboration began with system mapping and scoping exercises to identify multiple points for intervention in Australia's waste system. This led to an agreement on initial priorities.

Recycling contamination behaviour was selected as one of three focal points.



One of the key points of intervention selected was to reduce contamination of household recycling, thus reducing stockpiles and associated waste fires, and increasing the value of collected recyclables to enable both export and domestic reprocessing.

Household behaviour was identified as a clear part of the contamination problem, with an initial review of evidence revealing a dearth of knowledge on what works to improve it.

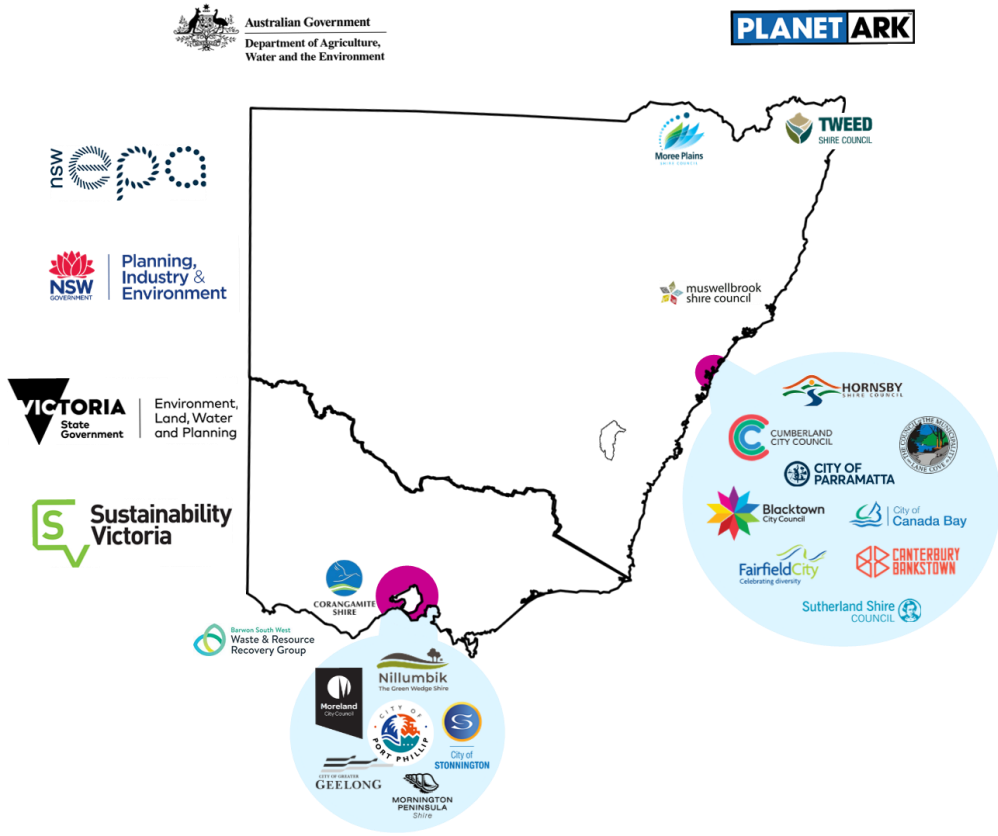
The program purpose was to support good public policy and programs by strengthening and sharing the evidence of what works to change household behaviour in order to reduce contamination.

WHAT did we do to learn what works to reduce contamination?

BWA oversaw the largest known program of coordinated waste behaviour change trials in Australia.

A total of 38 trials across three streams were initially planned, with 26 trial delivery partners across two states and all levels of government coming together to co-design solutions.

Despite the Covid-19 pandemic, 22 trials with 16 partners were able to be completed: 6 field trials and 16 online experiments.



The trials were underpinned by robust evidence and designed according to best-practice principles.

The trials were informed by a solid program of prior research, which included a review of academic evidence, and interviews with both practitioners and policy makers.[1]

The research provided insights into the some of the key barriers to correct recycling, particularly confusion arising from the growing complexity of Australia's recycling system and conflicting messages, combined with limited time and often space.

It also suggested types of interventions and messages that were more likely to be effective, including improving convenience, demonstrating and providing feedback on preferred behaviours, and building perceptions of norms and efficacy.

These findings were combined with best-practice behavioural science principles to design the final suite of trials.

[1] Download the full Evidence and Practice Review, or the Policy Highlights summary from https://www.behaviourworksaustralia.org/major-project/waste-circular-economy-collab-stream1-kerbside-recycling-contamination#RapidReview

The complex program was successfully delivered despite challenging circumstances.

Even a single trial can be complicated when behavioural theory and research design principles meet reality and feasibility constraints. The agreed Trials program was particularly ambitious, involving three separate streams of trials (Facebook experiments, Flyer experiments and Field Trials) each with various sub-trials to be implemented in varying contexts by different delivery partners across two states.

This complexity was exacerbated by the extremely challenging circumstances of the Covid-19 pandemic. The combination of lockdowns and decreased staffing due to ill-health caused multiple delays for both BWA research staff and Council trial partners. The flow on effects continued, extending the originally planned 12 month timeframe to almost 3 years.

SO WHAT did our behavioural science research find out?

There are better and worse ways to undertake waste education and behaviour change.

Targeting contamination (rubbish in the recycling bin) & leakage (recycling in the rubbish bin) at the same time creates confusion.

- **Focusing on ‘no’ items is more effective at getting them out of the recycling bin.**

Behavioural messaging can improve behaviour but it can also backfire, exacerbating the problem. More research is needed to better understand what types of messages are effective and when.

- **There are some promising message strategies.**

Traditional approaches (eg. signage and educational materials) are not sufficient on their own to change behaviour.

- **Behaviourally-informed, personalised feedback can reduce contamination.**

However, we still need to investigate other, less-intensive options, particularly for apartment buildings.

Focusing on ‘No’ items

Councils often face two problems:

- contamination (rubbish in the recycling)
- leakage (recycling in the rubbish).

Results from our survey experiments suggest that these goals are not easily achieved at the same time, as it appeared that in essence, tested flyers managed to convey either:

- ‘Put it in just in case’ (reducing leakage, increasing contamination)
- ‘If in doubt, leave it out’ (reducing contamination, increasing leakage).

The strongest impact on contamination was achieved by **focusing exclusively on contaminating items** that don’t belong in the yellow bin (ie. ‘No’ items).

While not as effective, including both ‘Yes’ and ‘No’ items performed better than focusing exclusively on ‘Yes’ items.

Promising messages

Adding messaging designed to capture attention or trigger action can make a big difference. However the type of message matters: some tested messages had positive impacts, while others were mixed or even exacerbated the problem.

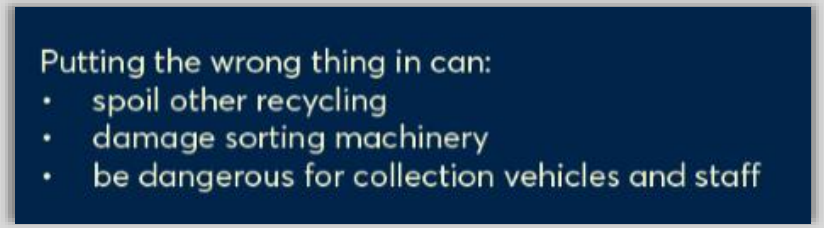
On educational flyers, an *enforcement* message had the strongest impact overall, while messages explaining the *consequences* of 'getting it wrong' (ie. of contaminating) had some positive impact. (see images on the right)

In Facebook ads, *prompting reflection* had the strongest overall impact, while second-person language ('you') activating s*elf-identity*, *gamification*, *social norms*, *negative efficacy* and *consequences* had some positive impact. (see next page)

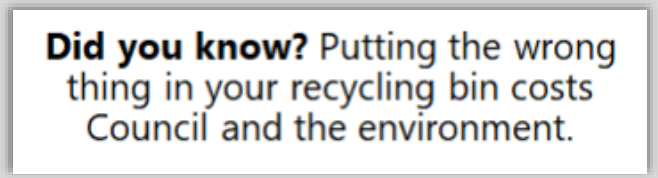
'Pre-testing' messages prior to including in communication campaigns can increase effectiveness and reduce perverse outcomes.

Messages on educational flyers

Enforcement



Consequences of contamination



Consequences of contamination

>> Read about these and other strategies in the Flyer Experiments report

Promising messages

Messages in Facebook posts

Prompting Reflection ✔✔✔

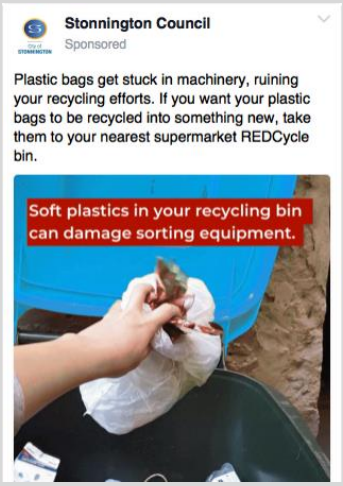
Second-person ('you') / Self-identity ✔

Social norm + person smiling ✔

Negative self-efficacy ✔

Gamification ✔

Consequences + Efficacy/Benefit ✔



>> Read about these and other strategies in the Facebook Experiments report

Personalised feedback

We tested three types of existing Council programs, and found that providing single dwellings with behaviourally-informed, targeted feedback via ‘bin tagging’ was effective in reducing the incidence of soft plastics and bagged materials in multiple locations.

Our feedback program included a series of three consecutive visual bin inspections with feedback provided on the contents. The first week used an initial ‘priming’ card with ‘soft’ feedback to introduce households to the program. Subsequent inspections then used either a visible, ‘reinforcing’ bin tag if no soft plastics/bagged materials were seen, or a ‘corrective’ postcard in the letter box if these contaminants were identified. (see images on the right)

All materials were carefully designed to target specific known barriers to correct recycling, as well as to prevent unintended negative outcomes.

1. Priming postcard + soft feedback

2a. Reinforcing

2b.Corrective postcard

>> Read about this and other programs in the Field Trials report

Personalised feedback

Key aspects of Personalised Feedback intervention design

- Focusing on just two specific contaminants, to minimise the amount of behaviour change requested at one time and increase effectiveness through specific, repeat messaging.
- Priming residents regarding the commencement of the feedback program to increase awareness and reduce reactance.
- Providing multiple rounds of feedback to reinforce intervention and encourage persistence of behaviour change.
- Providing feedback specifically on whether or not the target items “were seen” during the inspection, to avoid any perverse outcomes.
- Publicly reinforcing correct behaviours to highlight positive norms’.
- Privately ‘correcting’ incorrect behaviours to de-emphasise any negative social norms, using behaviourally informed messaging that reduces potential for shame, guilt, defensiveness or dismissiveness.

Source: City of Canterbury-Bankstown

NOW WHAT can government partners and the broader industry do?

1. Incorporate these learnings into current waste education and behaviour change efforts.

‘Waste educators’ across local government, recycling companies, and environmental organisations currently invest considerable time, energy and passion into initiatives to improve household waste and recycling behaviours.

Adopting the learnings from this research into their approaches will increase the effectiveness of their efforts, hastening change within households and associated improvements in recycling outcomes for Australia.

State Governments can facilitate this translation of evidence into practice by:

- actively disseminating these findings
- investing in the development of common materials and programs
- providing financial support to local governments and other entities to upgrade communication materials and deliver personalised feedback programs, which can be resource intensive.

2. Invest in continuing to learn more.

This research uncovered some key insights to improve waste education and behaviour change efforts. It also identified some promising approaches that would benefit from further research to validate and refine our understanding.

Specifically, recycling communications would benefit from further systematically-designed trials to validate promising messages for both social media and educational flyers, and explore how these can be adapted to other channels/materials.

In addition, there is still an open question of what might work to reduce contamination in apartment buildings. Plus, there are potentially other, less-resource intensive local government programs that may also be effective in reducing contamination in single-dwelling households.

While individual local governments can and should trial such things where possible, stronger evidence will come from further coordinated, collaborative trials across multiple locations and jurisdictions.

Collectively, large sums of public, philanthropic and industry money are invested in scatter shot programs with limited evaluation, which are rarely shared. All funders of behaviour change programs can facilitate adaptive policy and management of contamination prevention by facilitating systematic behavioural experimentation and knowledge sharing.

3.
Consider the broader system to determine where behaviour change can be most effective.

Behaviour change approaches can be very effective in addressing problems. However voluntary approaches centred around communication and engagement are unlikely to be able to completely mitigate the effects of the constantly evolving and complex packaging, or inconsistencies between recycling infrastructure and scheme operation.

To maximise the impact of investments in behaviour change, it is important to firstly determine which contamination problems can/should be addressed most urgently through household behaviour change, and which would be more effectively or efficiently addressed in other ways, such as infrastructure or other systems change. Conversely, infrastructure, policy and product marketing and packaging changes need to actively consider and test the behavioural signals they are sending to users to avoid unintended consequences and perverse outcomes.

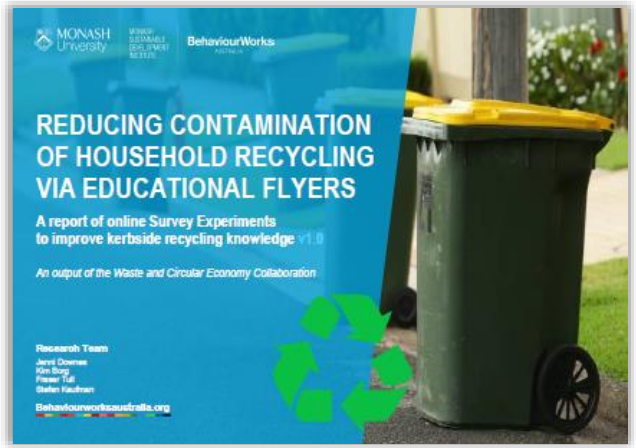
Relatively low cost, high value activities like multi-stakeholder, system-mapping contamination workshops could help. They bring together different actors and researchers to help identify where to prioritise behaviour change interventions, and/or system changes, for example from upstream packaging changes or downstream changes to collection and/or sorting processes.

Learn more

More detailed information is available from the three underlying Technical Research Reports, available from the BehaviourWorks Australia website.

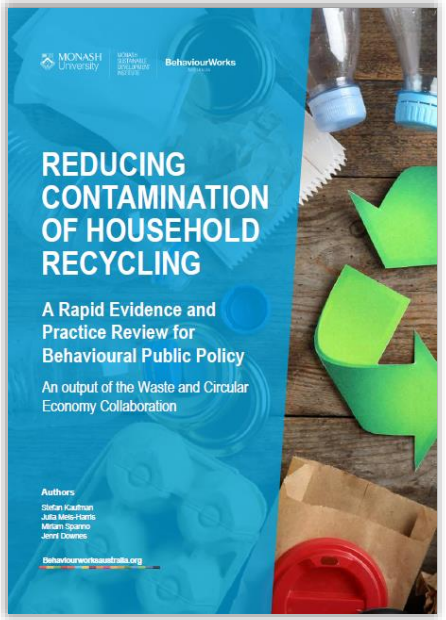
Facebook experiments

'Flyer' survey experiments



Council program field trials

Evidence Review



View these reports and more at:
www.behaviourworksaustralia.org/major-projects/waste-collaboration

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Conflict of interest
The authors have no conflicts to declare.

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