Psychology's version of 'Battleships'

The next time an ignoramus asks you what psychology has ever achieved, here's a new answer for you: it helped in the 2008 discovery of the Australian light cruiser HMAS *Sydney II*, lost in deep water off the west coast of Australia since its sinking in November 1941.

John Dunn and Kim Kirsner have documented in a new paper how they used insights from research into memory transmission to analyse the testimony from the German survivors of the ship HSK *Kormoran*, which battled with the *Sydney* not long before both vessels were lost. Whereas, tragically, all the crew of the *Sydney* perished, 317 of the German crew survived and many were interrogated by Australian authorities about what happened. Finding the *Kormoran* was the key that would unlock the location of the *Sydney*, as the ships were proximate at the time of their sinking.

In the July/August issue of *Applied Cognitive Psychology*

Dunn and Kirsner applied many principles from cognitive psychology to the testimony provided by the German survivors, which included 72 references to the last known location of the *Kormoran*, many of them contradictory. One of these principles is that as memory becomes degraded, either over time in an individual, or through transmission from one person to another – it becomes progressively influenced by a person's top-down expectations and expertise. Consider a study in which participants were asked to recall pictures of fruit and veg, some portrayed larger, some smaller, than their real-life sizes. People's memories for the pictures were distorted in the direction of prior knowledge, so that large vegetables were recalled as having been portrayed as larger.

Based on this idea, and with reference to the status and opportunity of the various witnesses, Dunn and Kirsner identified seven 'source statements' about the location of the *Kormoran* that had informed the testimony of the other witnesses and had been (further) distorted by them. For example, one of the statements, now known to be inaccurate, was from the *Kormoran* captain Theodor Detmers.

To confirm this assessment of the available data, the researchers exploited techniques used in the analysis of species evolution, to identify clusters of statements, with each cluster containing statements of various levels of degradation or 'mutation' from the key source statements. Once the source statements were confirmed, the researchers tested candidate locations for the *Kormoran* and worked out the potential of each one in relation to its distance from the seven source statements.

A key facet of Dunn and Kirsner's approach was to use all the available testimony to arrive at a prediction of where the *Kormoran* would be found. By contrast, other non-psychological experts involved in the search had tended to rely on just one or two key witnesses, such as Detmers.

By combining the best fit approach from the seven source statements with two further physical landmarks – drift objects lost from the *Kormoran* and an emergency signal sent by the *Kormoran* just prior to battle – Dunn and Kirsner identified a recommended search area. On 16 March 2008 the Finding Sydney Foundation located the *Kormoran* just 5km from Dunn and Kirsner's best prediction of where she lay. Five days later, the *Sydney* was found 21km away. The discovery helped heal a scar in Australia's history.

'The method we developed in response to the problem that was placed before us was necessarily tailored to the specific details of that problem,' the researchers said. 'Nevertheless, it may provide a blueprint for potential solutions to other similar problems. Such problems may include, but would not necessarily be restricted to, search problems for missing objects. In our view, the critical feature of a problem that would make it suitable for our methodology would be a set of statements or similar data that can be regarded as a set of constraints on a state of affairs that can be evaluated quantitatively. For example, and to move away from the present spatial domain, a relevant problem may involve the evaluation of eyewitness descriptions of a particular person, e.g. a criminal.'

The personality of companies

In the July/August issue of *Applied Co*

When we think about other people, we do so in terms that can be boiled down to five discrete personality dimensions: extraversion, introversion, neuroticism, conscientiousness and agreeableness (known as the Big Five factors). A new study suggests that a similar process is at work in our perception of companies and corporations. Google and Apple have personalities too, it seems.

Philipp Otto, Nick Chater and Henry Stott quizzed thousands of people about their perception of hundreds of companies, and they've found that our view of companies is encapsulated by four fundamental dimensions: honesty, prestige, innovation and power. These perceived characteristics correlate with traditional economic measures of company performance, but they offer something more.

'With the introduction of personality factors for companies, a new way of describing companies is provided,' the trio said, 'which directly reflects the public understanding of companies... Tracking measures of corporate personality might add important dimensions to economic measures of company performance and could be used both in shaping marketing and brand strategy, and potentially also in evaluating and predicting company success.'

Otto's team kicked off its investigation by using George Kelly's Repertory Grid technique. Six participants named nine well-known

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companies and then, taking three at a time, they identified an adjective on which two companies in that group differed from the third (a process known as 'triadic elicitation'). The idea of this approach is to cultivate responses from participants without putting ideas into their heads. Named companies included Tesco, BT and Chanel, and popular themes were quality, price, general appearance and experiences with the companies.

For a second study, the adjectives from the first were combined with adjectives taken from the existing literature on categorising objects, giving a total of 118. Twenty students then rated 20 companies on all these 118 adjectives. Adjectives were retained if they distinguished between companies (an adjective is useless if all companies score the same on it), and if different participants tended to give the same company a similar rating on the same measure. This whittling led to a list of 31 adjectives. In turn, these 31 were analysed for clustering so that highly correlated adjectives like 'luxurious' and 'upper class' were part of the 'prestige' dimension.

Next, thousands of participants recruited via the I-points web-service rated 64 companies along four of the 31 adjectives, and 10 more social adjectives like 'friendly' and 'helpful'. Again, the superordinate factors of honesty, prestige, innovation and power fitted the results well and were found to correlate with traditional economic factors: for example, prestige correlated with company size and profit; innovation correlated with company growth. The final phase of the study repeated this exercise precisely a year later (in 2006) with many of the same companies, to investigate the stability of the measures. There was a high correlation in the factor scores the companies achieved, although there were also some interesting changes in the relative rankings of the companies on these measures – for example, German car manufacturers showed gains in perceived innovativeness.

'The proposed methodology not only has substantial commercial value in helping companies understand and track their public perception, but scales of this type can potentially guide and manage the decision making of individuals or groups inside and outside rated organisations, thus influencing their organisational culture,' the researchers said.

Money makes mimicry backfire

In the September issue of *Psychological Science*

It's one of the first rules of persuasion: mimic subtly your conversation partner's movements and body language (with a slight delay), and they'll perceive you to be more attractive and trustworthy. Being mimicked, so long as it's not too blatant, apparently leaves us in a better mood and more likely to be helpful to others.

It sounds easy, but Jia Liu and her colleagues have thrown a spanner in the works. They've demonstrated that reminders of money reverse the benefits of mimicry – leading mimics to be liked less, and the mimicked to feel threatened. It's all to do with the selfish, egocentric mindset money triggers, leaving us yearning for autonomy.

Liu's team had 72 undergrads complete some irrelevant questions on a computer on which the screen background was either filled with shells or currency signs. Next, each participant chatted for 10 minutes with a stranger who either did or didn't mimic them. Finally, the participants rated how much they liked that person and completed an implicit measure of threat.

Without the initial reminder of money on the computer screen, mimicry had its usual beneficial effects – participants in this condition who were mimicked felt less threatened and liked their conversation partner more. By contrast, mimicked participants reminded of money at the outset, liked their partner less and felt more threatened (compared with participants in the money condition who were not mimicked). Feelings of threat were found to mediate the links (positive or negative, depending on the condition) between mimicry and liking.

'Being mimicked typically leaves people with positive feelings,' the researchers wrote, 'but this experiment showed that mimicry can diminish liking of the mimicker if people have been reminded of money.'

'The findings take the psychology of money in a new direction,' they added, 'by demonstrating money's ability to stimulate a longing for freedom.'

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