Share-bike littering is a problem almost everywhere they're introduced. In countries as diverse as China , Singapore and Ireland the bikes can be seen abandoned in the worst places. There are three elements to understanding the problems of share-bike dumping and vandalism:

- **behaviour**, or how we make the choices about how to act
- **context**, or the environment we're in at the time the action happens, of which national culture is an important part
- **cognition** or how our brains process information.

I have previously discussed the first two elements of behaviour and context .

Read more: *To end share-bike dumping, focus on how to change people’s behaviour*

Read more: *Three reasons why share bikes don’t fit Australian culture*

This article focuses on the third element, cognition.

Biases enable quick decision-making

An important theory in how we process information is called dual processing theory . In summary it says that we have two ways of processing information. One is fast, easy and automatic, which Nobel laureate Daniel Kahneman describes as System 1. The other way is slow, effortful and deliberate, referred to as System 2.

Underlying this theory is the assumption that we try to minimise the cognitive effort we put into decision-making. We allow System 1 to do most of the heavy lifting, and refer the complicated

stuff to System 2 only when needed.

That's all well and good, except that under this theory much of our behaviour is an unconsidered reflex. While that should work well for most situations, sometimes it can lead to unintended consequences. Such as when we use share bikes. To be clear, what we're looking at here is the behaviour of the share bike user who leaves the bike at risk, rather than the vandalism or littering that follows.

System 1 operates on mental shortcuts, or simple decision rules known as heuristics . While these generally work well, heuristics aren't a good fit for every situation. When they fail the resulting behaviour is a bias.

Read more: ***Here's what bike-sharing programs need to succeed***

So what biases are at work here?

When we look at share-bike littering, five biases are likely to be at play.

1) **Omission bias** is particularly relevant, as it's how share bikes become available to vandals. This bias roughly says that we judge an action that leads to harm as worse than lack of action that leads to harm. We don't see inaction, such as failing to park a bike in a safe and appropriate spot , as particularly wrong, even though it still leads to damage.

So, a user is likely to justify leaving the share bike somewhere dodgy on the basis that they didn't do anything wrong. What they won't admit to unfortunately is they exposed the bike to the risk of vandalism. If more share bikes were left in safer places, the incidence of share-bike littering would be likely to fall.

Share bikes are making news for the wrong reasons.

If a share bike has been left somewhere risky and exposed to vandalism, a second bias could kick in.

2) **Self-serving bias** says that individuals are much more likely to attribute positive outcomes to their own behaviour, and negative outcomes to someone else's. So, if a share bike ends up in a river, it can be justified entirely as someone else's poor behaviour, rather than the result of being left exposed by the user.

3) **Attribution error bias** may play a part if the share-bike user happens to be a little reflective. He or she could attribute their risky behaviour to the force of circumstance, which in their minds gave them little choice other than to abandon the bike to its fate. Unfortunately, bike scheme operators don't help in these situations by not making it clear enough where it is risky or safe to park bikes.

In Melbourne, share bikes are being dumped in the Yarra River.

The operators try to encourage users to do the right thing with a series of incentives and penalties. Unfortunately, two further biases blunt those measures.

4) **Optimism bias** is the first of these. It's the all-too-familiar idea that, for example, "bad things won't happen to me". For a user who is aware of potential penalties, the temptation to think they'll get away with it could be enough to tip them into abandoning the bike.

5) **Discounting bias** also makes potential rewards or penalties less effective. This is the notion that future penalties or rewards are not as powerful as present ones. For the share-bike user, maybe wending their way home after a good night out, the appeal of ditching the bike now and getting to bed, versus a possible penalty some time in the future, could be an easy decision to make.

So, how do we counter these biases?

Knowing that some or all of those biases are operating, what are we to do about the problems with share bikes? The answer lies in accepting these biases rather than ignoring them.

Operators could refine their business models and engineer better behaviour. For a start, they could make it much clearer to users where it's safe or unsafe to park the bikes.

As operators track where users are, they could also notify them through their app that a penalty is highly likely if they behave in certain ways. This could deal with two biases: optimism bias – by reminding the user they're certain to be penalised if they don't do as they should – and the discounting bias, i.e. the penalty will happen now, not at some time in the future.

Read more: ***They know where you go: dockless bike sharing looms as the next disruptor – if key concerns are fixed***

The question remains, what will push share bike operators to change their business models? Will market forces such as bike damage and the cost of recovery be enough to get them to change? Or is political leadership needed? For instance, in parts of Malaysia, share bikes have been seized when obstructing sidewalks .

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