

ROUTLEDGE FRONTIERS OF CRIMINAL JUSTICE

# Technocrime, Policing and Surveillance

Edited by  
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ROUTLEDGE



## 8 Technological innovation and offender reentry

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### **Introduction**

To address the problem of individual offender failure – as measured by new criminal activity of offenders released from prison – a wide range of federal, state and local reentry initiatives have been introduced in recent years. Not unlike their counterparts in policing, reentry programme developers have embraced a wide range of new technological innovations as a means to convince the public that – with the help of technology – offenders can be monitored and controlled in the community (Byrne and Marx, 2011). In this chapter a number of these technology-based community control strategies are described and the evidence of their effectiveness is examined. Our review raises serious questions about the continued utilisation of control-based reentry technologies, and suggests that reentry programme developers consider an alternative – the design, implementation and evaluation of technologies focused on the need to *change* – rather than to coercively control both offenders and their communities. We conclude the chapter with a discussion of possible new directions in reentry based on the following developments: (1) the emergence of the justice reinvestment movement; (2) the shift from control technology to persuasive technology; (3) the call for performance measurement and evidence-based reentry practice; and (4) the challenge of supervision (and treatment) in cyberspace. We anticipate that technological innovation will play an important role in the next generation of reentry programmes, but the question is: will the next-generation programmes continue to focus on the narrow, short-term goal of offender monitoring and control, or will reentry programmes be designed and implemented using various technological innovations to support the broader, long-term goal of individual – and community – change?

### **From preentry to reentry: a brief assessment of technology's role**

There has been considerable discussion and debate in the United States – and in many other countries around the world – about the costs and consequences of sentencing a large number of offenders to prison. According to a recent report by

the Bureau of Justice Statistics (BJS), there were over 1.6 million prisoners in federal and state corrections facilities in the United States at the end of 2010 (Guerino *et al.*, 2011); about half of these prisoners were convicted of non-violent crimes. While some have argued that the increased use of incarceration over the past three decades is, at least partially, responsible for the drop in the overall crime rate in the United States (Piquero and Blumstein, 2007), others argue that any general deterrent effect associated with incarceration must be weighed against the negative consequences that incarceration will have on the offenders sentenced to prison (Stemen, 2007). They point to high recidivism and technical violation rates among released prisoners as evidence that prisons may actually be criminogenic and reduce community safety, which is due to the negative impact of incarceration on both offenders and communities (Clear, 2007; Bales and Piquero, 2012).

Of course, it is more than contradictory empirical research that is fueling the current debate over US sentencing policies. Federal and state budget shortfalls have compelled policy makers to rethink sentencing policies, and find ways to reduce corrections spending by developing new – and expanding old – alternatives to incarceration. The role of technology in the development of these ‘new’ alternatives is fairly straightforward: technological innovations, such as electronic monitoring, drug testing, computer monitoring, etc. offer the promise of prison-like surveillance and control at a fraction of the cost (Bales *et al.*, 2010).

The typical state prison inmate in the United States is sentenced to 4.5 years in prison, and he/she will typically serve about 2.5 years before being released into the community; about half of all federal and state prison inmates are serving time for non-violent offences. While some prisoners are convicted for more serious crimes and receive much longer sentences, it is expected that 95 per cent of the inmates currently in prison will return to the community. There are three different methods of release from prison today: (1) supervised mandatory release (40 per cent of releases); discretionary release (25 per cent of releases); and (3) expiration of sentence or max-outs (about 20 per cent of releases). While a detailed review of the impact of release mechanisms on subsequent offender ‘success’ in the community is beyond the scope of our review, it is worth noting that there is an ongoing debate over the effectiveness of current release mechanisms (Austin, 2009; Byrne and Miofsky, 2009). For offenders who max-out, it appears that police departments have attempted to fill the surveillance and control ‘gap’ through expanded community policing initiatives and strategies, including the creation of lists of *high-impact* offenders in targeted high-crime neighbourhoods (Braga *et al.*, 2009).

Regardless of your view of the general and/or specific deterrent effect of incarceration, it is apparent that we have an offender population that is failing upon release from prison into the community. In 2010, 708,677 federal and state prisoners were released from prison and reentered the community; this represents a 20 per cent increase over the release population total in 2000. It is estimated that 40 per cent of releases in 2010 will be back in prison within three years (Pew, 2011). In addition, it is estimated that an equal number of ‘new’

offenders entered the federal and state prison system in 2010: about 40 per cent of these new admissions were actually probation or parole 'failures' due to a technical violation while under community supervision (Guerino *et al.*, 2011). According to the most recent BJS report, 33.1 per cent of all prison admissions in 2010 were parole violators (Guerino *et al.*, 2011). Typical violations under the conditions of parole supervision include drug test failures and curfew violations – two behaviours that we monitor using technology. While some have argued that monitoring offenders using surveillance technology and responding to violations using sanctions that include incarceration would change offender behaviour patterns over time (Farabee, 2005), there is no evidence to support this view. However, it should be emphasised that reentry programmes – and the technology components of these programmes – generally have not yet been evaluated in the type of randomised field experiments that are now being recommended (Farrington and Welsh, 2005; Byrne and Miosfsky, 2009).

Before we describe the various ways technological innovations are being adapted and applied in reentry programmes, it is important to keep in mind two facts about the offender reentry population. First, there is a subgroup of offenders in our corrections system who are constantly cycling in and out of the prison and jail system: these individuals are disproportionately poor; live in high-crime, poverty-based areas; lack basic education and employment skills; and have a history of (untreated) mental health and physical health problems. It should be noted that these offenders will be difficult to change, especially in the short term. Second, a significant number of offenders who leave the prison and jail system each year are not included in the offender reentry programmes we are about to describe. Due to mandatory minimum sentences, and the reluctance of parole boards to release offenders early in states that still rely on discretionary release, a significant number of offenders 'max-out' and return to the community without either the surveillance or the treatment afforded to offenders in reentry programmes. In addition, most formal reentry programmes currently in operation only target a subgroup of the release population for inclusion in the reentry programme, due to resource restraints and offender targeting decisions. For the remaining offenders released into the community, supervision, treatment and control are the responsibilities of traditional probation agencies (for offenders with split sentences), parole agencies (for offenders on mandatory or discretionary release), the police (for max-outs), and various public and private providers.

### **The three stages of reentry**

Reentry has been described in several reviews as including three identifiable stages: (1) the institutional phase; (2) the structured reentry phase; and (3) the community reintegration phase (e.g. Byrne and Pattavina, 2007). Figure 8.1 depicts the key steps in the reentry process and identifies the typical activities that are likely during each phase. For a variety of reasons, programme developers have focused limited reentry resources primarily on the final stage of the

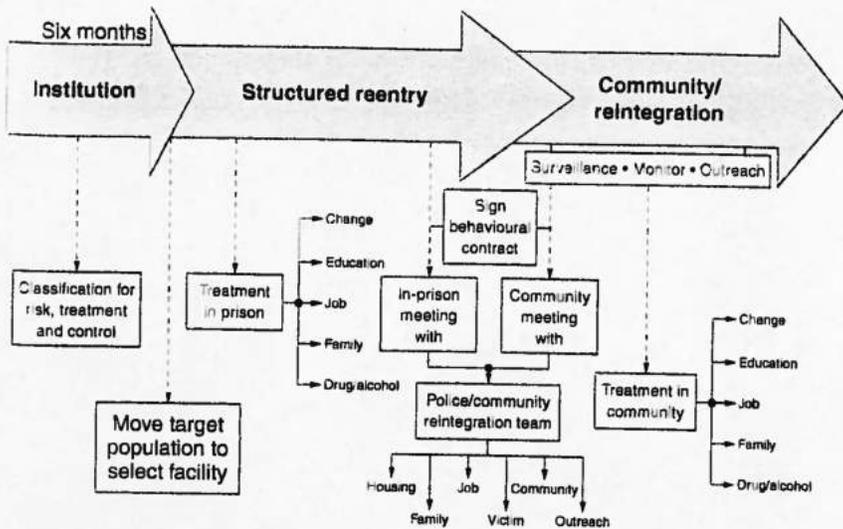


Figure 8.1 The three stages of reentry (source: Byrne *et al.*, 2002).

reentry process, emphasising the surveillance and control features of reentry initiatives. However, offender change is also an important stated goal of reentry programmes. Offender improvement is targeted in areas such as employment, education, substance abuse and individual values (i.e. criminal thinking). Reentry programme developers assume that offender improvement in one or more of these areas will result in less criminal behaviour. While change-related activities can be identified in all the reentry programmes we have reviewed, reentry programme developers have been criticised for focusing a disproportionate amount of reentry funding on offender monitoring and control, and not enough on offender treatment/change (Byrne, 2009a). In addition, it has been argued that, at best, only modest reductions in recidivism are likely to be found among offenders in reentry programmes that focus exclusively on individual offender change, and ignore the need to also address the underlying community context of crime (Byrne, 2009b).

### Technological innovation and offender reentry

A wide range of technological innovations have been introduced into the community corrections system in recent years. In previous reviews (Byrne and Marx, 2011; Byrne, 2008a), we have made a distinction between *information-based* technologies (which we refer to as soft technologies), and *material-based* technologies (which we refer to as hard technologies). In the following section, we provide an overview of the current utilisation of both types of technological innovation, focusing primarily on offender reentry. Examples of the types of soft

Table 8.1 The new technology of community corrections.

<i>Hard technology (hardware)</i>	<i>Soft technology (software)</i>
<ul style="list-style-type: none"> <li>• GPS/RF electronic monitoring technology for offender location, monitoring of zone restrictions, etc.</li> <li>• Language translators</li> <li>• Breathalysers, instant drug tests</li> <li>• Polygraph tests and plethysmographs to support sex offender treatment</li> <li>• Laptops for line staff in reentry programmes</li> <li>• GPS for staff location</li> <li>• Reporting kiosks for low-risk offenders</li> <li>• Remote alcohol monitoring devices</li> </ul>	<ul style="list-style-type: none"> <li>• New classification devices for the assessment of sex, drug and mentally ill offenders</li> <li>• COMPSTAT for reentry</li> <li>• New social network software</li> <li>• Mapping software applications (offender location, resource location)</li> <li>• SMART case management technology</li> <li>• Computer software to monitor sex offender internet activities</li> <li>• New technology for monitoring identity manipulation by registered sex offenders</li> </ul>

Source: adapted from Byrne and Rebovich, 2007.

technologies currently used in reentry programmes include the latest generation of risk classification devices, the use of COMPSTAT to support case management, the use of new software designed to monitor offenders' activities on the internet and new technology designed to detect identity theft among registered sex offenders. Examples of hard technology innovations include the latest generation of electronic monitoring devices, new drug testing technology and a range of new technologies for managing specific subgroups of offenders – including alcohol-involved offenders, domestic violence offenders and sex offenders. Table 8.1 provides an overview of the full range of hard and soft technology innovations being used in community corrections systems across the United States. While a detailed survey of the extent of technology utilisation in community corrections and, in particular, reentry programmes, is currently not available, the National Law Enforcement and Corrections Technology Center (NLETC) does provide information on specific programmes and new corrections technologies (see *TechBeat* at [www.justnet.org](http://www.justnet.org)). We have examined the available information on the use of new technology by reentry programme developers on this website, while also conducting our own review of federal, state and local reentry programmes using the reentry resources available from National Institute of Corrections, the National Institute of Justice and a variety of other publically available sources.

### **Soft technology and offender reentry**

In the following section we describe three different soft technology innovations being used in reentry programmes: (1) the latest generation of risk classification instruments; (2) COMPSTAT applications in reentry programmes; and (3) internet-based monitoring of offenders in reentry programmes. We will attempt to estimate the extent of use and cost of each innovation.

### **Risk classification and reentry**

There has been much recent discussion of how to improve the reentry prospects of inmates leaving the federal and state prison systems. Invariably, reentry programme developers are concerned with two related risk assessments:

- 1 What is the *level of risk* posed by a particular offender who is about to be released into the community?
- 2 Given what we currently know about intervention effects, which reentry strategy should we implement as a *risk reduction* strategy for high-risk, moderate-risk and/or low-risk offenders?

It will probably come as no surprise to hear that we know much more about how to accurately assess risk level than we know how to identify evidence-based risk reduction strategies.

The most common risk classification instrument used today in community corrections systems is the Level of Service Inventory, Revised (LSI-R) (Taxman *et al.*, 2007). According to a recent review by Smith *et al.* (2009), the LSI-R is currently being used in over 900 corrections agencies across North America. The LSI-R instrument requires the classification of each offender in ten unique areas, using a total of 54 items, including the following:

- 1 criminal history (ten items)
- 2 education and employment (ten items)
- 3 financial (two items)
- 4 family and marital (four items)
- 5 accommodations (three items)
- 6 leisure and recreation (two items)
- 7 companions (five items)
- 8 alcohol and drugs (nine items)
- 9 emotional and personal (five items)
- 10 attitude and orientation (four items)

While there is currently controversy about the use of the LSI-R to assess the risk level of *female* offenders (Reisig *et al.*, 2006), there is a body of research that suggests that overall the LSI-R is about as accurate as other risk instruments being used today (Smith *et al.*, 2009; Andrews and Bonta, 2010). However, the LSI-R is just one example of the type of 'new generation' risk instruments available to the field. What distinguishes this classification instrument from earlier risk instruments is the incorporation of dynamic risk factors – those items amenable to change – in the risk model. In the past, risk levels were largely determined by static risk factors – such as criminal history – that by definition are not amenable to change. However, it should be noted that Austin (2006) found that only a small number of the 54 risk items (mainly the ten criminal history variables) on the LSI-R were needed to accurately classify offenders; in fact, overall

predictive validity was actually higher in the more parsimonious risk model. This raises an obvious question: if the purpose of risk classification is to determine risk level, why would you include variables in the model that do not improve overall model accuracy?

Regardless of the type of risk instrument being utilised, the purpose of the risk classification process is to identify subgroups of high-, moderate- and low-risk offenders. A recent review of the risk classification research by Faye Taxman and colleagues identified the following risk levels and risk distributions among offenders released from federal and state prisons in the United States:

- *High-risk offenders* comprise approximately 20 per cent of the state prison population; 80 per cent of these offenders are predicted to fail (re-arrest) within three years of release from prison.
- *Moderate-risk offenders* comprise approximately 50 per cent of the state prison population; 60 per cent of these offenders are predicted to fail (re-arrest) within three years of release.
- *Low-risk offenders* comprise approximately 30 per cent of the state prison population; 40 per cent of these offenders are predicted to fail (re-arrest) within three years of release.
- *High-rate re-offending*: a small proportion of all releases (12 per cent) account for a significant proportion (34.4 per cent) of all crimes committed (35 or more total arrests, pre- and post-release) by the release cohort (Langan and Levin, 2002). About half of all high-risk offenders are high-rate offenders; high-rate offenders are rarely classified as medium or low risk (Taxman *et al.*, 2010).

It is assumed that once offenders are classified and separated into subgroups based on risk level, we can then turn to a critical task: the development of *risk reduction* strategies for offenders at each risk level. When thinking about risk reduction, it is necessary to distinguish the size of the risk reduction effect associated with a particular intervention, in terms of both within-group and overall risk reduction effects. For example, it is certainly possible that modest reductions in the recidivism of moderate-risk offenders may have a greater overall recidivism reduction effect on a cohort of released offenders than large reductions in the recidivism levels of high-risk offenders, given the differences in the size of both groups. An ongoing research study by Taxman and colleagues is exploring this issue in detail, using a variety of simulation modelling techniques (for an overview of the simulation project, see Taxman *et al.*, 2010).

Finally, one recent development in this area is the identification of the impact of community context on offender risk level, which suggests that we need to develop risk instruments that incorporate community context indicators into the next generation of risk classification models (for example, see Kubrin and Stewart, 2006; Byrne and Pattavina, 2006). Community context can be measured in a number of different ways, including indicators such as neighbourhood-level



crime rates, treatment resource availability, employment and housing/health care. Indeed, mapping community context appears to be an increasingly popular approach to highlighting the need for improved treatment options in high-risk communities with large concentrations of reentering offenders.

### **COMPSTAT and reentry**

A second soft technology innovation involves the application of the COMPSTAT model used to support community policing initiatives to the problem of offender reentry (Gelb, 2006). The four basic principles of COMPSTAT-driven reentry initiatives – intelligence, rapid deployment, effective tactics and follow-up and assessment – were described by William Burrell and the PEW Foundation's Adam Gelb (Burrell and Gelb, 2007: 6):

For community corrections, the *intelligence* principle of Compstat consists of information about offenders. Risk assessment instruments help probation and parole officers identify characteristics of individual offenders, such as substance abuse, that make them more likely to commit additional crimes. These research-based tools predict who is likely to re-offend and why. The *rapid deployment* principle has several elements. First, resources should be deployed to those offenders who pose a high risk of reoffending, while low risk cases should receive far more limited attention and resources. Second, caseloads should be of a manageable size to enable officers to monitor offenders closely and respond quickly when problems arise. Third, resources should be concentrated during the times when offenders are most likely to slip back into their old habits and recidivate – the few months immediately following their release from prison or sentence... Finally, officers should work in the community, not in the office, and they should have flexible schedules that enable them to respond to situations and crises when they occur, which is often not during the traditional work schedule. The *effective tactics* principle has received considerable attention in community corrections in recent years. A growing body of evidence-based practice has demonstrated that certain programmes matched to the specific needs of individual offenders can produce significant reductions in recidivism. The last principle of the model, *follow-up and assessment*, is simply sound management practice. Managers need to monitor performance and determine how well the strategies are working.

It appears that several state and local corrections systems have attempted to utilise various mapping strategies in order to understand reentry patterns in their jurisdictions, and to consider the implications of offender location for the availability and allocation of treatment resources, as well as on supervision strategies (e.g. geographic supervision). In addition, California has developed new parole policies targeting resources, and supervision, on offenders during their first few months in the community when recidivism for property and drug crimes is most likely to occur (Byrne, 2009b). However, it should be noted that recidivism

patterns do not vary much over time for violent re-offending, which is a low-rate occurrence that does not vary significantly over time (Byrne, 2009b).

### ***Internet-based monitoring and reentry***

The internet provides opportunities for social networking by offenders reentering the community after a period of incarceration. By extension, the monitoring of offender behaviour on social networking sites has become another facet of supervision. Community corrections workers are developing strategies that involve direct monitoring of offender social network activity, utilising a variety of methods – some involving undercover surveillance and the creation of false identities to gain access to online groups. A detailed overview of these strategies has been provided by Shannon Blalock (2010), a probation and parole officer with the Kentucky Department of Corrections. According to Blalock, there is much to be gained from monitoring the social network activities of offenders under community supervision:

The information that individuals provide on their social network profile provides a massive amount of information and intelligence on the offender and individual:

- street names, gang names, and monikers can be learned from photos, screen names, and personalized URLs;
- leads can be developed from wall/comment conversations and photos;
- friends and associates can be learned from friend lists;
- individual movements can be learned from mini-feeds, wall posts, and comments;
- whereabouts can be learned by reported city and state, place of employment, or IP address.

(Blalock, 2010)

While this type of direct monitoring of social networking sites using a variety of undercover surveillance techniques raises some obvious privacy concerns, it would also appear to be very time consuming for community corrections officers. We suspect that this will lead to a call for the development of site-tracking software, perhaps using key words or pictures to assist officers involved in monitoring social network sites.

Other soft technology applications include the use of Field Search software to look for pornography on the computers of sex offenders, and the ongoing development of new technologies designed to monitor identity manipulation by registered sex offenders (Rebovich and Byrne, 2011). However, it should be recognised that with the move to 'cloud' technology and the availability of software to mask your internet identity and/or location, monitoring offender internet activities will be an ongoing challenge for community corrections. The recent controversy over the website Silk Road highlights this issue. In order to gain

access to the website, an individual must first create an anonymous online identity using software available on the internet, such as Tor (<https://www.torproject.org/>). Once your anonymous identity is created, you can surf the net anonymously and shop anonymously on the Silk Road website for a wide range of illegal products, purportedly including drugs.

### **Hard technology and offender reentry**

Our review of hard technology innovation in reentry will focus on the following three technologies currently used in reentry programmes: (1) electronic monitoring (EM); (2) drug testing; and (3) new technologies for managing special offender populations reentering the community (sex offenders, alcohol-involved offenders, domestic violence offenders). Estimates are provided on the extent of use and estimated cost of each innovation.

#### ***Electronic monitoring and reentry***

EM has recently re-emerged as an appealing tool for supervising offenders living in the community (Pattavina *et al.*, 2010). Although statistics on the extent of EM use vary (Harris and Byrne, 2007), a recent projection estimated about 200,000 units currently in use (DeMichele and Payne, 2009). The use of EM technology is expected to grow considerably as more legislation is passed calling for EM supervision of certain offender populations. Currently, 47 states have legislation governing the use of EM technology. Of these states, 19 require EM for sex offenders and some call for lifetime electronic supervision (Button *et al.*, 2009). One fairly recent 'rough' estimate claimed that '20 per cent of community supervision ... now involves electronic monitoring' (Gable and Gable, 2005: 21), which would translate to almost *one million* offenders on EM. We are sceptical of such claims; a careful review of the research reveals that the actual prevalence of EM is still very modest, given the overall size of the community corrections population. A recent review of the use of EM in Florida is illustrative. In Florida, 'at the end of June 2009, the state had 143,191 offenders on supervision, including 2,392 under electronic monitoring' (NIJ, 2011: 1).

When discussing EM, a distinction needs to be made between EM *devices* and/or EM systems and EM *programmes*. As Corbett and Marx (1992) observed over 20 years ago, 'electronic monitoring is a technology in search of a program'. Ultimately, the success of this technology will depend largely on the design and implementation of the programmes established by community corrections managers across the country that include an EM component. Stated in its simplest form: it is one thing to collect information about offenders; it is quite another to use this information as an offender management and control tool. With this caveat in mind, we can now focus on the various EM devices available to the community corrections field.

There are currently two categories of EM systems being used in the United States: devices that rely on radio frequency monitoring, using either continuous

signalling or random calling technology; and devices that use global positional systems (GPS) and mobile phone technology (Lilly, 2006; Renzema and Mayo-Wilson, 2005). While radio frequency technology was the primary form of EM in the 1980s and 1990s, it is being challenged (in terms of market share) by the newer, more advanced GPS technology (Lilly, 2006). Unlike the radio frequency monitoring systems that allow the identification of an individual at a specific geographic location, the GPS-based monitoring systems allow 'real time' tracking of offender movements across wider areas (home, work, neighbourhood, etc.). Newer technologies include kiosk reporting, remote alcohol detection and biometric analysis.

### ***Drug testing and reentry***

The second hard technology we review in this chapter is drug testing. A variety of drug testing procedures are currently available in community corrections, including urinalysis, collection of oral fluids, hair analysis and even the use of sweat patches. Harris and Byrne (2007: 296–298), offer the following overview of the use of drug testing in community corrections:

Different methods provide different sensitivities to type as well as timing of drug use. Various methods may be distinguished by whether they are incremental (assessing recent use) or cumulative (assessing any use over a prolonged period); are more or less invasive to the individual being tested; and their rate of false hits (Swan, 1995). Though urinalysis is the most popular measure of drug abuse in community corrections (Vito, 1999), it has several important limitations. First, urine tests do not detect drug use immediately after consumption. An offender who reports to his or her officer 'high' may yield a negative test. Second, urine tests cannot detect drug use longer than two or three days after use (Swan, 1995; Harrell and Kleiman, 2000). Consequently, agencies would need to conduct frequent urinalysis (at least twice a week) to more accurately capture drug use by clients. Third, urinalysis is especially susceptible to adulteration leading to false negative results (GAO). On the other hand, urinalysis yields a lower rate of false positives than sweat patches and hair analysis (Swan, 1995).

A second drug testing procedure involves the testing of oral fluid taken from the offender. Collection of oral fluid is a recent drug testing technology that has advantages over other methods. Oral fluids can capture a wide variety of drugs. Certain drugs, such as amphetamines and heroin, display higher concentrations in saliva specimens than blood and plasma for the first 48 hours following use (Crouch, Day, Baudys, and Fatah, 2004). A drawback to this method is that measurements taken from oral samples do not separate concentrations due to residual drugs remaining in the mouth and drugs which have entered the bloodstream, which can elevate results (Crouch, Day, Baudys, and Fatah, 2004).

Finally, two additional drug testing procedures have been tested on community corrections populations: hair analysis and sweat patches. Hair

analysis can provide information about an offender's drug use over extended periods of time, but is controversial. The hair of non-drug using individuals who keep company with drug users who smoke illicit substances, or who have handled certain drugs but not used them, is subject to contamination and false results (Crouch, Day, Baudys, and Fatah, 2004). Sweat patches rest on less established consensus regarding interpretation of drug concentrations they accumulate (Crouch, Day, Baudys, and Fatah, 2004).

Drug testing is currently the most prevalent kind of hard technology in community corrections (Harris and Byrne, 2007). The underlying assumption of drug testing strategies is that if offenders are using illegal drugs, they are not only breaking the law but they are also increasing the likelihood that they will commit other criminal acts in the near future. Adele Harrell and Mark Kleiman provided perhaps the clearest description of the drugs-crime connection:

Drug testing of offenders reflects the widespread recognition among criminal justice professionals that reductions in some forms of drug use among certain offenders result in reductions in crime. The relationship of crime and chronic hard-drug use has been well documented in research literature.... Chronically hard-drug-involved offenders have high rates of criminal activity, with the frequency and severity of criminal behavior rising and falling with the level of drug usage.... Drug addicts commit more crimes while they are addicted – some four to six times more than when they are not abusing narcotics, a pattern that is even more pronounced among habitual offenders.

(Harrell and Kleiman, 2002: 2)

However, Harris and Byrne (2007) argue that there appears to be an emerging perspective on technical violations generally, and drug test failures in particular, with direct consequences for offenders under community supervision: we need to stop incarcerating technical violators of probation, parole and other forms of community supervision and focus our energies on alternative strategies for improving offender compliance (Taxman, 2006). Harris and Byrne (2007: 300) point out that 'in Washington state, the legislature passed a legislation in 1999 that essentially prohibits the use of prison as a sanction for offenders who violate the technical conditions of community supervision (Jetzer, 2004)'. In the last decade several other states, including California and Michigan, have developed similar strategies for reducing the flow of technical violators into the prison system. As Harris and Byrne observe,

despite these shifts in legislative policy and public opinion, drug testing is still viewed as a critical feature of community supervision. The question is not whether to test; it's how to respond to evidence of continued drug use by offenders under community supervision *without using the threat of incarceration.*

(2007: 300)

***New technologies for managing special offender populations and reentry***

There are a number of other hard technology innovations that we will only briefly mention here. Technologies for managing sex offenders continue to be developed and fieldtested, including the use of improved polygraph testing and the use of penile plethysmographs to monitor offenders' progress in sex offender treatment (Harris and Byrne, 2007). For offenders with alcohol-related convictions, both ignition interlock systems (for vehicles) and remote alcohol monitoring (of individuals) are becoming more popular. The remote alcohol monitoring devices are typically used in conjunction with EM (Harris and Byrne, 2007). Finally, new technology is being field tested which alerts a potential victim – and the police – when an offender has violated restrictions placed on contact with the victim. No estimates of the extent of use for each of these technologies are currently available.

**The effectiveness of technology-driven reentry strategies**

We have identified a number of hard technology innovations currently being used in reentry programmes, including: (1) EM technology; (2) drug testing technology (via urinalysis, sweat patches, saliva samples, hair analysis and blood tests); and (3) technologies for managing alcohol-related offenders (ignition interlock systems, remote alcohol monitoring devices), sex offenders (polygraph testing, the penile plethysmograph, identity monitoring, computer monitoring) and domestic violence offenders. However, we have found little scientific evidence to prove that the adoption of these new technologies improves the performance of reentry programmes, because the necessary research has not been conducted. Absent scientific evidence, we do not anticipate quick, definitive resolutions of either: (1) the continuing debate between advocates of treatment and control-based corrections strategies (Byrne and Taxman, 2005; Farabee, 2005); or (2) the ongoing debate over the intended and unintended consequences of privatisation of certain technology-based supervision functions (e.g. EM) for community corrections' organisation, administration and effectiveness (Byrne, 2008a).

We have also provided a description of the current utilisation of various soft technology innovations in reentry programmes. Pattavina and Taxman (2007) recently offered their assessment of the impact of information technology on community corrections, which echoes the 'culture of control' argument offered by Garland (2002) and others. According to the authors,

Despite their good intentions, advances in soft technology in community corrections have resulted in more control over offenders. We collect more information about them, use that information to shape their future behavior and then closely monitor and control that behavior in the community.

(Pattavina and Taxman, 2007: 344)

Their review revealed that the necessary evaluation research on the implementation and impact of these soft technology innovations has not been completed. This leads us to conclude that we do not know whether improvements in information technology have resulted in the improved performance of the community corrections system.

Several state and local community corrections agencies have recently applied the COMPSTAT model to reentry initiatives, but there is no body of empirical research on COMPSTAT-driven reentry initiatives available for review. Byrne (2009b: 6) reviewed the research on three key strategies consistent with the underlying assumptions of the COMPSTAT model – targeting high-risk offenders, high-risk times and high-risk locations – and offered the following assessment:

Over the past three decades, the total population of this country's community corrections system has grown significantly (from 4 million to 7 million offenders), probation and parole terms became slightly longer and supervision strategies became much more control oriented. To date, all we have to show for this strategy are more offenders under community control, higher costs, and a significant number of probation and parole 'failures' entering – or reentering – our prison system each year (16 per cent of probationers and 38 per cent of all parolees discharged in 2005). Only 59 per cent of the 2.2 million adults discharged from probation in 2005 were successful, compared to over 70 per cent in the middle of the 1980s. Among our parole population, the numbers are even worse: only 45 per cent of all parolees 'successfully met the conditions of their supervision' in 2005, compared to over 60 per cent in 1980.

Concentrated supervision strategies offer an alternative to business-as-usual in the area of community correction. Given the demonstrated lack of effectiveness of current community supervision practices over the past three decades, it does appear that we need to do *something different* in the area of community supervision. There is a great opportunity for jurisdictions around the country to test new strategies of community supervision. Based on this review, it appears that concentrating community supervision by offender, time, and place holds promise for more effective supervision, greater public safety, and better use of available resources.

### **Emerging trends and new directions for reentry technology**

Given the recent discussion and debate over what reforms are necessary, based on the need for justice reinvestment (Clear, 2011), this may be a good time to explore the relationship between innovations in technology and offender change. As we noted earlier, the notion that correctional programming should invest in strategies to promote offender change has informed a new generation of classification tools used by correctional agencies to better identify the treatment needs of offenders. Risk assessments are used to determine risk levels and both static and dynamic factors found to be correlated with recidivism are considered.

Dynamic factors include offender associations, attitudes and values, lack of problem-solving skills, substance use and employment status. These factors, also known as criminogenic needs, can be targeted for change. The question is: how can various forms of hard and soft technology be used to facilitate offender change? A similar question can be raised about the use of various technological innovations to facilitate community change, based on the notion that real progress in breaking the constant cycling of offenders through our corrections system will not be made until we recognise and address the need to also change community-level risk factors. In the following section (adapted from Pattavina *et al.*, 2010), we offer a framework for change-focused technology development, along with three 'real life' examples of what we refer to as the new technology of offender change.

One treatment modality that incorporates the dynamic nature of some risk factors and the need for responsivity is cognitive-behavioural therapy (CBT). In fact, CBT has been identified as *a best practice* by the National Institute of Corrections and has been discussed in a new users guide on electronic supervision (Thigpen *et al.*, 2007; DeMichele and Payne, 2009). The CBT focuses on the thoughts, choices, attitudes and meaning systems that are associated with criminal lifestyles. It uses a training approach to teach new skills in areas where offenders show deficits. To facilitate change, CBT programmes attempt to restructure cognitive processing of events and provide social and interpersonal skills training. Reinforcement is used to strengthen the thoughts that lead to positive behaviour (Thigpen *et al.*, 2007). There are a variety of programmes that use CBT for treating offender populations including: Aggression Replacement Training; Criminal Conduct and Substance Abuse Treatment; Strategies for Self-Improvement and Change; Moral Reconciliation Therapy; Reasoning and Rehabilitation; Relapse Prevention Therapy; and Thinking for a Change (Thigpen *et al.*, 2007). A recent, comprehensive evidence-based review by Landenberger and Lipsey (2005) found that CBT was an effective strategy for reducing recidivism for high-risk offenders.

How can EM technology be used in conjunction with programming like CBT to promote offender change? According to a recent review by Pattavina *et al.* (2010), EM technology and CBT are more compatible than they may first appear. Despite the popular conception of EM as a locational or status verification tool, the historical roots of this technology actually resonate more with a behavioural change perspective regarding offender behaviour. Although EM appeared as commercial technology for correctional use in the 1980s, it was first experimented on in the 1960s (Schwitzgebel, 1967). According to Gable, 'The goal was to establish a therapeutic relationship with a counselor and the offender would either be rewarded or warned about the activities that could positively or negatively impact rehabilitation' (2007: 101). These same scientists have recently returned to the EM debate and they continue to call for a more theory-driven approach to the application of EM technology, based on social learning and behaviour modification (Burrell and Gable, 2008). Criminal justice practitioners and researchers are growing increasingly comfortable with technology



and can participate in debates about how to apply and measure EM technology in ways that are consistent with treatment philosophies. Moreover, the current political and economic climate regarding the need to effectively reintegrate offenders into the community presents an opportunity for us to rethink the role of EM, if only for some offenders, and how new technological advances can be harnessed for this purpose (Pattavina, 2009).

To facilitate the use of EM technology for behavioural change outcomes requires a broader conceptualisation of EM. Renzema and Mayo-Wilson note in their review that 'EM is not a treatment that changes values or teaches skills' (2005: 232). So far, they appear to be correct in their assessment. There are, however, new possibilities that build upon the communication aspects of technology to create environments where EM, or more broadly conceived, electronic interaction and supervision, offers a growing capacity for therapeutic connections between offenders and treatment providers in addition to monitoring. Informing the potential for developments along these lines is an emerging field known as persuasive technology (Fogg, 2003). Persuasive technology, or *captology*, examines the use of computing technology to change what people think and do. This technological perspective recognises that computing resources of many types – from websites, to computer applications, to mobile devices – are being designed specifically to motivate and influence users (Fogg, 2003). The use of computing technologies to support CBT and the growing potential for EM technologies to become more communicative presents a new conceptual space for persuasive technologies to emerge.

The major difference between typical applications of EM and persuasive technology lies in scope and intent of application. Traditional EM technology's primary emphasis is on surveillance and control. Persuasive technology offers communication and information in relation to surveillance with the intent to change thought processes that support criminal lifestyles. According to Fogg (2003: 25), computing technologies may persuade in three ways. They may serve as a persuasive tool that leads people through a process, makes target behaviour easier to do or perform calculations or measurements that motivate. They may persuade as a social actor that rewards people with positive feedback, models a target behaviour or attitude or provides social support. They may act as a medium, allowing people to explore cause-and-effect relationships, provide people with experiences that motivate or help people rehearse a behaviour.

For programme developers, the challenge is how to deal with offender needs in ways that address their deficits while keeping the community safe. Gable and Gable (2005), who have been strong advocates of using technology to promote change within a cognitive-behaviour framework, offer some useful guidelines. They particularly emphasise the use of incentives to promote change. Recommendations include rewarding small steps, especially at the beginning of a programme. Recognising even small improvements can provide motivation to engage in more positive behaviour. The development of communication is also essential and can be achieved through mobile communications, providing incentives and reinforcement on a real-time basis. Active intervention is essential

when helping offenders manage temptation during 'risky' times and in 'risky' places. According to Gable and Gable (2005), understanding the pattern of the behaviour that takes place before a crime or relapse provides a key opportunity to intervene. For example, contacting an offender during a risky time of day (when he/she finishes work) may be more effective than later on (when he/she enters a bar). While house arrest can prevent the entire sequence of behaviour, it does not allow opportunities for offenders to manage in real-life situations (Gable and Gable, 2005), nor can it help address problems such as substance use, which the offender can engage in at home and, technically speaking, be 'in compliance' with house arrest provisions.

Recent examples of how persuasive technology can be used in treatment programmes can be identified. We will describe three programmes: (1) The Methamphetamine Remote Recovery Project; (2) E-Treat; and (3) Ann-e. The primary purpose for each of these applications is to treat substance abuse problems. Substance abuse is a common problem for many offenders and treatment options are necessary for successful rehabilitation. It should be noted from the outset that these are all relatively new programmes and have not been evaluated for their effectiveness with criminal justice populations. Nevertheless they are exemplary of new possibilities to deal with offenders using technology in a persuasive manner.

#### ***The Methamphetamine Remote Recovery Project***

This programme, established under the direction of the University of Nebraska Omaha, combines communication technologies with innovative case-management protocols (Robinson *et al.*, 2010). The goals of this programme are to improve supervision outcomes for probation clients as well as improve treatment outcomes. This programme integrates communication technologies to provide remote supervision and treatment. Probation officers and treatment providers work together with the probationers throughout the programme. Through the use of mobile phone technology with text messaging and computer technology with webcams, web conferencing and web access, there is more time to supervise and treat the offender by decreasing travel time necessary for face-to-face contacts, especially for those in rural areas.

Used in conjunction with a cognitive-based treatment philosophy, computing technologies provide more opportunity for communication between the probation officer and the offender for routine supervisory check-ins, as well as determining individual treatment needs. Together, the probation officer, treatment provider and offender can locate additional substance abuse support based on offender needs through the Substance Abuse Treatment Locator (SATL). The SATL is a web-based search engine that will allow probationers to locate and make initial contact with substance abuse treatment providers in their area. Offenders can search for treatment providers by zip code and review information about each provider, and can also request appointments with providers. Treatment providers can communicate with offenders to provide direct support and

assist the offender in locating appropriate online support groups. Treatment providers, probation officers and offenders can hold meetings via web conferencing and webcams. Here, computing technologies are employed as persuasive tools that lead offenders through a treatment process. Offenders engage with treatment providers and probation officers in devising the individualised treatment plan and the treatment-seeking behaviour is enhanced through the use of web resources including the SATL.

### ***E-Treat***

E-Treat is a computer-assisted intervention for individuals seeking treatment for substance abuse disorders. Although not designed specifically for probationers, the programme does accept referrals from probation and parole officers. The E-Treat programme combines elements of motivational interviewing with persuasive technologies to support the motivation to continue treatment for those who are either waiting for long-term treatment or are in transition between treatment services. E-Treat employs recovery coaches – trained in motivational interviewing – to conduct initial assessments, assist clients in using available computer resources and initiate access to electronic resources available through the E-Treat intervention (VanDeMark *et al.*, 2010). Recovery coaches provide personalised coaching and support – they also send motivational messages to clients using telephone, text messages, email and web-based communication. Individualised messages offer suggestions about sustaining recovery efforts, such as exploring ambivalence about entering treatment, averting destructive communication patterns and eliciting self-motivational statements.

Programmes like E-Treat use computers as a persuasive activity by filling the role of social actor where people are rewarded with positive feedback and are given social support. Although these types of programmes are relatively new and rigorous evaluations are lacking, preliminary research suggests that computerised cognitive behavioural programmes delivered in conjunction with outpatient treatment for substance abuse, is related to longer periods of abstinence (Carroll *et al.*, 2009). In their analysis of E-Treat, VanDeMark *et al.* (2010) indicate that these types of programmes may be well suited for women and parents.

### ***Ann-e***

This iPhone application allows persons involved in Twelve Step programmes to find meetings being held close to where the offender is located at the time of a mobile query. Offenders can also request real-time support from persons on call for support or even offer support to others in need. Probation officers can send mobile reminders and support to probationers during risky times and places associated with relapse and use positive messages in real time for offenders as they make positive choices. This application may offer a less intrusive persuasive option which would be more appropriate for low-risk offenders or those transitioning out of higher risk levels. This application may also be used to

support treatment programmes required by drug courts. Using mobile communication units that have phone and GPS capabilities offers many possibilities in addition to surveillance. For example, information on the time and location of Alcoholic Anonymous or Narcotics Anonymous meetings selected using the iPhone application can be sent to the offender by the Probation Officer, or accessed directly by the offender.

### Concluding comments

The constant cycling of offenders in and out of prison suggests that new approaches to the community control of offenders need to be developed, implemented and evaluated both at the preentry (i.e. alternatives to incarceration) and the reentry (mandatory and discretionary release) stages. While there has been considerable talk about the importance of evidence-based practices in corrections generally – and in reentry programming in particular – examination of the research on the effectiveness of reentry strategies underscores a simple point: you cannot develop and implement evidence-based reentry programmes without first doing the necessary evaluation research (Byrne, 2009a; Byrne and Lurigio, 2009). In this chapter we have highlighted the utilisation of a wide range of hard and soft technology innovations to support existing offender reentry strategies, while cautioning the reader that the empirical research examining the impact of the expanded use of control-based reentry technologies has yet to be completed. We have also suggested that there are a variety of new possible applications of technology that have not been given sufficient attention, including the field testing of new technologies designed to support the goal of positive offender change, rather than short-term, and mainly coercive, offender control.

### Bibliography

- Andrews, D. A. and J. Bonta. 2010. *The Psychology of Criminal Conduct*. Burlington: Elsevier Science Ltd.
- Andrews, D. A., J. Bonta and J. S. Wormith. 2006. 'The recent past and near future of risk and/or need assessment'. *Crime and Delinquency*. 52(1), 7–27.
- Ann-E iPhone application. Available at [www.ann-e.com/](http://www.ann-e.com/) (accessed 13 September 2010).
- Austin, James. 2006. 'How much risk can we take? The misuse of risk assessment in corrections'. *Federal Probation*. 70(2), 58–63.
- Austin, James. 2009. 'The limits of prison based treatment'. *Victims and Offenders*. 4(1), 311–320.
- Bales, William D. and Alex R. Piquero. 2012. 'Assessing the impact of imprisonment on recidivism'. *Journal of Experimental Criminology*. 8(1), 71–100.
- Bales, William, Karen Mann, Thomas Blomberg, Gerry Gaes, Kelle Barrick, Karla Dhungana. 2010. *A Quantitative and Qualitative Assessment of Electronic Monitoring: Report to Office of Justice Programs*. Washington, DC: National Institute of Justice.
- Blalock, Shannon. 2010. 'Using social networks for offender supervision and fugitive apprehension'. Presentation (powerpoint available upon request) at the 2010 Annual Innovative Technologies for Corrections Conference, 21–23 June, Fort Lauderdale, Florida.

- Braga, Anthony, Ann Piehl and David Hureau. 2009. 'Controlling violent offenders released to the community: an evaluation of the Boston reentry initiative'. *Journal of Research in Crime and Delinquency*. 46(4), 411-436.
- Burrell, William D. and Robert S. Gable. 2008. 'From B. F. Skinner to Spiderman to Martha Stewart: the past, present and future of electronic monitoring of offenders'. *Probation and Parole: Current Issues*. New York: Haworth Press, pp. 101-118. Available at <http://jor.haworthpress.com>.
- Burrell, William and Adam Gelb. 2007. *You Get What You Measure: Compstat for Community Corrections*. Washington, DC: Public Safety Performance Project, Pew Charitable Trusts.
- Button, Deanna, Mathew DeMichele and Bryan K. Payne. 2009. 'Using electronic monitoring to supervise offenders: legislative patterns and implications for community corrections officers'. *Criminal Justice Policy Review*. 20, 414-436.
- Byrne, James. 2008a. 'The best laid plans: an assessment of the varied consequences of new technologies for crime and social control'. *Federal Probation*. 72(3), 10-21.
- Byrne, James. 2008b. 'Editorial introduction: the social ecology of community corrections - understanding the link between individual and community change', *Criminology and Public Policy*. 1(2), 1201-1213.
- Byrne, James. 2009a. 'What works in prison reentry'. 12 March 2009 testimony before the House Appropriations Subcommittee on Commerce, Justice, Science, and Related Agencies, Alan Mollohan (WV), Chair Prison Re-entry -
- Byrne, James. 2009b. 'Maximum impact: targeting supervision on higher-risk people, places and times'. Public Safety Performance Project, the PEW Center on the States. July 2009.
- Byrne, James and Arthur Lurigio. 2009. 'Separating science from nonsense: evidence-based research, policy, and practice in criminal and juvenile justice settings'. *Victims and Offenders: Journal of Evidence Based Policies and Practices*. 4(4), 303-310.
- Byrne, James and Gary Marx. 2011. 'Technological innovations in crime prevention and policing: a review of the research on implementation and impact'. *Journal of Police Studies*. 20(3), 17-38.
- Byrne, James and Karin Miofsky. 2009. 'From preentry to reentry: an examination of the effectiveness of institutional and community-based sanctions'. *Victims and Offenders: Journal of Evidence Based Policies and Practices*. 4(4), 348-356.
- Byrne, James and April Pattavina. 2006. 'Clinical and actuarial risk assessment in an evidence-based community corrections system: issues to consider'. *Federal Probation*. 70(3), 64-67.
- Byrne, James and April Pattavina. 2007. 'Institutional corrections and soft technology', in James Byrne and Don Rebovich (eds). *The New Technology of Crime, Law, and Social Control*. Monsey, NY: Criminal Justice Press, pp. 245-286.
- Byrne, James and Donald Rebovich (eds). 2007. *The New Technology of Crime, Law, and Social Control*. Monsey, NY: Criminal Justice Press.
- Byrne, James and Faye Taxman. 2005. 'Crime (control) is a choice: divergent perspectives on the role of treatment in the adult corrections system'. *Criminology and Public Policy*. 4(2), 290-309.
- Byrne, James, Faye Taxman and Douglas Young. 2002. *Emerging Roles and Responsibilities in the Reentry Partnership Initiative: New Ways of Doing Business*. Office of Justice Programs, Washington, DC: National Institute of Justice.
- Byrne, James, Arthur Lurigio and Joan Petersilia. 1992. *Smart Sentencing: The Emergence of Intermediate Sanctions*. Newbury Park, CA: Sage Publications.

- Carroll, Kathleen M., Samuel A. Ball, Steve Martino, Charla Nich, Theresa A. Babuscio and Brice J. Rounsaville. 2009. 'Enduring the effects of a computer-assisted training program for cognitive behavioral therapy: a 6-month follow-up of CBT4CBT'. *Drug and Alcohol Dependence*. 100, 178-181.
- Clear, Todd. 2007. *Imprisoning Communities: How Mass Incarceration Makes Disadvantaged Neighborhoods Worse*. New York: Oxford University Press.
- Clear, Todd. 2011. 'A private-sector, incentives-based model for justice reinvestment'. *Criminology and Public Policy*. 10(3), 585-608.
- Corbett, Ronald P. and Gary T. Marx. 1992. 'Emerging technofallacies in the electronic monitoring movement', in James M. Byrne, Arthur J. Lurigio and Joan Petersilia (eds). *Smart Sentencing: The Emergence of Intermediate Sanctions*. Newbury Park, CA: Sage, pp. 85-102.
- DeMichele, Mathew and Brian Payne. 2009. 'Offender supervision with electronic supervision: community corrections resource'. Washington, DC. Office of Justice Programs, Bureau of Justice Assistance, Department of Justice. Available at [www.appanet.org/eweb/docs/appa/pubs/OSET\\_2.pdf](http://www.appanet.org/eweb/docs/appa/pubs/OSET_2.pdf) (accessed 13 September 2010).
- Farabee, David. 2005. *Rethinking Rehabilitation: Why Can't We Reform Our Criminals?*. Washington, DC: AEI Press.
- Farrington, David and Brandon Welsh. 2005. 'Randomized experiments in criminology: what have we learned in the last two decades?' *Journal of Experimental Criminology*. 1, 1-29.
- Fogg, B. J. 2003. *Persuasive Technology: Using Computers to Change What We Think and Do*. San Francisco, CA: Morgan Kaufman Publishers.
- Gable, Ralph Kirkland and Robert S. Gable. 2005. 'Electronic monitoring: positive intervention strategies'. *Federal Probation*. 69(1), 21-25.
- Gable, Robert S. 2007. 'Electronic monitoring of offenders: can a wayward technology be redeemed?', in Yvonne DeKor, Wijnand IJsselsteijn, Cees Midden, Berry Eggen and B. J. Fogg (eds). *Persuasive Technology*. Germany: Springer-Verlag, pp. 100-104.
- Garland, David. 2002. *The Culture of Control: Crime and Social Order in Contemporary Society*. New York: Oxford University Press.
- Gelb, Adam. 2006. 'Compstat for community corrections'. *Perspectives*. winter issue, 30-33.
- Guerino, P., P. Harrison and William Sabol. 2011. 'Prisoners in 2010'. Washington, DC: U.S. Department of Justice, Bureau of Justice Statistics. Available at [www.bjs.gov/content/pub/pdf/p10.pdf](http://www.bjs.gov/content/pub/pdf/p10.pdf) (accessed 5 April 2012).
- Harrell, A. and M. Kleiman. 2002. *Drug Testing in Criminal Justice Settings*. Washington, DC: The Urban Institute.
- Harris, Patricia and James M. Byrne. 2007. 'Community corrections and hard technology', in James M. Byrne and Don Rebovich (eds). *The New Technology of Social Control*. Monsey, NY: Criminal Justice Press.
- Jetzer, K. 2004. *The Effects of OAA (offender accountability act) on Community Custody Violations*. Olympia, Washington: Washington State Department of Corrections.
- Journal of Offender Monitoring*. 2009. 'The 2008-2009 electronic monitoring survey'. 20, 1-2.
- Kubrin, Charis and Eric Stewart. 2006. 'Predicting who reoffends: the neglected role of neighborhood context in recidivism studies'. *Criminology*. 44(1), 165-197.
- Landenberger, Nana A. and Mark W. Lipsey. 2005. 'The positive effects of cognitive-behavioral programs for offenders: a meta-analysis of factors associated with effective treatment'. *Journal of Experimental Criminology*. 1, 451-476.

- Langan, P. A. and D. J. Levin. 2002. *Recidivism of Prisoners Released in 1994*. Washington, DC: Department of Justice, Office of Justice Programs, Bureau of Justice Statistics.
- Latessa, Edward J. and Brian Lovins. 2010. 'The role of offender risk assessment: a policy maker guide'. *Victims and Offenders*. 5, 203-219.
- Lilly, R. 2006. 'Issues beyond empirical EM reports'. *Criminology and Public Policy*. 5(1), 93-102.
- Longshore, D., F. Taxman, S. Turner, A. Harrell, T. Fain and J. Byrne. 2001. *Operation Drug Test Evaluation*. Washington, DC: National Institute of Justice.
- MacKenzie, Doris L. 2006. *What Works in Corrections*. New York: Cambridge University Press.
- National Institute of Justice (NIJ). 2011. *Electronic Monitoring Reduces Recidivism: In Short - Toward Criminal Justice Solutions*. Washington, DC: U.S. Department of Justice, Office of Justice Programs, NCJ 234460.
- Nellis, Michael. 2006. 'Surveillance, rehabilitation, and electronic monitoring: getting the issues clear'. *Criminology & Public Policy*. 5, 103-108.
- Nilsson, Anders and Felipe Estrada. 2007. 'Risky neighborhood or individuals at risk? The significance of neighborhood conditions for violent victimization in residential areas'. *Journal of Scandinavian Studies in Criminology and Crime Prevention*. 8, 2-21.
- Padgett, Kathy G., William D. Bales and Thomas Blomberg. 2006. 'Under surveillance: an empirical test of the effectiveness and consequences of electronic monitoring'. *Criminology & Public Policy*. 5, 61-92.
- Pattavina, April. 2009. 'The use of electronic monitoring as persuasive technology: reconsidering the empirical evidence on the effectiveness of electronic monitoring'. *Victims and Offenders*. 4, 385-390.
- Pattavina, April and Faye Taxman. 2007. 'Community corrections and soft technology', in James Byrne and Donald Rebovich (eds). *The New Technology of Crime, Law, and Social Control*. Monsey, NY: Criminal Justice Press, pp. 327-346.
- Pattavina, April, Karen Miofsky-Tusinski and James Byrne. 2010. 'Innovation in community corrections: from monitoring technology to persuasive technology'. *Journal of Offender Monitoring*. 23(1), 1-5.
- Pew Center on the States. 2011. *State of Recidivism: The Revolving Door of America's Prisons*. Washington, DC: The Pew Charitable Trusts.
- Piquero, Alex and Al Blumstein. 2007. 'Does incapacitation reduce crime?'. *Journal of Quantitative Criminology*. 23, 267-286.
- Rebovich, Don and James Byrne. 2011. 'Evaluating the possible link between missing sex offenders and identity theft/manipulation: an overview of the sex offender authentication study'. Presentation at the Annual Meeting of the American Society of Criminology. November. Washington, DC.
- Reisig, M. D., K. Holfreter and M. Morash. 2006. 'Assessing recidivism risk across female pathways to crime'. *Justice Quarterly*. 23(3), 384-405.
- Renzema, Marc and Evan Mayo-Wilson. 2005. 'Can electronic monitoring reduce crime for moderate to high-risk offenders?'. *Journal of Experimental Criminology*. 1, 215-237.
- Robinson, T. Hank, Nicole Kennedy and Alison King. 2010. 'Utilizing technology to promote recovery: piloting substance abuse recovery with Nebraska probationers'. Presentation at the Innovative Technologies for Corrections Conference. June. Available at [www.justnet.org/Pages/corr2010\\_presentations.aspx](http://www.justnet.org/Pages/corr2010_presentations.aspx) (accessed 13 September 2010).

- Rosenfeld, R., J. Wallman and R. Fornango. 2005. 'The contribution of ex-prisoners to crime rates', in Jeremy Travis and Christy A. Visher (eds). *Prisoner Reentry and Crime in America*. Cambridge: Cambridge University Press, pp. 80–104.
- Schwitzgebel, Ralph. 1967. 'Electronic innovation in the behavioral sciences: a call to responsibility'. *American Psychologist*. 22(5), 364–370.
- Smith, P., F. T. Cullen and E. J. Latessa. 2009. 'Can 14,737 women be wrong? A meta-analysis of the LSI-R and recidivism for female offenders'. *Criminology & Public Policy*. 8(1), 183–208.
- Stemen, Don. 2007. *Reconsidering Incarceration: New Directions for Reducing Crime*. New York: Vera Institute of Justice.
- Taxman, Faye. 2006. 'Assessment with a flair: offender accountability in supervision plans'. *Federal Probation*. 70(3), 2–7.
- Taxman, Faye, Matthew Perdoni and Lana Harrison. 2007. 'Treatment for adult offenders: a review of the state of the states'. *Journal of Substance Abuse Treatment*. 32, 239–254.
- Taxman, Faye, James Byrne, April Pattavina, Stephanie Ainsworth, Jillian Baird, Ed Banks, Terri Hines and Avinash Bhatti. 2010. 'Risk, need, responsivity (RNR) simulation tool'. Unpublished Report prepared for the BJA-funded Simulation Research Project, and presented for advisory group review at the American Society of Criminology Annual meeting, 17 November 2010.
- Thigpen, Morris L., Thomas J. Beauclair, George M. Keiser, Michael Guevara and Rachel Mestad. 2007. 'Cognitive behavioral treatment: a review and discussion for corrections professionals'. Washington, DC: National Institute of Corrections. U.S. Department of Justice.
- VanDeMark, Nancy R., Nicole R. Burrell, Walter F. LaMendola, Catherine A. Hoich, Nicole P. Berg and Eugene Media. 2010. 'An exploratory study of engagement in a technology-supported substance abuse intervention'. *Substance Abuse Treatment, Prevention, and Policy*. 5(10). Available at [www.substanceabusepolicy.com/content/5/1/10](http://www.substanceabusepolicy.com/content/5/1/10) (accessed 5 April 2012).
- Vieraitis, Lynne, Tomislav Kovandzic and Thomas Marvell. 2007. 'The criminogenic effects of imprisonment: evidence from state panel data, 1974–2002'. *Criminology and Public Policy*. 6(3), 589–622.