



Australian Government

Australian Institute of Criminology

Trends & issues in crime and criminal justice

ISSN 0817-8542

No. 538 October 2017

Abstract | Surveillance technologies have been playing an increasingly important role in crime prevention and detection, particularly with cost-effective improvements in resolution and mobility. There remains mixed evidence on the effectiveness of this technology for deterrence and detection and whether use results in displacement. In this study, 899 adult police detainees were interviewed about their views and experiences of CCTV through an addendum to the Drug Use Monitoring in Australia (DUMA) program. Police detainees tended to regard CCTV as effective in reducing crime, particularly violent crime, but a significant number felt it would not *prevent* any crime. Nonetheless, for some the presence of CCTV deterred them from committing crime, although detainees were more likely to carry out their intended behaviours regardless of CCTV. Detainees identified a range of simple strategies for avoiding surveillance cameras, such as covering their face or turning away from the cameras. The findings have implications for the continued use of CCTV as a crime prevention and reduction tool.

Police detainee perspectives on CCTV

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Recent years have seen a significant increase in the range and sophistication of technologies being deployed in policing and crime prevention (Lee & McGovern 2014). Technological advances leading to improved audiovisual quality, greater mobility and reduced costs have revolutionised policing and, not surprisingly, provoked significant debate.

Surveillance scholars have for some time considered the implications of the expansion of institutionally driven surveillance such as closed-circuit television (CCTV) (Norris & Armstrong 1999; McCahill 2002; Wilson & Sutton 2003a, 2003b; Taylor 2010a). While most surveillance cameras are privately owned and managed (Taylor & Gill 2014), scholars have focused attention on public CCTV as one of the most recognisable forms of technological state surveillance. Attention has been given to evaluating its effectiveness (Wells, Allard & Wilson 2006; La Vigne et al. 2011; Welsh & Farrington 2004, 2009), its capacity as a new control mechanism (Gill & Loveday 2003; Norris & Armstrong 1999) and issues such as the impact of technological surveillance on privacy and regulation (Lippert, 2009; Taylor 2010b).

CCTV: review of the literature

At the most basic level, CCTV can be defined as surveillance systems composed of ‘a network of cameras and components for monitoring, recording, and transmitting video images’ (La Vigne et al. 2011: 3). While this definition captures the basic elements of CCTV systems, they can vary widely in their complexity, interconnectivity and capability. The extent of monitoring also varies. According to Taylor and Gill (2014: 705):

CCTV varies greatly in its application from basic schemes, involving a handful of cameras without any ongoing monitoring, to complex integrated networks that can feature automatic zoom, night vision, facial recognition, thermal imaging, automatic number plate recognition, tracking devices, ‘talking’ cameras and so on that are monitored continuously.

Five broad purposes have been associated with the use of CCTV (Wells, Allard & Wilson 2006):

- preventing crime;
- detecting and identifying incidents;
- increasing actual and perceived public safety, so reducing fear of crime;
- gathering evidence for arrest and prosecution; and
- acting as a general site management tool.

CCTV technology was first used as a crime prevention tool in Trafalgar Square in London in 1960 as a temporary measure to monitor crowds (Norris, McCahill & Wood 2004) and is now used by many Australian local governments in response to street crime. Developments in technology have supported the expansion of CCTV surveillance, as well as changing its scope and sophistication.

At the same time, concerns have been raised that CCTV may unnecessarily target particular groups in society such as ethnic minorities and working-class youth (Norris & Armstrong 1999; Wells, Allard & Wilson 2006). Other concerns are that CCTV may negatively impact on personal privacy and civil liberty and may fail to actually prevent or reduce crime but merely displace it.

Taylor (2014) has suggested that the impact and effectiveness of CCTV can be understood using a ‘3D’ model comprising deterrence, detection and displacement, as indicated here.

Deterrence

In relation to CCTV, deterrence refers to the notion that potential offenders will not commit a crime for fear of being caught on camera and apprehended or subsequently identified. In a meta-analysis of CCTV evaluations in the UK, US, Canada, Norway and Sweden, Welsh and Farrington (2009) found a modest yet significant reduction in crime (16%) in areas with CCTV compared to areas with no CCTV. However, this decrease in crime was largely due to the effectiveness of CCTV schemes in car parks, where there was a 51 percent reduction in crime. CCTV in various city and community locations, and on public transport, did not significantly reduce crime. In some locations, particularly in car parks, where CCTV has been found to be more effective, other measures such as signage, fencing and pay barriers likely contributed to the overall effectiveness. This is consistent with other studies demonstrating that CCTV is effective in preventing motor vehicle theft but has a limited effect on other crime types (Piza 2016). It is also consistent with reviews showing cost effectiveness and significant reductions in some crime types in locations where the cameras were sufficiently concentrated and routinely monitored by trained staff and where police were able to respond quickly when offending behaviour was observed (Caplan, Kennedy & Petrossian 2011; La Vigne et al. 2011; Cerezo 2013). Research has suggested that the strategic placement of cameras is no more effective at deterring crime than random placement (Caplan, Kennedy & Petrossian 2011).

Detection

In recent years, CCTV has shifted to being an intelligence gathering tool to detect and identify offenders rather than primarily a deterrence measure (Hulme, Morgan & Brown 2015; Taylor & Gill 2014). Hulme, Morgan and Brown (2015) examined the prevalence and characteristics of open-street CCTV systems in Australia managed by local councils. They found that 81 percent of councils had received at least one request from police for footage from a CCTV camera they operated. Most councils reported that footage was used to successfully identify an offender (69%), to assist in the prosecution of an offender (55%), to seek information from the public about a crime (32%), and to promote a community safety message (15%). Wells, Allard and Wilson (2006) found general support for CCTV as a crime control measure in Queensland and some evidence of it leading directly to arrests. They found CCTV was effective at detecting violent crime and possibly increased reporting but had no significant impact on property offences. However, Taylor and Gill (2014: 714) maintain that the ability of CCTV to successfully identify offenders 'should not be overstated'. They cite evidence indicating that potential offenders can take simple steps to evade detection by CCTV cameras. For example, in a study involving British inmates, Gill and Loveday (2003) found offenders avoided CCTV through strategies such as disguising their appearance and typically did not find CCTV made offences more difficult to commit.

Displacement

A major concern regarding CCTV is that it will cause the geographical or tactical displacement of crime, whereby criminal activity still occurs but in areas that do not have surveillance cameras (Wells, Allard & Wilson 2006; Taylor & Gill 2014). There is conflicting evidence on whether CCTV is associated with displacement, with some studies suggesting no displacement effects (see Wilson & Sutton 2003b; La Vigne et al. 2011). However, UK research has shown spatial displacement effects, although they were infrequent and inconsistent across offence types, mostly displacing crime to elsewhere within the same target area (Waples, Gill & Fisher 2009). Researchers have highlighted the difficulty of isolating the impact of cameras from other factors and assert that 'different measurements on different types of cameras in different contexts make generalising unwise' (Taylor & Gill 2014: 714–715).

Monahan (2011) notes that the field of surveillance studies 'has advanced rapidly because of empirical research on surveillance, which itself has expanded out from those doing surveillance, to those subjected to it, to those appropriating it for their own purposes' (2011: 479). The present study focuses on those being subject to surveillance, but it also has implications for those doing surveillance and those appropriating it. Indeed, this triangulation of surveillance participants is vital if we are to develop a nuanced analysis of surveillance technologies.

CCTV in Australia

In July 1991, the City of Perth installed Australia's first CCTV system (Wilson & Sutton 2003a). In 2003, Wilson and Sutton reported that there were 33 CCTV schemes operating in public spaces across Australia, with the Northern Territory the only jurisdiction not to have a system installed (Wilson & Sutton 2003a). In 2005, IRIS Research reported that nearly one in 10 councils (9.1%; n=61) across Australia had a CCTV system installed (IRIS Research 2005). More recently, Hulme, Morgan and Brown (2015) reported that over half (57%; n=127) of local councils in Australia had installed at least one CCTV system.

In a landmark case, the legality of using CCTV systems to monitor public areas was challenged in the New South Wales Administrative Decisions Tribunal (ADT). A citizen of the Shoalhaven City Council area in southern New South Wales alleged that the council had breached several provisions of the *Privacy and Personal Information Protection Act 1998* (NSW) by capturing his image on CCTV cameras in the central business district of Nowra, the largest city centre in the council area (*SF v Shoalhaven City Council* [2013] NSWADT 94). The citizen alleged that the council did not have a lawful or legitimate basis for capturing his image while he was going about his normal, lawful activities and transferring those images to the state police force.

The ADT found that the council had breached several principles under the privacy legislation, including through the collection of personal information that was excessive, inaccurate, incomplete and not relevant for crime prevention purposes. The council was also found to have provided insufficient information, through signage, about the purposes of collecting personal information and to have failed to adequately safeguard the private information collected (*SF v Shoalhaven City Council*). The ADT ordered the council to apologise and further ordered it to refrain from any conduct that breached the privacy principles. Shortly after, the New South Wales Government amended the *Privacy and Personal Information Protection Act 1998* (NSW) to exempt CCTV use by local councils from privacy laws (Privacy and Personal Information Protection Regulation 2014, reg 9).

More recently, considerable media attention has been focused on the suggestion that a city council in Melbourne may remove CCTV cameras installed following the high-profile murder of Jill Meagher (Michie 2016), whose image was captured shortly before her death on a privately owned CCTV camera.

Method

Data for this study were obtained from the Drug Use Monitoring in Australia (DUMA) program, which aims to provide information on drugs and crime to inform policy initiatives, and to provide an early warning system to inform law enforcement and other stakeholders of changes to the illicit drug market. It achieves these aims by interviewing police detainees quarterly at selected police stations and watch houses across Australia, using a core questionnaire and varying addenda. The core questionnaire collects a range of information including demographic data and drug use information. Quarterly addenda are developed to examine topical issues of policy relevance.

Survey questions

During the third quarter (July–August) and fourth quarter (October–November) of 2015, the *CCTV and police body-worn video* addendum was used along with the DUMA core questionnaire. The aim of the addendum was to examine police detainees' perspectives of the use of two types of surveillance technologies deployed for the purposes of crime control and law enforcement: CCTV and police body-worn video cameras. Results of the body-worn camera part of the study are reported in a separate *Trends & issues* paper (Taylor et al. 2017) and both are detailed in the full report, published through the Criminology Research Grants process (Gannoni et al. 2017).

In relation to CCTV, the addendum contained a mixture of closed and open-ended questions on the following topics:

- perceptions of CCTV and how effective it is at preventing crime;
- experience of CCTV at the time of committing a crime in a public place; and
- behavioural changes arising from awareness of CCTV.

Sample

The sample was drawn from police detainees interviewed during the third quarter (July–August) and fourth quarter (October–November) of 2015 at five sites across Australia: Adelaide (SA), Brisbane (Qld), Perth (WA), Surry Hills (NSW; 3rd quarter only) and Bankstown (NSW; 4th quarter only). This paper reports the findings from adult detainees (18 years and over) at an aggregate level. A total of 899 adult detainees answered questions from the addendum questionnaire. All responses to the survey were voluntary and not all interviewees answered every question.

Results

Characteristics of the sample

Table 1 shows the breakdown of detainees by DUMA site, gender and age.

| Table 1: Detainees by DUMA site, gender and age | | |
|---|-----|-----|
| DUMA site | n | % |
| Adelaide | 177 | 20 |
| Bankstown | 24 | 3 |
| Brisbane | 349 | 39 |
| East Perth | 302 | 34 |
| Surry Hills | 47 | 5 |
| Total | 899 | 100 |
| Gender | n | % |
| Male | 749 | 83 |
| Female | 150 | 17 |
| Total | 899 | 100 |
| Age | n | % |
| 18–20 | 90 | 10 |
| 21–25 | 161 | 18 |
| 26–30 | 180 | 20 |
| 31–35 | 140 | 16 |
| 36+ | 328 | 36 |
| Total | 899 | 100 |

Note: Percentages may not add up to 100 due to rounding
Source: AIC DUMA 2015 [computer file]

Detainees may have been charged with multiple offences. Each detainee was categorised according to the most serious offence they had been charged with at the time of interview. Table 2 shows the breakdown of detainees by most serious offence category.

| Most serious offence ^a | n | % |
|-----------------------------------|-----|-----|
| Violent | 288 | 32 |
| Property | 152 | 17 |
| Drug | 102 | 11 |
| DUI ^b | 13 | 1 |
| Traffic | 40 | 4 |
| Disorder | 34 | 4 |
| Breach | 249 | 28 |
| Other | 14 | 2 |
| Total | 892 | 100 |

a: Detainees may have been charged with multiple offences; each detainee was categorised according to the most serious offence for which they were being held under charge at time of interview

b: Driving under the influence of alcohol and/or illicit drugs

Note: Cases with missing data were excluded from analysis. Percentages may not add up to 100 due to rounding

Source: AIC DUMA 2015 [computer file]

Just under one-half of the detainees (48%; n=430) reported using methamphetamine in the 30 days prior to interview. Detainees could report using more than one drug and a similar proportion (46%; n=411) reported using cannabis. Small proportions reported using heroin (7%; n=62) or ecstasy/MDMA (6%; n=56). In all, 67 percent (n=603) reported using any drug in the preceding 30 days.

Perceptions of CCTV as a crime prevention tool

Detainees were asked how effective they thought the use of CCTV was at preventing crime. As shown in Table 3, the majority of detainees (69%; n=619) thought CCTV was effective at preventing crime to some extent—36 percent (n=321) reported it was *very effective* and 33 percent (n=298) *a little effective*. However, 21 percent (n=193) of detainees thought CCTV was *not effective* at preventing crime.

| Effectiveness | n | % |
|--------------------|-----|-----|
| Very effective | 321 | 36 |
| A little effective | 298 | 33 |
| Not effective | 193 | 21 |
| Don't know | 87 | 10 |
| Total | 899 | 100 |

Source: AIC DUMA 2015 [computer file]

As a follow-up, a question was asked as to whether detainees thought there were any specific crime types that CCTV was particularly effective at preventing. For this analysis, only the responses of those who said they thought CCTV was 'very effective' or 'a little effective' at preventing crime were included. Detainees gave their responses in an open, free-form way and responses were classified into crime types by the authors. Detainees were able to report more than one crime type, although some did not report any. A total of 265 detainees who thought CCTV was 'very effective' at preventing crime gave a response to this question, together with 239 detainees who thought CCTV was 'a little effective' at preventing crime.

As shown in Table 4, a total of 638 responses identified one or more crime types that respondents thought CCTV was effective at preventing. These included 65 (42 'very effective' respondents and 23 'a little effective' respondents) who thought CCTV was good at preventing all types of crime. Of the specific crime types, the most commonly reported was assault, cited in 165 responses, predominantly by those who thought that CCTV was very effective as a crime prevention tool. The next most commonly cited crime type was theft (n=115 responses), followed by shoplifting (n=70 responses). The next most common offence type was robbery, cited in 63 responses, and break and enter/ burglary, which was cited in 54 responses.

A total of 20 detainees who saw CCTV as at least partly effective at preventing crime reported that they thought it was mainly effective at helping to solve crime, by providing evidence and helping police to catch the offenders. These detainees saw the benefits of CCTV in providing evidence to be used in identifying perpetrators and potentially for prosecutions, reflecting that the operation of CCTV has shifted to being more focused on evidence gathering after the event, rather than primarily being a deterrence measure.

Perhaps contradictory, 65 detainees who felt CCTV was at least partly effective at preventing crime indicated 'none' in response to the crime types it was effective at preventing. This consisted of 15 respondents who thought CCTV was 'very effective' at preventing crime and 50 who thought it was 'a little effective'. However, it is not clear whether the responses classified as 'none' indicated respondents thought there were no crime types at all that CCTV was good at preventing; in many cases this response appears to indicate 'none in particular' or that the respondent could not think of any specific crime types.

Respondents were also asked whether there were any crime types CCTV was *not* good at preventing. A small number of detainees who reported they thought CCTV was at least somewhat effective at preventing crime identified crime types they thought CCTV was *not* effective at preventing. The offence type cited most frequently by this group was drug-related offences, identified by 30 detainees (16 who had reported CCTV to be very effective at preventing crime and 14 who thought it was a little effective). This was followed by assault, identified by nine detainees who thought CCTV to be very effective and 24 who thought it a little effective.

Table 4: Detainees' perceptions about the crime types CCTV is effective at preventing

| Offence Type | Very effective (n=265) | A little effective (n=239) |
|-----------------------------------|------------------------|----------------------------|
| Homicide | 5 | 4 |
| Assault | 108 | 57 |
| Sexual assault | 14 | 6 |
| Robbery | 40 | 23 |
| Damage | 6 | 5 |
| Burglary | 37 | 17 |
| Theft (other than motor vehicles) | 64 | 51 |
| Motor vehicle theft | 11 | 2 |
| Shoplifting | 39 | 31 |
| Drug offences | 9 | 4 |
| Traffic | 4 | 6 |
| Other | 16 | 12 |
| All | 42 | 23 |
| TOTAL | 395 | 243 |
| None | 15 | 50 |
| Solve | 5 | 15 |

Source: AIC DUMA 2015 [computer file]

Impact of CCTV on offending behaviour

Almost half of detainees (42%; n=376) were aware of a CCTV camera operating in the area at the time of attempting to commit a crime, while a third were not aware (29%; n=260). The remaining 253 detainees (28%) had never attempted to commit a crime in a public place.

The 376 detainees who were aware of a CCTV camera when attempting to commit a crime in a public place were asked how the camera changed their behaviour; 360 provided a response. As shown in Table 5, over a third of detainees (39%; n=139) indicated that the CCTV camera had not changed their behaviour. Some suggested they would not change their behaviour because they were intoxicated or because their offending was for an instrumental purpose, such as stealing food when they were hungry and had no money, which they would not easily be dissuaded from. Others suggested they would not change their behaviour because the CCTV recording would only be checked if they were caught.

For those participants who indicated that CCTV changed their behaviour when attempting to commit a crime (53%; n=191), a key difference emerged. In all, 23 percent of detainees (n=84) indicated that the camera caused them to not go ahead with the crime, while 30 percent of detainees (n=107) indicated that they changed their behaviour to avoid detection by the CCTV camera. Therefore, while awareness of a CCTV camera caused some detainees to change their mind about committing a crime, others simply changed their behaviour to avoid being caught. Behavioural responses to CCTV included detainees covering up their faces or distinguishing features such as tattoos, wearing disguises or keeping their faces turned away from the cameras, finding blind spots or concealing drugs and money inside commonplace items.

Table 5: Behavioural changes resulting from awareness of CCTV while attempting to commit crime in a public place

| Behavioural change | n | % |
|---|-----|-----|
| No change | 139 | 39 |
| Changed behaviour to get around the cameras | 107 | 30 |
| Decided not to go ahead with committing the crime | 84 | 23 |
| Elicited a negative emotion | 11 | 3 |
| Other | 19 | 5 |
| Total | 360 | 100 |

Note: Cases with missing data were excluded from analysis
Source: AIC DUMA 2015 [computer file]

Impact of CCTV on day-to-day behaviour

Detainees were asked whether CCTV influenced the way they behaved in public on a day-to-day basis. All detainees were asked this question, regardless of whether they had attempted to commit a crime in a public place. As shown in Table 6, the majority of detainees (74%; n=659) reported that CCTV had not influenced their day-to-day behaviour in public. However, one in four detainees (24%; n=217) reported that CCTV influenced their behaviour.

Table 6: Whether CCTV influenced behaviour on a day-to-day basis

| Whether cameras influenced behaviour | n | % |
|--------------------------------------|-----|-----|
| No | 659 | 74 |
| Yes | 217 | 24 |
| Don't know | 13 | 1 |
| Total | 889 | 100 |

Source: AIC DUMA 2015 [computer file]

Again, a major difference appeared among detainees who reported that CCTV influenced their behaviour (Table 7). The majority of detainees who reported that CCTV changed their behaviour on a day-to-day basis (69%; n=131) indicated that CCTV led to behavioural changes that tended to make them more compliant and law abiding. These changes extended to minor infringements of the law, such as smoking in prohibited areas.

However, 23 percent of detainees (n=43) indicated that CCTV changed their behaviour in other ways, primarily relating to getting around the cameras, such as by disguising their appearance. In some cases these changes to day-to-day behaviour mirrored changes to offending behaviour, suggesting that these detainees were conscious that CCTV might bring them to the attention of police, perhaps resulting in detection for earlier offences. In a small number of cases (3%; n=6) detainees indicated that they avoided CCTV altogether, perhaps suggesting a displacement effect.

Table 7: Behavioural changes resulting from awareness of CCTV on a day-to-day basis

| Behavioural change | n | % |
|---|-----|-----|
| Improved behaviour | 131 | 69 |
| Changed behaviour to get around the cameras | 43 | 23 |
| Avoided the cameras | 6 | 3 |
| Other | 9 | 5 |
| Total | 189 | 100 |

Note: Includes only detainees who reported CCTV changed their behaviour on a day-to-day basis. Cases with missing data were excluded from analysis

Source: AIC DUMA 2015 [computer file]

Discussion and conclusions

Police detainees provide unique perspectives on the perceptions and the practical application of surveillance technologies. As is clear from the results presented here, far from presenting as docile subjects of surveillance, police detainee respondents expressed a variety of perspectives on CCTV, from very positive to very negative. This is particularly so when these results are considered together with detainees' perspectives on body-worn video cameras, reported separately. Rather than merely offering disconnected and theoretical perspectives, many detainees demonstrated that they were actively aware of surveillance technologies and responded to their presence in a variety of ways, while holding considered views of how the technologies affected their behaviours and interactions with police.

Police detainees tended to regard CCTV as an effective crime prevention measure, with the majority (69%) of respondents expressing that view, while 21 percent thought it not effective. CCTV's ability to prevent crime relates to its capacity to deter offending. These results counter Gill and Loveday's (2003) UK findings that offenders generally evaluated CCTV's capacity to deter negatively. There may be a range of reasons for these conflicting perceptions. The respondents in this study may be aware of the significant improvements in the clarity of CCTV images since earlier evaluations. Another factor may be that the survey questions used in this study were less specific; Gill and Loveday (2003) asked whether respondents would themselves be deterred. This is an important distinction and may indicate that, while individuals feel they can evade detection themselves, they do not necessarily evaluate others' evasive abilities so positively. Finally, the cultural currency of CCTV's capacities—imagined or not—increasingly normalises its presence and acceptance (Monahan 2011), suggesting that our interactions with the technology have become somewhat normative. These findings speak to the cultural ubiquity and general acceptance of CCTV in contemporary cities.

The more targeted questions about which crimes respondents thought CCTV was most effective at preventing also delivered interesting results. CCTV was seen to be most effective in cases of violent crime. Interestingly, there is little evidence in the literature to suggest CCTV prevents violent crime to any great extent, although it can aid in detecting crime after the fact for investigation and prosecution purposes (Taylor & Gill 2014). This is a complicated issue, since some studies (see Taylor & Gill 2014) have found that CCTV can result in police or other capable guardians being dispatched to incidents earlier and thus being able to intervene and prevent the escalation of violence.

This makes it a particularly difficult phenomenon to investigate empirically, as the preventive effect may be a matter of degree rather than totality. In contrast to the views of police detainees, the evidence indicates that CCTV is more effective in preventing property crimes than violent crimes, as well as having the greatest impact in specific locations such as car parks (Welsh & Farrington 2009). In this sense the respondents may simply be repeating commonly held beliefs about the effectiveness of CCTV in crime prevention.

Nonetheless, a quarter of the sample (25%) suggested CCTV was not effective in preventing any specific form of crime. They pointed to many of the limitations of CCTV that have also been identified in the literature: the placement (or misplacement) of CCTV cameras (Welsh & Farrington 2009), the ability of offenders to conceal their identity (Taylor & Gill 2014), CCTV's ability to identify and detect after the fact rather than prevent crime (Hulme, Morgan & Brown 2015), and the fact that most violent crime occurs under the influence of drugs or alcohol and is not planned or rational (Tewksbury & Mustaine 2010).

Of the 376 detainees who were aware CCTV was operating in the area when they were attempting to commit a crime in a public place, 39 percent suggested the cameras had not changed their behaviour. These respondents, according somewhat with the work of Gill and Loveday (2003), indicated that they thought they could evade the cameras or simply that they would not get caught. Others, perhaps contrary to rational choice theory, indicated they were simply too intoxicated to change their behaviour. A small number (3%) noted that the cameras made them anxious, indicating something of a preventive effect.

Notably, 23 percent of those aware of CCTV decided not to go ahead with the offence, but it is unclear if the crime was then displaced rather than completely prevented. This also indicates that, at least in some instances where the presence of CCTV is clear, potential offenders may be persuaded not to offend, indicating that behaviour change is possible, at least in a minority of weakly motivated offenders.

Acknowledgements

This study was funded by a grant from the Criminology Research Grants (CRG) program. The full report of the study can be found on the CRG website (<http://www.crg.aic.gov.au>), and a companion paper reporting the results of the police body-worn video aspects of the study can be found on the AIC website (<http://www.aic.gov.au>). The authors are grateful to all police detainees who participated in the DUMA survey and provided the information that made this study possible, as well as to the researchers involved in administering the DUMA survey across the five sites.

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ISSN 0817-8542

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