

ARTICLE

# Reflections on applying behavioural insights to crime: a guide for behavioural scientists and criminologists in search of policy unicorns

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## Abstract

Behavioural science has made significant contributions to public policy over the last decade from tax compliance to pensions and energy use. However, behavioural insights (BI) have not yet been able to claim significant policy shifts in the area of crime, despite increasing interest and experimentation. This paper offers a critical reflection on the state of BI and crime from the perspective of those who have been at the forefront of this work since the inception of the world's first behavioural science team in government. We outline how existing theories of crime have already laid foundations for the successful application of BI but identify opportunities to build on these with tools from behavioural science. We conclude by examining how continued cross-pollination of ideas between BI and disciplines such as applied criminology points to promising directions for future research.

**Keywords:** behavioural science; behavioural insights; behavioural economics; nudging; situational crime prevention

## Introduction

In 2017, Prof Richard Thaler won the Nobel Prize in economic sciences for his life-long dedication to the field of behavioural economics, a discipline which can most simply be described as incorporating a psychological perspective into the study of economics. Thaler is one of several Nobel Prize winners who have been referred to as behavioural scientists, including Daniel Kahneman, George Akerlof, Elinor Ostrom, Robert Fogel and Robert Shiller.

Thaler's Nobel triumph was, in part, to do with the way in which he has engaged and influenced governments to incorporate the principles of behavioural economics in their approach to policymaking (e.g. Thaler & Bernartzi, 2004). One such example has been the UK's Behavioural Insights Team (BIT), which was part of the UK

government for a decade. In a recent article, David Halpern, BIT's CEO, highlights the large impact that behavioural science has had across the policy spectrum, pointing to policy 'unicorns'<sup>1</sup> in areas such as tax compliance, energy use and pensions. Other areas, such as healthcare, education and welfare, are also touted as the next tier of winners. However, there is a notable absence from this list: crime.

At this stage, it is important to note the parameters of this paper. Firstly, we refer to behavioural insights (herein, 'BI') as using robust methods to measure the impact of lessons from the behavioural sciences on a social outcome. Secondly, although there is considerable scope for applying BI principles to the criminal justice system<sup>2</sup> (e.g. in areas such as probation, to reduce reoffending) and indeed there have been notable successes within court systems (HMCTS in the UK lists BI as one of the principles on which it draws to reform justice delivery), the primary focus of this paper is the application of behavioural sciences to understanding and responding to crime.

While there has been a steady rise in the number of trials applying BI to crime reduction (e.g. Loughran, 2019), some with promising results, BI has not yet been able to claim sizable policy shifts in this space. In this paper, we outline why this might be the case and offer guidance for behavioural scientists and criminologists in search of so-called policy unicorns.

We begin by delineating what makes crime stand out from other policy areas where behavioural science has made notable contributions to date. We then outline how existing theories of crime have already laid foundations for the successful application of BI but identify opportunities to build on these with tools from behavioural science. We conclude by examining how continued cross-pollination of ideas between BI and disciplines such as criminology can help to overcome some of the challenges faced by behavioural science, pointing to promising directions for future research.

## Unique challenges facing crime reduction policy

Part of the challenge for applying a behavioural lens to crime is the complexity of the myriad behaviours which can lead to offending. Crime and responses to crime differ from other policy domains in several respects, which we list below.

### Target behaviours

The behaviours and motivations relating to crime are very broad. The concept of crime itself is amorphous. Even taking a simple legalistic definition of crime as being a transgression of some codified rules, the breadth of behaviours and contexts relating to crime is enormous (e.g. from cyber-crime to speeding to child sexual abuse). Each varies in severity, method, duration, frequency and degree of impulsivity/pre-meditation. Since the range of underlying drivers of these behaviours is equally wide, this results in a complex interplay of individual and environmental risk and protective factors for different perpetrators and victims. This is not to say

<sup>1</sup>A term used in business refers to an impact of more than £1 billion.

<sup>2</sup>For example, see 'Behavioural Economic Applications' in *Criminology & Public Policy*: <https://online-library.wiley.com/toc/17459133/current>.

that BI cannot offer useful clues as to how to affect human decision-making, but that there is likely less advantage to deploying BI interventions at scale.

Furthermore, the nature of crime reduction involves a difference in the framing of behaviour change. Skinner's work on operant conditioning distinguishes between behavioural reinforcement (increasing or maintaining a behaviour) and punishment (decreasing a behaviour) (Skinner, 1948). Through this lens, while crime reduction efforts invariably include elements of reinforcement (e.g. encouraging compliance with bail conditions), the impetus behind behaviour change most commonly implied in crime reduction is that of cessation or desistance (i.e. punishment). This contrasts with other policy areas where the primary focus is reinforcement (e.g. encouraging school attendance or tax payments).

### *Target populations*

The most researched and successfully applied 'nudges' tend to be those that target the majority of a given population (those under the middle of the curve in a standard distribution), such as interventions which make adherence to a programme easier or draw on assumed or described normalised behaviours in a group (Service *et al.*, 2014). Offending populations, however, may differ from the majority in the general population in a wide range of measures, including, e.g., self-control, cognitive ability, mental health and addiction (see, e.g., Farrington, 2017). For example, more than a third of men in the New Zealand criminal justice system suffer from multiple, severe traumatic brain injury – at least four times higher than among non-offending peers (Lambie, 2020). This means that interventions need to be more tailored, are less likely to be able to draw on published research and must break through a range of adverse circumstances to be effective.

And unlike education or pensions, there is not a single observable target group. Some crimes are associated with certain cohorts, e.g. shoplifting and drug-dependent offenders,<sup>3</sup> whereas other offence types, such as common assault, are associated with a much broader range of perpetrators. This means that there are a wide range of delivery points to reducing offending behaviour, with little clarity as to which ones are most effective. Unlike schools or hospitals, offending does not have a clearly defined set of environmental parameters and actors.<sup>4</sup> This context further creates a substantial coordination challenge for the disparate set of agencies and communities involved in preventing and responding to crime.

### *Limited empiricism*

Those seeking to apply BI to crime face similar challenges to applied experimental research in the criminal justice context. As a starting point, there is a limited history

<sup>3</sup>For example, heroin users are almost five times more likely than non-heroin users to have committed shoplifting in the last 12 months. See Bennett & Holloway (2005).

<sup>4</sup>While it could be argued that the criminal justice system (e.g. courts, prisons etc.) represents a clear touchpoint for engaging offenders, this is likely too late (i.e. following the commission of an offence). Thus, primary interventions target a wide range of risk/protective factors from family to education and employment.

of empiricism in crime and justice relative to other fields. A paper produced by Jonathan Shepherd showed that there had been fewer than 200 randomised controlled trials (RCTs) in criminal justice compared to over 650,000 in medical science (Shepherd, 2003).

One reason for this is a lack of reliable data that makes it particularly challenging to robustly evaluate interventions. Underreporting of crimes makes it difficult to assess baseline rates while measuring other outcomes often requires bespoke data collection with hard-to-reach populations. Even where data are available, it may sit across multiple agencies and different systems, which may be further compounded by reluctance to share data for security reasons. These frictions often require time and resources to circumnavigate, thereby restricting researchers' ability to undertake robust evaluations.

Secondly, law-breaking often evokes a set of emotional responses that make it difficult for evidence-based approaches to cut through. Principled and moralistic views on how to respond to crime (e.g. punishment vs rehabilitation and incarceration vs reintegration) inform policy responses and, in turn, inhibit receptiveness to new ideas or experimentation. This is compounded by a sense of risk-aversion, given the political stakes involved.

Another important reason is the lack of an obvious delivery mechanism where controlled trials can be implemented. In education, for example, schools are the obvious contact point where behavioural adaptations to existing approaches can be implemented (and they are also the mechanism via which effectiveness can be measured). Schools are administered centrally, follow processes to a high degree of consistency and cover the same age groups across the country. For crime, Police forces seem the most obvious agency with whom to develop and test interventions. But there is far less centralisation and consistency across the policing landscape than with schools (for example, in terms of the prevalence of crimes, organisational priorities and data capture).

Finally, even if stretched Police forces are willing to support experimental research methods, the sample sizes per force of likely subjects for trials are limited, meaning many trials (particularly those aiming to change the behaviour of offenders) will be underpowered unless experiments run for extended periods to increase the sample size. For some senior Police decision-makers who mainly operate in a highly reactive political landscape, endorsing a trial may appear too high a risk. In addition, it makes it more difficult to argue for the necessity of robust research to inform practice when the findings will not be available for many months. For this reason, large forces like the Metropolitan Police Service are at a significant advantage when it comes to precisely impact assessing a multitude of different approaches to policing, compared to smaller forces operating in less populous jurisdictions.

The barriers listed above help explain the relatively slow application of BI to criminal justice policy and practice. However, they are not insurmountable challenges as practitioners working in this space, like BIT, have demonstrated over the last decade.

## Introducing BI to UK crime policy

BI has revealed conduits of behaviour that challenge the assumptions of rationality underpinning traditional models of economics. BIT's CEO, David Halpern, refers to this as a 'more realistic model of human behaviour'; it has been BIT's task since 2010 when former Prime Minister David Cameron established us as a small team operating inside the Cabinet Office and 10 Downing Street<sup>5</sup> to apply this model to a range of areas of social policy. However, to gain traction within the field of crime and justice, we faced considerably more barriers than any other area of social policy.

Firstly, the Home Office and Ministry of Justice did not fare well in the first spending review of that Parliament. In order to preserve citizen-facing services, the effects of cuts were felt most keenly away from the frontline, increasing pressure on budgets that might have supported research and development programmes (HMIC, 2012).

Secondly, the Home Secretary at the time, Theresa May, played an important balancing act within a Coalition government that included Liberal Democrat Ministers, by offering reassurance to Conservative voters with whom a more traditional approach to policy making (particularly in crime and justice) was likely to resonate. Finally, in the early days of the Coalition, all the indicators suggested that crime was continuing to decline and was therefore not a priority for Ministers.

Therefore, we decided to modify our approach. Instead of proposing policies at the national level, we worked locally to test smaller tactical 'nudges' which senior public servants in operational roles would have the autonomy to sign off, in order to demonstrate the potential for behaviourally informed policies. Working in a more focused way directly with operational delivery was a feasible means of applying BI, though not without challenge given the complexity and constantly changing nature of the operational landscape. To minimise disruption to service delivery, we designed our experiments, often RCTs, to plug into existing infrastructure and processes. These experiments drew on routinely collected administrative data for their evaluation, so they did not create an additional expense.

An early example of this was to test different types of text messages sent from HM Courts and Tribunals Service to those who had failed to pay their court fines. The results were startling – a fourfold increase in payment (and thus a significant reduction in the requirement for bailiffs, which are expensive for the government and very unpleasant for the citizen) (BIT, 2012). We were simultaneously able to influence at a national level by drawing on research from others to make recommendations. For example, the Home Secretary announced one of our national policy recommendations, a Mobile Phone Risk of Theft Ratio, which borrowed from previous research on theft indices (Farrell & Mailley, 2007).

This is not to say that all the interventions we tested worked. For example, we did not find any statistically significant changes in reducing re-offending in trials that tested 'fresh start' messages in police custody cells and birthday cards to young offenders. Without having been able to conduct follow-up qualitative work to understand how the respective interventions had been received by participants, we were left to speculate whether the interventions were simply ineffective at shifting complex

<sup>5</sup>As of December 2021, BITs are now a subsidiary of Nesta, the UK's innovation agency.

behaviour like crime (as opposed to paying for court fines), or whether we did not have sufficiently large sample sizes to detect effects. However, more recently, we have seen positive results in relation to reducing speeding re-offending following improvements to speeding infringement letters (Halpern, 2022).

BIT have not been alone in growing the use of BI in public policy. A number of other studies have contributed to the evidence base on using nudges to prevent crime, ranging from burglary prevention (Roach *et al.*, 2020) to reducing theft from insecure vehicles (Roach *et al.*, 2017). This has been buttressed by the simultaneous growth of evidence-based policing, which has drawn a sharp focus on understanding what works using robust methodologies (Sherman, 2013). This has created fertile ground for testing new approaches in policing, including behaviourally informed interventions. For example, in a cluster RCT with 65 teams of counter-terrorism officers at borders, Langley *et al.* (2021) found that the use of a checklist significantly increased suspects' perceptions of police legitimacy along several dimensions.

Several BI interventions have focused on improving outcomes for the criminal justice system, such as reducing attrition from black and minority ethnic candidates in police recruitment and improving resilience to cyber phishing attacks.<sup>6</sup> While several trials have targeted different forms of crime reduction (e.g. speeding, reducing re-offending), there have been mixed results. It is not always clear why some of these trials do not work: some may work but be underpowered to detect an effect (another specific challenge with experimentation in crime and justice policy); others may simply be insufficient to challenge the complex interplay of factors that result in a crime.

Given the complexity of crime, it is pertinent to consider how BI might benefit from and build upon the rich set of insights developed from disciplines such as criminology. We now turn to explore such opportunities, starting with a conceptual neighbour of BI: Situational Crime Prevention (SCP).

## Nudging crime beyond the promise of SCP

With Prof Cass Sunstein, Thaler introduced the notion of the 'choice architect'. This identified methods through which subtle changes to the context in which decisions take place could help people to make better choices. In *Nudge: Improving Decisions about Health, Wealth, and Happiness*, the two academics proposed ways in which adopting a 'choice architect' approach might improve policy recommendations. Thus, the concept of behavioural economics became synonymous with 'nudging'.

The idea of adapting environments to shape decision-making is a familiar concept to criminologists under the guise of SCP. The impact of motorcycle helmet legislation on motorcycle theft has long been used as an example of the powerful influence of the environment on behaviour (see, e.g., Mayhew *et al.*, 1989). SCP proposes that crime is best dealt with by trying to remove the opportunities to commit crime rather than focussing on changing the propensity of potential offenders to commit a crime

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<sup>6</sup>The rise of 'Evidence-Based Policing' (EBP), in particular, has helped to create the space for experimentation in policing, and it is of little surprise that most of BIT's work to date in the space of crime has been with police forces in the forefront of EBP.

(Clarke, 1995). According to SCP, there are five tenets to crime prevention: increasing effort (e.g. steering column locks); increasing risk (e.g. burglar alarms); reducing rewards (e.g. property marking); reducing provocations (e.g. separate seating for football supporters) and removing excuses (e.g. 'private property' signs) (Clarke, 2008).

Indeed, the principles of SCP already contain some core behavioural principles. For example, a central tenet of encouraging behaviour is to make it as easy as possible to achieve (e.g. removing frictions and simplifying communications and defaults) and, correspondingly, to discourage a behaviour, to make it as difficult as possible (i.e. 'increase the effort', 'reduce provocations' and 'remove excuses'). Similarly, making a behaviour (un)attractive is another key principle that the SCP framework speaks through 'reducing the rewards' and 'increasing the risks'.

The dramatic decline in vehicle theft witnessed between the early 1990s and 2010 can be explained by the principles of SCP, most notably improved security features, like central locking and steering wheel locks (ibid). In the early 1990s, the Home Office produced a Car Theft Index, which told consumers which cars were most likely to be stolen, in order to improve the alignment of manufacturer incentives with those of the citizen and the state when it came to the availability and cost of new security devices. SCP has made a fundamental contribution to our understanding of crime, spawning a wide range of research that continues to generate insights (see, e.g., research on the impact of street lighting on crime, Davies & Farrington, 2020; Chalfin *et al.*, 2022; Tompson *et al.*, 2022)

Though popular in the 1980s and early 1990s, the emphasis on 'causes of crime' under New Labour and the growing focus on local solutions to local issues under the Coalition Government, as well as an academic challenge (Wortley, 2010), saw SCP approaches lose traction nationally. Part of the academic critique was that SCP drew upon rational choice theory, assuming that actors made rational cost calculations based on risk and reward. However, this is the same departure point for behavioural economists, who challenge the rational choice assumptions of classic economics. Behavioural scientists contend that there are myriad influences in everyday decision-making that distort rational decision-making, perhaps most vividly characterised by Kahneman's concept of System 1 vs System 2 thinking. Kahneman posits that classic policy levers (i.e. information, regulation, incentives, etc.) fail to account for all the underlying mental shortcuts ('biases') that people use to make decisions.

In this sense, BI offers proponents of SCP a toolkit to better understand how decisions to commit a crime might be made. For example, behavioural science research suggests that people are typically bad at estimating risk, particularly when an individual's own behaviour creates a risk to herself (smokers are often guilty of 'optimism bias', fully understanding the health risks of smoking yet rationalising that they can smoke while mitigating their own personal risks, see Arnett, 2000). This finding tallies with research on deterrence theory, which suggests that certainty of being caught is the most instrumental to behaviour change relative to other forms of deterrence, such as the celerity or severity of punishment (Nagin, 2013). An RCT exploring the mechanisms of Chicago's Project Safe Neighbourhoods found that perception of risk was a common denominator in motivations to adhere to the programme (Trinkner, 2019). Similarly, part of the success of Hawaii's high-intensity probation



programme (Project HOPE) has been attributed to enhanced the perception of risk of punishment among probationers on the programme, with researchers finding that HOPE benefits from reputation effects that exceed the certainty delivered in practice (Hawken *et al.*, 2016). It follows that interventions that can enhance perceptions of risk may be effective in deterring crime. Indeed, a recent meta-analysis of 15 experiments shows that photographs and/or stylised images of eyes reduced antisocial behaviour by 35%. The authors argue that a key mechanism for this effect is likely to be that eye cues make people feel a higher state of public self-awareness (Dear *et al.*, 2019), which, in turn, may affect risk perceptions.

However, behavioural science also highlights that *how* a message is communicated is paramount to achieving behaviour change. A growing body of work illustrates the way in which social networks can effectively disseminate messages through the power of messenger effects (Service *et al.*, 2014). For example, in a recent RCT, Ariel *et al.* (2019) found that when police delivered a single preventative specific deterrence message to prolific offenders, subsequent offending significantly decreased among co-offenders who had not received the message (11% reduction compared to control). This illustrates the way in which information can cascade down through social networks to create a vicarious deterrence effect. This approach can be bolstered by targeting relevant populations using data science. For example, using an algorithm based on police-recorded data, Wheeler *et al.* (2019) find that a group violence reduction message only needs to reach approximately a third of a gang network to reach full coverage.

However, Ariel *et al.* (2019) warn that a one-off intervention of this nature is likely to fade over time, particularly if those delivering the message (e.g. the police) fail to follow up on stated threats (and indeed, may backfire if the threat of sanction is seen as hollow). This is a challenge for BI more generally. Critics argue that a one-off nudge is likely to dissipate over time and is unable to secure lasting behaviour change. The dosage and complexity of the behaviour and related incentives will likely affect intervention's sustainability (Allcott & Rogers, 2014). A BIT tax trial in Guatemala showed remarkable sustained effects on payment behaviour 1 year on and 4 years on, varying by treatment (Kettle *et al.*, 2017). In Moldova, a behaviourally informed intervention that allowed TB patients to take their daily medicines while being observed by a nurse via a video connection (as opposed to having to attend in person) led to a much higher, sustained level of adherence (Ravenscroft *et al.*, 2020).

Despite such successful examples of long-term behaviour change, the evidence remains sparse on how to achieve this in the context of crime reduction, in which offending populations may differ from the general population in a wide range of measures such as self-control, cognitive ability and mental health (see, e.g., Farrington, 2017). Furthermore, while it is possible to draw on parallels from these approaches with many behaviours that we would seek to encourage among offending populations (e.g., adhering to probation requirements), there are important limitations to this exercise. Encouraging tax payment and adherence to medication, though by no means straightforward objectives, are designed to overcome inaction by encouraging positive (i.e. adherent) actions, whereas crime reduction objectives will often involve preventing negative (i.e. non-adherent) actions. Behavioural scientists working on crime reduction must therefore look beyond



the confines of classic ‘nudges’ to better understand how to create long-term behaviour change (i.e. desistance).<sup>7</sup>

Indeed, while BIT is widely referred to as the ‘Nudge Unit’ in the UK and international media outlets when leaving government, we resisted adopting that moniker as our trading name because the term nudge, as interpreted by BIT, implies a type of intervention restricted to what is described above. But it is not always possible to deploy nudges at the point of behaviour with which we are concerned, or even close to it. In addition, as applied behavioural research in government has developed, more complex and entrenched behaviours have come into the crosshairs of BIT and other organisations like us.

On establishing BIT in the UK Government in 2010, we coined the term ‘behavioural insights’ to acknowledge the perspectives of psychologists like Prof Kahneman in addition to behavioural economists like Thaler. Whereas a nudge is deployed at the ‘point of behaviour’ or as close to as possible and accommodates our behavioural biases, there are wider behavioural interventions that might seek to help us to engage our reflective system of thinking (Kahneman’s ‘System 2’) or overcome our behavioural biases by offering cognitive or non-cognitive tools. These interventions can be deployed in advance of the point of behaviour and have the potential for impacts that go beyond single behaviours.

To this end, criminology offers several well-trodden paths for behavioural scientists to explore, to which we now turn.

### Long-term behaviour change – where next for BI and crime?

The rich research stemming from life-course criminology illustrates the complex relationship between environmental and individual-level factors (or, in other words, nature and nurture) in shaping criminal decision-making. The growing body of work led by Wikström *et al.* on situational action theory (SAT) illustrates that people will tend to only recognise criminal opportunities if they already have the propensity to offend (e.g. Wikström *et al.*, 2017). For example, consider a car parked on a residential street with a window that has been left open. Proponents of SAT would argue that few of those passing by would likely notice the window open; of those, fewer would recognise a criminal opportunity; and still, fewer would then act on that opportunity, depending on the interplay between individual morality and self-control, and environmental factors (at which point SCP may become pertinent, e.g. street lighting).

To develop effective behavioural interventions to reduce crime, behavioural scientists must therefore consider how to target specific risk factors at different stages of offending (i.e. primary, secondary and tertiary interventions). One increasingly well-evidenced example of this approach is the use of cognitive behavioural therapy (CBT) to address impulsivity (Jolliffe *et al.*, 2017). From a behavioural perspective, impulsivity is a form of automaticity (i.e. ‘System 1’ thinking), which can result in poor decision-making. An impulsive reaction could be an association which causes an emotional response disproportionate to the original stimulus (provocation) but could also manifest as the

<sup>7</sup>See also Bhanot & Linos (2020), who call for behavioural science to move beyond ‘quick win’ interventions and towards ‘improving our understanding of the deeper psychological processes that drive human behavior, such as identity and cognitive processes, or thornier research questions, such as how to promote long-term habit formation...’.

temptation to break into a car via an open window. Although CBT programmes vary in application, CBT essentially helps people to engage in ‘meta-cognition’, guiding them to challenge their own thinking and behavioural responses.

CBT targeting of impulsivity has been used to prevent a range of offending types from intimate partner violence (Strang *et al.*, 2017) to youth offending (Heller *et al.*, 2017). For example, Chicago’s Becoming a Man (BAM) programme targets young men at risk of gang violence through CBT and weekly group sessions. Two RCTs of the programme found that it reduced total arrests during the intervention period by 28–35%, reduced violent-crime arrests by 45–50%, and improved school engagement (*ibid.*)<sup>8</sup>. The study found that the key mechanism for these results was helping youth slow down their automatic responses to potentially provocative situations (in other words, helping to engage in ‘System 2’ thinking).

However, a critical question is whether such intensive forms of interventions can ensure long-term behaviour change. Follow-up data from Chicago offer a perplexing answer: there were persistent positive impacts on schooling outcomes such as graduation rates, but the effects on arrests were not sustained beyond the intervention period. The authors hypothesise that this could be because there could be other latent factors associated with the programme that affect schooling and crime outcomes differently. But it may also be related to the fact that there are fewer arrests than school disengagement, meaning that arrests are more likely to be affected by a small group of persistent offenders (Heller *et al.*, 2013).

But behavioural science illustrates how such crime-reducing effects can be maintained through appropriate incentives. An 8-week CBT programme in Liberia targeted at men working in low-skilled or illicit jobs tested the impact of CBT alone vs receiving a US\$200 unconditional cash transfer alone. The study also had a third condition involving both CBT and cash to examine the additive impact of receiving a cash transfer to maintain behaviour change. Those who received therapy demonstrated greater patience and forward-looking behaviour, with larger, more persistent effects among men who received both therapy and cash transfer. In the weeks following the end of treatment, crime rates among participants who had received therapy fell by up to nearly half relative to the comparison group. After 1 year, these effects persisted only among those who had also received the cash transfer. The authors hypothesise that cash reinforced therapy’s impacts by prolonging learning by doing, lifestyle changes, and self-investment (Blattman *et al.*, 2017).

This suggests that long-term behaviour change is possible through a combination of behavioural therapy, opportunities and incentives. This is ultimately where BI and crime must strive towards to make a significant shift in crime reduction. A key question for future research is whether these sorts of initiatives are transferrable and whether they would replicate in other contexts. For example, Chicago suffers from acute rates of violence, meaning that similar interventions developed in, e.g., the UK or New Zealand may not be able to achieve the same sort of results seen elsewhere.

<sup>8</sup>Follow-up data on graduation rates were only available in the first study but found increased graduation rates by 12–19%.

### Untrodden ground: where next for BI and crime?

In this article, we have laid out a conceptual path for behavioural science to make a dent in crime. We conclude by considering some side roads for future research to explore.

Firstly, there is a growing body of evidence that BI can be used effectively to improve criminal justice system responses (e.g. Liden, 2018). Much of the work to date has been focused on police, with comparatively little in the courts. While there have been some promising studies exploring behavioural biases in, e.g., sentencing (Loughran, 2019), there is considerable room to explore the role of behavioural biases – and potential solutions – in the context of, e.g., juror decision-making, sentencing and simplifying processes for end-users.

Secondly, entrenched criminal behaviour – like the gang-related violence we have seen in London in recent years – may be mitigated by the social cohesiveness of our communities (Sampson *et al.*, 1997). Divided societies, beset by mistrust and exacerbated by disinformation, may also be susceptible to extremism, serious public disorder and wider social ills. BI approaches will be able to aid consensus building within communities, bringing people together by sharing perspectives (see, e.g., Mousa, 2020)

Although the primary focus of this paper has been on crime prevention, another largely untapped area to be further explored is rehabilitation. Criminology has developed a comprehensive body of work on desistance, and yet there is much more that can be done by infusing a behavioural understanding. For example, experimental research could explore the impact of experiential peer support on desistance (e.g. Lenkens *et al.*, 2019), using principles from other successful peer-supporter trials in other fields (Groot *et al.*, 2017), or simply adherence to rehabilitative programmes. The value adds of BI in this context may lie not only in nudging behaviour associated with desistance but also through interventions that target deeper cognitive processes as has been evidenced by CBT. But BI could also be deployed towards more strategic questions at the policy level, such as how to reduce the prison population (through, e.g., reducing the likelihood of administrative breaches), to how to best manage an aging prison population.

A fourth area where BI could lend more weight is supporting victims, from encouraging help-seeking behaviour (e.g. Garnelo *et al.*, 2019), to empowering by-standers (e.g. Paluck *et al.*, 2016), to reducing susceptibility to victimisation. For example, a recent BIT trial that involved a mock phishing attack on 17,000 Metropolitan Police Service officers found that three forms of email-based interventions significantly reduced the number of officers who clicked on the link and the number of officers who submitted their login credentials. Internet-mediated preventative measures like this, whose effectiveness to a large extent will depend on the presentation of information therein, seem particularly ripe for behavioural thinking (BIT, 2019). Applying a BI lens to large-scale, multichannel communication campaigns (such as those targeted at reporting modern slavery) may offer further promise by applying and further testing evidence-based insights.

Finally, BI has made contributions to the effectiveness and efficiency of law enforcement, particularly in the area of racial disparity in Police recruitment (e.g. Linos *et al.*, 2017). But as law enforcement agencies grapple with questions as to

their role in the online space, BI should give clues as to how to frame messages or suggest when to intervene. In a post-COVID world of constrained budgets yet increasing demand, BI can both help prevent extraneous demand and direct citizens to the correct channels for their requirements.

All of this is not to say that behavioural science is the missing ‘silver bullet’ to many of these pervasive challenges faced by criminal justice systems. Challenges of deviancy, recidivism, and rehabilitation, for example, are perennial issues faced by all societies throughout history. But behavioural science provides an extra tool in the policy-makers’ toolbox. Some of these tools are not necessarily new – as illustrated through early work on SCP – but BI may offer new methods of breaking through old problems. There is enough evidence from other policy areas and some initial successes in application to the criminal justice system to suggest that the behavioural lens is worth testing further in the context of crime.

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