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EFFECTIVENESS OF THE DIRECT SUPERVISION SYSTEM OF CORRECTIONAL DESIGN AND MANAGEMENT

A Review of the Literature

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The direct supervision system of correctional management and design was first used in adult detention facilities in 1974. Since then, it has been adopted by hundreds of prisons and jails and accepted as best practice by professional associations and accrediting organizations in corrections. Research assessing its success has taken the form of detailed case studies, comparisons among different facilities, and comparisons within the same facility or system over time. Overall, reports have been consistent in finding that direct supervision has led to reduced assaults and other serious incidents, and lower costs. Findings on the quality of working environments for staff are positive but mixed. Methodological issues and recommendations for future research are considered.

Keywords: direct supervision; jail; prison; architecture; evaluation; violence; assault; vandalism; stress

One of the most striking correctional reforms of the late 20th century has been the development and dissemination of the direct supervision (DS) model of design and management (Wener, 2005). DS was dramatically different from traditional approaches in which the officers kept order mainly through the use of visual surveillance and hard barriers (referred to herein as non-DS systems [NDS]).¹ DS was a proactive management system intended to prevent negative inmate behavior before it occurred (Nelson, 1983a).

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DS decentralized administrative, classification, and case management functions to small living units and normalized the environment by using commercial grade furniture and fixtures, as well as noninstitutional colors and materials. The job of the correctional officer became one of supervising inmates through direct contact, outside of officer stations. The principles of DS call for disseminating a clear management philosophy and providing intensive staff training and supervision (Bogard & Pulitzer, 1990; Davis, 1987; Nelson, 1990).

Several writers have suggested this model works because it addresses the social and psychological needs of inmates and staff by assuring personal safety, providing privacy for inmates, making it clear the officer is in charge of the living area, and setting positive behavioral expectations (Bottoms, 1999; Gettinger, 1984; Wener, 2000; Wortley, 2003). Others, however, wondered if claims of success were supported by hard data (Wells, 1987). Now, more than 30 years after the opening of the first DS jails, there are many anecdotal commentaries and more than three dozen research reports, including case studies as well as cross-sectional and longitudinal comparative studies, which have attempted to assess the impact of this design and management system. These studies have most often focused on operational issues, including the quality, safety, and security of the housing environment; the cost of construction and operation; and support for management and staff functions.

OPERATIONAL ISSUES

Safety and security. A number of managers and designers have commented on improved staff and inmate safety and reduced incidents through use of DS (Conroy, 1989; Heuer, 1993; Kilbre, 1991; Mueller, 1998; Nelson, 1976, 1983b; Pellicane, 1990; Wallenstein, 1987). Staff and inmates felt the threat of assault was lower at the Chicago and New York Metropolitan Correctional Centers (MCCs)—the first jails built specifically to use DS with adults—than at other jails (Wener & Olsen, 1980). The New York MCC was perceived as much safer than the traditional Wayne County Jail, where inmates felt that fighting was a problem and risk of attack was very high and unpredictable (Wener & Olsen, 1980).

Similar findings came from assessments of the DS Manhattan House of Detention. Inmates reported remarkably low levels of tension and minimal risk of violence or sexual assault (Sigurdson, 1985; Wener, 1985). Staff indicated the risk of assault was much lower than in other New York City Department of Correction facilities and racial tensions were also reduced. These findings were supported by National Institute of Corrections (NIC) audits of other DS jails (Farbstein, Liebert, & Sigurdson, 1996; Sigurdson, 1987a, 1987b). After 1 to 3 years, none of the audited sites had experienced a homicide, suicide, sexual assault, or inmate disturbance. Two had recorded no aggravated assaults, whereas one of the sites suffered four such incidents. The authors described these rates as strikingly low and enviable for any detention facility. In other evaluations of DS jails, inmates and staff also agreed the risk of violence or sexual assault was remarkably low (Wener & Farbstein, 1994a, 1994b; Wener, Knapel, & Vigorita, 1996).

Farbstein and Wener (1989) along with Zimring, Munyon, and Ard (1989) conducted a mail survey of administrators at 52 institutions (38 prisons and 14 jails) followed by onsite case studies of 7 of these settings (4 prisons and 3 jails). The DS and NDS facilities in the large sample did not differ in age of facility or average capacity. DS institutions, however, reported an average of 12.99 incidents during a 12-month period, compared to 32.04 for the NDS institutions ($t = -1.70, p < .10$), and had improved levels of perceived safety. DS facilities offered better surveillance and had lower response times to emergency calls. Inmates in DS settings felt staff did a better job of protecting them.

Knapel, Wener, and Vigorita (1986) surveyed 160 new DS and NDS facilities, all of which had received commendations for their design. It is not surprising that most (80%) rated their design as successful and saw their institutions as safe or very safe (91%). The DS facilities in the sample, though, were rated significantly better for perceived safety.

Other studies that directly compared DS and NDS facilities also found DS environments safer. Nelson and O'Toole (1983) reported the six NDS jails studied averaged 15-fold more assaults (154.3 and 141.5) for a 2-year period than did the five DS jails of similar capacity (10.4 and 8.7), and more than 4 times the number of escapes (39 to 9).

Williams, Rodeheaver, and Huggins (1999) found that more inmates in a DS jail felt safe than in a traditional jail in the same complex (81% to 47%). Staff felt safe in both places and saw no differences in the level of fights, but the DS jail had lower levels of inmate–inmate assaults (12 vs. 33), inmate–correctional officer assaults (0 vs. 3), and incident reports (61 vs. 97).

Senese, Wilson, Evans, Aguirre, and Kalinich (1997) compared a DS jail and an NDS facility in the same county, along with two NDS jails in other states, using archival sources. The DS jail performed much better on safety and rules violations, had significantly lower levels of inmate–inmate violence and inmate–staff violence, far fewer written warnings issued to inmates, and not as many instances where inmate privileges were revoked. The total number of incident reports during two 6-month periods was 50% lower in the DS jail compared to the NDS jail (211 vs. 333), but there were no differences in verbal threats.

Frazier (1985) reported that from 6 months before to 6 months after the move to a new jail in Contra Costa County, California, the level of assaults dropped by 90%. A later study of the same institution (Zimring et al., 1989) confirmed that although there was significant overcrowding in the intervening period, there continued to be a high level of perceived safety among inmates and staff. After the transition from an old to new DS facility in Sonoma County, California, overall assaults were down by 50% (Jackson, 1992). Assaults on staff were down by 25%, there were 90% fewer inmate–inmate assaults, criminal disciplinary infractions were reduced by half, there was 68% less inmate fighting, and the use of disciplinary isolation was reduced 33%. Both male and female inmates felt safer in the new jail.

Bayens, Williams, and Smykla (1997) reviewed archival records from a period 5 years before to 5 years after a move to a DS jail. Although population demographics were very much the same in both periods, 51 of 70 measures of behavior and institutional functioning improved in the 5 years after the move. Overall, serious safety infractions (e.g., fighting, inmate or staff assault) were down 58%, although minor infractions (e.g., insubordination) were up 129% in the postmove period.

Not all reports on DS were positive. Tartaro (2002, 2003) analyzed a data set from 646 jails and found no significant relationship between design and supervision style and the number of infractions but noted that self-definitions of DS may be unreliable. Liebert, Knapel, and Davis (1993) studied a new DS jail that had experienced a number of high-profile incidents, including escapes, serious assaults, and an inmate death. The authors concluded problems in the institution were related to poor design decisions and inadequate implementation of the DS model, including officer training.

Tension and stress. A number of studies have reported lessened levels of tension and stress among inmates and staff in DS institutions (Knapel et al., 1986; Wener, 1985; Wener & Clark, 1977; Wener & Farbstein, 1994b; Wener, Farbstein, & Knapel, 1993; Wener & Olsen, 1980; Zimring et al., 1989; Zupan & Stohr-Gillmore, 1988). Tension was so low in Contra Costa County's DS jail that one visiting correctional official initially thought the inmates had been tranquilized (Wener, Frazier, & Farbstein, 1985, p. 92).

Vandalism and maintenance. Administrators have commented on the lack of graffiti and other forms of vandalism in DS institutions (Nelson, 1983a; Wallenstein, 1987), a finding supported by case studies (Nelson, 1986; Wener & Olsen, 1980) and comparisons among DS and NDS institutions (Farbstein & Wener, 1989; Senese et al., 1997; Williams et al., 1999). After the move to the new Contra Costa County jail, the number of damaged mattresses dropped from 150 per year to none in 2 years; from an average of 2 TVs needing repair per week to 2 in 2 years; and from an average of 99 sets of inmate clothes destroyed per week to 15 in 2 years (Wener, Frazier, & Farbstein, 1987, p. 42). In addition, several studies suggested that DS facilities are perceived to be cleaner, better maintained, and/or more humane settings than NDS institutions (Farbstein & Wener, 1989; Knapel et al., 1986; Wener & Olsen, 1980; Williams et al., 1999).

Contraband. Several studies found particularly low levels of contraband in DS facilities (Senese et al., 1997; Sigurdson, 1985, 1987a, 1987b). Jackson (1992), though, reported contraband up slightly in

DS institutions and suggested this might be because correctional officers had more time to search in the new facility.

Suicide. Administrators have suggested DS institutions experience fewer suicides than NDS facilities (Nelson, 1983a; Saunders, 1995). Sigurdson (1985, 1987a, 1987b) reported no suicides in NIC-audited DS jails, and Senese et al. (1997) and Bayens et al. (1997) reported fewer suicides in DS than NDS institutions. Tartaro (2003), however, found no effect of design and management style on suicides.

Theft and minor violations. Although Wener and Olsen (1980) reported inmates in DS jails felt property theft was not a problem, two studies found that theft and other minor violations increased as major violations decreased in DS facilities (Bayens et al., 1997; Senese et al., 1997) and suggested this might be the result of closer reporting and more aggressive enforcement of rules by officers in these settings.

REHABILITATION AND RECIDIVISM

A number of writers have observed that the use of DS allows jails to offer more in the way of rehabilitative and supportive programs than would be otherwise available (Arbiter, 1988; Ard, 1991; Bordenaro, 1992; Saxton, 1990; Wallenstein, 1987; Wener & Farbstein, 1994b). One study looked closely at the impact on rates of recidivism of being incarcerated in a DS jail that made heavy use of such programs (Applegate, Surette, & McCarthy, 1999).

Archival records were reviewed from the entire 3,100-bed Orange County, Florida, system, which included DS and NDS facilities (Applegate et al., 1999). Rearrest rates of 600 inmates were analyzed for 18 months postrelease and classified by time of incarceration (less than 5 days, 6 to 45 days, or 45 days or more). Fifty-three percent of all released inmates had been rearrested at least once within the 18-month period (mean number of rearrests = 1.54; mean time to rearrest = 193 days). The rearrest rate was significantly related to gender, age, and prior record. Furthermore, when the inmate had spent 23 days or longer in the DS facility, rearrest rate was significantly correlated with time served: "Longer terms of confinement reduced recidivism only when the offenders were housed in new

generation facilities for a substantial portion of their sentence” (Applegate et al., 1999, p. 545). By way of caution, it should be noted that inmates were not randomly assigned to the DS jail but rather transferred there based on a willingness to engage in the program, suggesting possible selection and self-selection bias in the sample.

In sum, the predominance of research evidence indicates that DS design and management fosters more perceived safety among officers and inmates, reduced levels of serious and violent incidents, fewer inmate assaults on staff, and a diminished number of inmate–inmate assaults. There is also some evidence for lower levels of vandalism, better staff–inmate interactions, improved levels of stress, decreased escapes or risk of escape, a drop in the rate of fires, cleaner and better maintained settings, and improved recidivism. At the same time, there is some evidence of increases in minor offenses in DS institutions.

INSTITUTIONAL COSTS

Advocates have argued that the DS model results in lower construction costs, presumably because high-strength, high-impact, vandal-resistant materials are less necessary. Administrators have, indeed, reported reduced construction costs by the use of wood or metal swinging cell doors, instead of sliding solid metal doors, and porcelain, instead of steel, toilet fixtures (American Society of Civil Engineers, 1992; DeWitt, 1987; McKenzie, 1997; Mueller, 1998). Farbstein and Wener (1989) and Nelson (1988a) reported that DS institutions reduced construction costs by using less expensive materials.

Because of previous successes with DS, officials in Costa County, California, experimented with lower cost dry cells (cells without toilets) and drywall construction in their next jail (Ard, 1991). Ten years later, there are anecdotal reports suggesting that administrators are not happy with how drywall construction has held up to traffic and wear and tear, although vandalism has not been a problem. There are also concerns about lack of flexibility in assigning inmates to rooms provided by dry cells as population levels increase (V. Persons, NIC, personal communication, November 5, 2003).

Additionally, it is contended that one officer can oversee many more inmates than with traditional models, consequently resulting

in lower operations costs (DeWitt, 1987; Pellicane, 1990). A comparison of actual operational costs for the new DS Dade County Stockade to those that had been previously projected for a traditional jail found significant savings (Atlas, 1984). The DS staffing for 1,000 inmates was 172 positions, leading to an annual operating cost of \$6.2 million per year, compared to the projected staffing for a traditional jail of about the same size of 295 positions at \$9.3 million per year. Atlas (1984) argued that further cost savings might be obtained from reduced sick call rates, reduced time lost to injury, and less turnover of officers. Another DS jail provided a movable wall between two 64-cell living units that could be opened each night, allowing two units to be supervised by a single officer, reducing staffing costs (Ard, 1991; Wener & Farbstein, 1994b). McNamara (1992) also suggested that DS allowed officers to supervise more inmates and indicated one officer could reasonably supervise as many as 80 inmates in a properly designed DS setting.

NIC audits of DS jails noted the commercial grade furniture seemed to be holding up well, leading to very low repair costs (Sigurdson, 1985, 1987a, 1987b). Sigurdson (1985) also reported that officers in the Manhattan House of Detention claimed 1,810 fewer sick days than officers at equivalent New York City system facilities, resulting in a savings of \$250,000 in overtime pay. Farbstein and Wener (1989) found that DS facilities reported requiring fewer staff to operate, were less concerned about condition of confinement lawsuits (a potential expense item), and were more likely to rate soft (presumably less expensive) materials as appropriate for use in their institution. Nelson (1986) also found DS jails required fewer staff and experienced less sick leave and staff turnover.

However, Williams et al. (1999) found no savings in staffing levels or costs in a DS facility that was compared to other institutions. Also, Bigelow (1993) reported that staffing costs in three DS facilities were much higher (60%) than for three NDS institutions, mostly because of higher staff-to-inmate ratios. The author noted that the staffing disparities could be the result of differing facility goals that might, for instance, lead to greater use of program staff at the DS jails (T. Bigelow, personal communication, January 15, 2003).

In short, there is evidence that DS can result in reduced operational costs with respect to staffing, as well as lessened maintenance

costs, although several studies did not support that finding. There is also some support for the contention that DS can also result in lower construction costs, although assuring comparability of situations and measures for assessing construction costs is particularly difficult.

STAFF AND MANAGEMENT IMPACTS

DS purports to delegate significantly more control and authority to correctional officers, who are expected to enforce rules closely and make decisions about infractions as events occur, with less need to bump every infraction to a higher ranking officer or infractions committee. The intended result is increased job satisfaction and professionalism, and an enriched working environment.

Administrators and planners have commented, for instance, that staff members like to work in these settings (Kilbre, 1991) and DS made the use of cross-gender staffing more possible (American Correctional Association, 2000; Wallenstein, 1990). The MCCs, for example, were pioneers in using female officers on male units where females were shown to be at least as effective as male officers in maintaining order and at no more risk of assault (American Correctional Association, 2000; Wener & Clark, 1977).

Job satisfaction and enrichment. Results of research on job satisfaction are inconsistent. Zupan and Menke (1988) conducted a longitudinal study of work perceptions among officers 6 months before and after the transition from an NDS to a DS jail. Some improvements were reported in job satisfaction, but changes were fewer and more modest than had been predicted. The authors hypothesized that staff were negatively affected by reduced inmate distance and their limited ability to withdraw from contact with inmates. Conroy, Smith, and Zupan (1991) also found that compared to officers in traditional jails, officers in DS jails were more satisfied with their jobs.

On the other hand, a study comparing four DS with three NDS facilities (Zupan & Menke, 1991) found no differences in job enrichment and motivating potential. DS officers were more satisfied with some aspects of their job (environment, pay, promotion possibilities) but less so with others (the character of work, the quality of

supervision). The authors suggest this latter result may be because the officers in traditional jails are less independent and get more supervision. Jackson (1992) also found a split response. Correctional officers were more satisfied with their jobs in DS jails and were more positive about people and pay but less happy with job feedback, possibly because of more isolation from other officers. Correctional officers felt they had more space and freedom in the DS facilities and had less crowded conditions but also felt they had experienced less teamwork in the new jail.

Taking a different tact, Stohr, Lovrich, Menke, and Zupan (1994) compared several DS facilities according to their fit with DiIulio's (1987) control and investment models of inmate management. Contrary to DiIulio's predictions, the data indicated increased job satisfaction, motivation, and organizational commitment in the two DS jails that better approximated an employee investment model than in those that more closely approximated control models of management.

Professionalism. Wallenstein (1987) claimed the DS model changed the role of the officer from one of opposition, coercion, and survival to one of professional competence. Others have also noted officers in DS facilities feel a greater sense of professionalism (Wener et al., 1987). Officers in the first DS jails, including some who had been skeptical about working in such close proximity to inmates, commented that in these new jails, officers felt less like guards and more like professionals. Social climate was found to be better in a DS jail than a comparable NDS institution (Houston, Gibbons, & Jones, 1988). Similarly, there were improvements noted in organizational climate among staff after a move from a traditional to a DS jail (Zupan & Menke, 1988).

Officers have been reported to feel an increased sense of control in DS environments (Williams et al., 1999). In contrast to staff in traditional jails, DS officers are very career oriented (Menke, Zupan, & Lovrich, 1986; Zupan & Menke, 1987). Officers saw interpersonal skills as the key to successfully managing their job and felt that problems were inherent in the nature of the correction officer's work. The authors indicated that a "lack of coherent philosophy linking officer practices with detention facility goals" (Zupan & Menke,

1987, p. 15) could lead to operational problems and concluded there was a need to redefine tasks and responsibilities to significantly enrich the officer's job.

Staff stress. Several case studies reported that staff experienced generally low levels of tension in DS jails (Wener, 1985; Wener & Olsen, 1980). Other research has revealed staff in DS institutions had lower levels of stress than those in NDS facilities (Conroy et al., 1991; Farbstein & Wener, 1989; Knapel et al., 1986). Conroy et al. (1991) pointed out that the most important issue for officers was not the amount of job-related stress but rather job effectiveness and the quality of work. Compared to NDS officers, DS officers had fewer instances of on-the-job hassles and stress-inducing events.

Not all were so positive, though. One study found very high levels of stress in several DS jails (Stohr, Lovrich, & Wilson Gregory, 1994). The authors suggested that some DS jails manage stress better than others and that good management can increase job satisfaction and reduce stress. Another study found turnover, an indicator of stress, was high (13.8%) in several DS jails (Stohr, Self, & Lovrich, 1992). Some staff left because they were simply uncomfortable with the level of inmate interaction required in a DS setting.

In sum, there is mixed evidence that officers in DS jails are more satisfied with their jobs and the quality of their working environment. DS officers have reduced sick time, a greater sense of professionalism, are more career oriented, feel less hostility and more in control of their environment, and experience an improved organizational and social climate. Although several studies indicated reduced levels of stress for officers in DS institutions, others found no stress differences and no significant differences in job enrichment or motivating potential.

CONCLUSION

METHODOLOGICAL ISSUES

There are methodological concerns inherent in the kinds of field research efforts required to study jails and prisons in situ that can limit claims for the generality of findings that might emanate from

any individual study (see Cook & Campbell, 1979). Many reports must be considered anecdotal in nature, often written by those with significant investment in the DS model. Others are individual case studies that do not directly compare DS and NDS settings. Those that do make direct comparisons across settings or time are at best quasi-experiments.

Oftentimes, the DS institution being studied is a replacement facility and therefore significantly newer and possibly with more resources than the traditional one to which it is being compared. In addition, comparability across institutions of types of inmates, training and level of staffing, or number and quality of programs and other resources is often unknown. Moreover, it can be challenging to know how well institutions that claim to use the DS model have actually adhered to the tenets and principles of that system based on survey data alone. There is evidence of great variability of practice among institutions purporting to use DS (Farbstein & Wener, 1989; Tartaro, 2002). Whatever the supervision system, a great deal of variance in facility operation depends on the quality of institutional management, something that is not easy to measure and experimentally or statistically control. Studies that look at multiple institutions under a single management team, such as Williams et al. (1999), have a significant advantage in this respect.

EFFECTIVENESS OF DS

The research reviewed here (in spite of any methodological limitations) and decades of professional practice show that the DS model is neither a dangerous nor risky proposition, as some once feared. It is an effective means of inmate management that has been accepted as best practice by agencies at the federal, state, and local levels and by accrediting organizations. DS facilities are consistently perceived by staff and inmates to have safer environments and, in fact, experience fewer violent or security-related incidents. The emerging pattern indicates that serious and major infractions are much lower in DS facilities, whereas minor infractions and property theft may be the same or higher (Bayens et al., 1997; Senese et al., 1997). It is too soon to know if this latter result is a real difference in behavior or an artifact of closer observation, reporting, and recording of events. Officers in DS settings

are expected to closely attend to small infractions and are freed to do so by the relative infrequency of larger and more dramatic events.

Staff who work in these living units appear to be clearly in control of the institutional environment, allowing DS jails to offer a range of programs that directly address the reasons for incarceration. There is evidence that these programs in one institution may have a positive impact on recidivism (Applegate et al., 1999), although rigorous cross-sectional and longitudinal studies are needed to provide process as well as outcome evaluations of these efforts. It also would be useful to see if similar results extend to DS prisons, where rehabilitation programs are more common.

The least clear and most mixed results concern management and staff issues. For instance, some studies found staff in DS jails to be more satisfied (Conroy et al., 1991) and less stressed, whereas others found no differences in important measures (Zupan & Menke, 1991) and high levels of stress (Stohr, Lovrich, & Wilson Gregory, 1994). This may reflect the reality that working in a DS institution is a mixed blessing in which officers have more control and authority but less immediate contact with other staff and lack the comfort of a hard barrier between themselves and potentially violent individuals. It is, arguably, both a more professional and rewarding job and a more demanding one. It is this reality that may be reflected in the conflicting results of some studies. Further investigation should follow Zupan and Menke (1988) and Stohr, Lovrich, Menke et al. (1994) by emphasizing independent assessments of actual operational and management style.

It would also be useful to pay more attention to gender differences in the way inmates respond to traditional and DS settings. Because most correctional facilities have largely male inmate populations, women in many settings are far more restricted in access to spaces and facilities (Wener & Farbstein, 1994b). Several studies have suggested that women experience the loss because of incarceration differently and more severely than men, including in DS facilities (Jackson & Stearns, 1995; Pogrebin & Dodge, 2001).

There is some evidence to support the claim that DS institutions are less expensive to build and operate. Operational cost savings are difficult to judge because they are dependent on staffing assumptions and programmatic goals. Early DS institutions extended the

understood limits for the number of inmates one officer could effectively supervise on living units, and these ratios have been stretched even further in light of growing jail populations. Newer facilities have added staff to run habilitative programs in the hope that these increased staffing costs will result in long-term gains by reducing incarceration rates. There may be other potential operational cost savings from reduced staff sick days and turnover and lowered repair costs, although these savings have not been consistently documented. Research in the future needs to carefully measure costs but at the same time look at institutional goals, level of control provided over inmate behavior, and quality of operations.

The superiority of DS was not as strongly supported by the findings in several studies (Senese et al., 1997; Zupan & Menke, 1988) as might have been expected given the wide and extreme differences described in early reports (e.g., Frazier, 1985). There are several possible explanations for the difficulty some studies have had in finding larger effects. First, it is possible that early reports in some ways overstated the benefits of DS because of the stark comparisons that were made with jails that were old, in poor repair, and had insufficient space.

In more recent studies, DS jails have been compared to newer and better serviced alternatives. Several studies compared NDS and DS institutions, which were operated by the same agency. Administrators in these systems may have learned lessons in implementing DS that transferred to operation of the NDS institutions (Houston et al., 1988; Senese et al., 1997; Williams et al., 1999). Traditional institutions may be better than they were 25 years ago, at least in part as a result of the implementation of the DS model.

On the other hand, there are several reasons research may actually understate the success of DS. A number of studies found DS facilities experienced significantly more crowding than traditional ones (Farbstein & Wener, 1989; Stohr, Lovrich, & Wilson Gregory, 1994; Zupan & Stohr-Gillmore, 1988). Though DS facilities have performed well in spite of overcrowding, issues such as safety, stress, program implementation, staff-inmate communication, and social climate may still be affected (Liebert, 1996; Senese et al., 1997; Zupan & Menke, 1991). Although there has been considerable attention to individual impacts of institutional crowding (Paulus, 1988),

more research on ecological and system-wide effects is needed (Gaes, 1994).

Paradoxically, this level of overcrowding may occur, at least in part, because DS facilities are seen to operate so well. Judges may be less reluctant to use the sanction of incarceration to places seen as safe and humane (Lund, Morrise, & Jordan, 1998).

The positive effects of DS may also be understated because, as noted earlier, not all of the institutions classified as DS adhere to the principles advocated by its originators (Liebert, 1996; Nelson, 1988c). Implementation of DS without sufficient staff training, for instance, can lead to operational problems (Hughes, 2003; Liebert et al., 1993). It is important for future research to independently verify application of the DS model so that comparisons can be made on the basis of actual institution design and operation rather than from self-applied labels.

DS seems to be a robust model but one with limits. It appears able to survive overcrowding, environments harder than originally proposed, fixed (though open) officer stations, dormitories instead of private cells, and high inmate–officer ratios. DS facilities may have difficulties, though, when the level and quality of training is insufficient. Research should study more closely how these limitations affect operation.

DS was a radical departure from accepted practice in a field known for conservative thought. It is never easy for significant innovations to spread (Rogers, 1995) and even more so when change requires a commitment to significant capital costs in ways that may be politically unpopular. At a time in the 1970s when problems of urban violence seemed intractable, here was an approach that took environments where violence was endemic and created a calm and safe atmosphere. Moreover, it did so in a way that eschewed the hard-edged big house approach in favor of improved communication and social contact.

The improbable success of DS may have important things to say about several areas of intellectual endeavor. It is, significantly, a management system, and as such, DS has been discussed and studied for how it implements important management principles and how these lessons might be applied to different settings, including other kinds of institutions or work environments (Davis, 1987; Zupan & Menke,

1991). The accumulated experience of the use of DS in jails and prisons are also important to architecture, social psychology, and environmental psychology. Rarely has there been so dramatic a demonstration of how the physical and social environment can work to change behavior. The difference in appearance and atmosphere between older traditional facilities and DS jails and prisons is apparent and palpable. In research fields that often measure important change in terms of a few percentage points of variance, the broad changes in levels of aggression and in social relationships between inmates and officers can be striking.

NOTE

1. There are several kinds of NDS models, as described by Nelson (1988b), but for this discussion, we will not make distinctions between NDS types.

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