The Effects of Administrative Segregation: A Lesson in Knowledge Cumulation

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Abstract and Keywords

This essay considers debate over the extent to which some inmates should be isolated from others within prison, the impact of isolation on psychological well-being during confinement, and the implications for supermax prisons with 23-hour lockdown. The need for administrative segregation and solitary confinement is assessed in the context of improving the safety of individual inmates as well as preventing collective violence. These ideas are contrasted with the downside of isolation, including the possibility of compounding problems with existing mental illnesses, the development of "new" psychological problems during confinement, increased demands for psychological and psychiatric resources, and the problems posed for successful re-entry. However, contrary to some scholarly discourses, evidence to date suggests that administrative segregation does not produce dramatic negative psychological effects unless extreme conditions apply.

Keywords: administrative segregation, solitary confinement, mental illness, psychological problems during confinement, prisoner re-entry

The effective management of prisons has been a magnet for polarizing views among penologists. Recall the "nothing works" debate (Martinson 1974), which focused on the failure of prison treatment programs (Cullen and Gendreau 1989). Those who opposed Martinson's position swiftly became the targets of ad hominem attacks (see Gendreau and Ross 1979; Palmer et al. 2012). More recently, the professional competency and ethics of researchers (see O'Keefe et al. 2010) examining the effects of administrative segregation (AS) have similarly come under fire from those (e.g., Mohr 1985; Grassian 2010) who have disputed the findings that AS does not uniformly result in debilitating psychological effects for all inmates.

Before addressing the crux of this issue—namely, the magnitude of the effects of AS—we provide some background information on the history of AS. The informative reviews by Haney (1997) and Scharff-Smith (2006) on the evolution of the use of AS in corrections would prove helpful in this respect. Nowadays, AS is typically defined as 23 hours a day of lockup in an environment with severe restrictions placed on auditory, visual, and kinesthetic stimulation. By comparison, regular living conditions within prisons or jails provide inmates with access to various activities (i.e., programming, recreation), which affords them a degree of meaningful social interaction. Inmates in AS are not representative of the general population as typically they have posed a threat to the good order of the prison or they have been placed in AS at their own request for various reasons (Pizarro and Narag 2008). There is also considerable variation in the administration of AS across jurisdictions, particularly in the United States (Metcalf et al. 2013) as compared with that of other countries (e.g., Canada, the UK) where federal authorities are responsible for the great majority of inmates.

In assessing the effects of AS, this essay proceeds in the following manner. Section I discusses the three dominate schools of thought on the topic. In order to assess the validity of these competing perspectives, the essay examines three relevant and distinct literatures: the general prison life literature (Section II), the sensory deprivation (SD) literature (Section III), and solitary confinement (SC) studies involving prisoners (Section IV). Section V offers a rationale for why some offenders may report greater distress while in AS. Section VI outlines what needs to be done in terms of additional research and suggests several clinical practice guidelines that will ensure inmates are treated more humanely while in AS. The main conclusions discussed here include the following:

- Examination of the general prison incarceration literature, the studies on SD for both nonoffender and offender samples, and a meta-analysis of the studies on inmates exposed to AS does not support the view that AS produces dramatic negative psychological effects unless extreme conditions apply.
- These findings are consistent with predictions from two of the theories of prison life and the perceptual sensory adaptation literature. It is likely that the failure to recognize the confounding effects of response bias factors has led to previous overestimations of the negative effects of AS.
- When negative effects from AS occur, it is primarily due to how offenders are managed by prison authorities.
- We recommend that to better understand the effects of AS researchers must rely on a meta-analytic perspective and work directly in prisons to gain the necessary data. Researchers must gather information on how correctional officers supervise inmates, search for individual differences among inmates that predict a negative response to

AS, and study the effects of AS in those prisons whose substandard physical conditions, lack of treatment programming, and extreme length of stay may produce iatrogenic consequences.

• In order to reduce the use of AS in prisons, recommendations are made regarding the clinical management of mentally disordered offenders, the monitoring of the psychological health of inmates in AS, and development of incentive programs to encourage inmates to return to the general population.

I. The Effects of AS

There are two schools of thought regarding the effects of AS. The first characterizes AS as a form of torture, resulting in an environment that is psychologically crippling and sufficiently destructive to promote self-harm among inmates (Jackson 1983). Proponents of this view have been unwavering in their belief that AS is capable of producing ubiquitous pathological effects that quickly lead to lasting emotional damage, functional disability, and psychosis (Grassian 1983; Scharff-Smith 2006; Kupers 2008; Haney 2012).

The second position is that AS produces much less intense effects and only for some inmates in prisons that meet basic standards of humane care (Suedfeld et al. 1982; Gendreau and Bonta 1984; Wormith 1984; Clements et al. 2007; O'Keefe et al. 2010; Gendreau and Thériault 2011; Gendreau and Goggin 2013; O'Keefe et al. 2013; Valera and Kates-Benman 2015: O'Donnell 2016), rather, other factors in the prison environment put offenders at greater risk of psychological harm.

In attempting to establish the validity of these two schools, we take as our starting point Toch's (1984, p. 514) call for a "science of imprisonment as well as a science of inmate reactions to imprisonment." In so doing, we adhered to the investigative process adopted by the Canadian school of rehabilitation in their development of a viable theory of effective offender treatment (Gendreau, Smith, and French 2006; Andrews and Bonta 2010; Cullen and Jonson 2011). Their approach involved the search for convergent validity from diverse empirical and theoretical literatures in order to demonstrate that certain types of treatment programs produce robust, replicable effects that will both protect the public and benefit inmates. As part of this process, a meta-analysis was used to quantitatively synthesize the results, in contrast to narrative reviews, which often reach inaccurate conclusions, meta-analysis provides a point estimate of the effect size (ES) and an estimate of its precision (Beaman 1991; Schmidt 1992; Cooper and Hedges 1994).

In this essay we follow a similar investigative route in the hopes of improving our understanding of the issue by examining three distinct literatures as a means of assessing the relative consistency of findings regarding the effects of AS. We start with a review of the effects of general conditions of prison life, followed by a summary of experimental studies on SD in the field of sensation and perception, and finally, a meta-analysis of SC studies involving offenders.

II. The Effects of Prison Life: The General Case

If AS represents the most powerful prison "dosage" that results in the most psychological pain among inmates, it would be reasonable to assume that being exposed to a lesser dosage of prison should produce psychological distress, although to a lesser extent. Three theories of the effects of prison life offer some predictions in this matter (Gendreau and Smith 2012). One of them directly contradicts the point of view that AS necessarily has vivid negative effects on inmates' psychological health, while the other two focus on other outcomes (i.e., misconducts, recidivism) that have been ignored in the AS literature.

In the first case, a theory originally known as the importation model (Thomas and Foster 1973) that goes under the colorful title of "behavioral deep freeze" (Zamble and Porporino 1988, 1990), submits that prisons are relatively neutral environments. Framed in the language of coping theory, Zamble and Porporino (1988, 1990) asserted that inmates who cope badly with prison have typically demonstrated inadequate coping skills throughout much of their lifespan.[1] In fact, inmates may cope better with prison life than in the outside world because, there, behaviors are restricted by the prison regime. This theory also accounts for how extra-prison factors (e.g., family, friends) may affect coping behaviors in prison. The evidence in support of this theory comes from a number of studies with large sample sizes using cross-sectional and longitudinal designs ranging from brief periods of several months to more than 10 years that assessed inmate adjustment to prison life (see Wormith 1984; Bonta and Gendreau 1990). On the basis of this literature, as well as his work with Porporino, Zamble (1992, p. 420) concluded that "the most striking result was in the total absence of any evidence for *general* or *widespread* deteriorative effects" of incarceration (emphasis added). The deep freeze theory also applies to mentally disordered offenders. Hodgins and Côté (1991) reported that 86 percent of mentally disordered offenders exhibited similar pathology prior to being admitted to prison and being placed in AS.

Subsequently, two reports have appeared that are in agreement with Zamble's (1992) conclusion. Walker et al.'s (2014) narrative review of 10 prison studies found that

offenders reported mental health problems upon first entering prison, but in 7 of the 10 studies an improvement in mental state over time was reported. Two studies reported little change in mental health status, and one study showed an increase. Second, the Bauer (2012a) cross-sectional study found mixed results: some inmates responded poorly to incarceration, while others adjusted quite well (see Morgan et al. 2014).

In the absence of a meta-analysis of this literature, there are no estimates of the precise magnitude of the effects of prison life, although we expect it is likely close to zero given the previous summary of results. Until one is conducted, we are left with two meta-analyses on crowded living conditions, which should, ostensibly, result in greater levels of inmate distress than living in prisons that have adequate housing space. The interpretation of the magnitude of the effects from crowding studies, however, depends on what one considers a large effect. We took the data from Table 1 of Bonta and Gendreau's (1990, p. 352) meta-analysis on prison crowding and converted their ESs into *r* values, with accompanying 95 percent confidence intervals (CI). This offers a plausible range of ES values. The correlation between *density of living conditions* and *physiological indices* (e.g., elevated heart rate, blood pressure) and *feelings of personal discomfort* were $r = .20$ (CI = .14, .26) and $r = .22$ (CI = .15, .29), respectively. We regard estimates of this width as being too imprecise to form more definitive conclusions for policy purposes (i.e., CI width > .10; Gendreau and Smith 2007). When it comes to expressions of behavioral outcomes such as assaults and misconducts, the point estimate for crowding was quite a bit less and the estimate was more precise (.06–.08). The CI predicts that there is an 83 percent chance that this CI result will include the mean of a future replication experiment (Cumming 2012). Subsequently, a meta-analysis by Franklin, Franklin, and Pratt (2006) on the effects of crowding replicated these results. These authors found an ES of $r = .07$ (CI = .02–.11).

None of these findings dismiss prison overcrowding as inconsequential to the goal of providing humane care of inmates. Future research in the area must explore how factors such as management style, staff case management practices, abrupt changes in prison population involving younger inmates, and inmates' perceptions of control and "feelings" of being crowded moderate the ESs reported here (Bonta and Gendreau 1990; Franklin, Franklin, and Pratt 2006; Steiner and Wooldredge 2008, 2009).

The other two theories of prison life have primarily focused on criminogenic outcomes. Deterrence theory rests on the assumption that the stigmatizing and humiliating experience of prison life should be an antidote for pursuing a criminal lifestyle (see Gendreau and Smith 2012). It has been proposed that prison life should be made much harsher (e.g., physical punishment) to achieve the desired effect (see Stubblefield 2002; Gendreau and Goggin 2013, p. 764). The other theory, known as the "schools of crime,"

predicts the reverse outcome. Through a process of prisonization and social learning, inmates adopt the antisocial culture of the setting, which in turn reinforces criminogenic values (Clemmer 1940; Buckstel and Kilmann 1980). The longer the time spent in prison, the worse the result, which should be reflected in higher rates of recidivism (Jaman, Dickover, and Bennett 1972).

The support for the deterrence school prediction is almost entirely based on anecdotal evidence (Pizarro and Narag 2008) or the weakest of quasi-experimental research designs (Ward and Werlich 2003). On the other hand, the research results support the schools of crime hypothesis. Large sample primary studies and meta-analytic summaries (the total sample sizes are several hundred thousand) that have compared offender outcomes after serving time in prison versus being placed on community sanctions as well as outcomes after serving varying lengths of sentence all indicate that time in prison increases recidivism and makes prison adjustment worse (e.g., increases misconducts), usually in the range of 5 percent to 30 percent (see Smith, Goggin, and Gendreau 2002; Gendreau and Goggin 2013). There is one major caveat to this conclusion: these negative effects appear to be moderated to a large extent by lower inmate risk levels and to a lesser degree by “harsher” prison life conditions (i.e., maximum security environments; Gaes and Camp 2009; Jonson 2010; Gendreau and Smith 2012).

In conclusion, we recognize that previously cited literature is a distal representation of the living conditions found in AS. Studies must take into account the psychological histories of inmates; otherwise there may be a misattribution of negative symptoms to the physical structure of prison environments. Finally, this literature identifies criminogenic outcomes as the most adverse outcome of incarceration.

III. Sensory Deprivation

One of the puzzling aspects of the AS debate has been the lack of recognition of the SD literature (see Zubek 1969). To use a musical analogy, in order to understand the entire “scale” of the effects of confinement, would not the first step be to learn the “root notes,” which, in this case, can be found in the psychological sensation and perception literature? This field of study seems, at first glance, to be a historical oddity, far removed from the interests of penologists. To be charitable, some AS researchers may have encountered this literature but had their interest soon extinguished because SD studies are a complex mix of subtle definitions, different methods, and different procedures. This research may also have been ignored because of the intellectual egocentrism and ethnocentrism that exists within and between the disciplines that work in corrections, resulting in a silo

model of knowledge generation (Gendreau 1996; Gendreau and Goggin 2013). Whatever the case, a failure to respect this body of knowledge has been most unfortunate.

The rush to judgment on the effects of SD began with the legendary McGill experiments in the 1950s (see Gendreau and Thériault 2011). In these studies, college students were subjected to conditions[2] that were more severe than those found in any AS units of which we are aware. The McGill findings produced cognitive deterioration and visual and auditory hallucinations within a relatively short time (e.g., two to three days). In later years, however, such symptoms were not replicated in studies of up to 14 days using either SD modality (Zubek 1969). The consensus among experts in the area was that the studies were influenced by the powerful demand characteristics of settings within which they were conducted. In other words, the results were contaminated by participant response bias (Orne 1962). We discuss two studies that epitomize this point.

The first, by Jackson and Kelly (1962), was a telling example of the formidable influence of instructional set. Fourteen students were subjected to just one hour of perceptual monotony conditions. They were warned to anticipate unusual effects and were administered a placebo hallucinogen they were told might facilitate these experiences. All subjects reported marked visual, auditory, somesthetic, emotional, and cognitive distortions of reality. Some thought their hallucinations were real. In the second study, by Orne and Scheibe (1964), similar findings were reported *without* employing perceptual monotony or restricted environmental stimulation. All the experimenters had to do to produce results comparable to those found at McGill was to manipulate non-SD features of the environment, such as the dress and demeanor of the experimenter, material in the room, and a medical tray full of various items, and provide a panic button in case participants felt they might be vulnerable to becoming distressed. The control group, meanwhile, was not subjected to any of these procedures while placed under the McGill-like perceptual monotony conditions. Reported symptoms among controls were three times less than that of the experimental group! Orne and Scheibe, it should be noted, did not deny that SD did produce some negative psychological effects.

By the early 1970s, several hundred SD experiments had been conducted (Zubek 1969). Suedfeld (1975) described a survey he undertook of prominent research programs in the field involving 3,300 subjects of widely varying backgrounds, both volunteers and nonvolunteers. He reported that some participants reacted negatively but “one rarely finds, particularly in more recent studies, extreme emotionality, anger, and anxiety” (p. 62). Decrements in performance were usually found in the appearance of colors, spatial orientation, or arousal to visual stimuli. The effects usually dissipated shortly after leaving the SD venue. Negligible results have been found in a number of tactual, visual, and kinesthetic tasks while improvements have been reported on auditory tests and some

intellectual tasks.[3] Tolerance of SD was as high as 90 percent, and the incidence of hallucinations that lasted for a significant period of time after SD was about 1 percent.[4]

As with the general incarceration literature, theory contributes to understanding why some of these results occurred. Beginning in the 1890s, perceptual researchers revealed how the sensory system successfully adapted to acute distortions in their sensory modalities (e.g., alterations in the visual field; Stratton 1896). Subsequently, a perceptual adaptation theory was developed by Helson (1964), which laid the foundation for understanding how organisms integrate stimuli and adapt to changing patterns and magnitudes of sensory input. Thus it comes as no surprise that many SD research participants were able to cope with the lack of stimulation, recognizing that the experimental condition was generally limited (up to 14 days) and that the researchers involved took care to monitor the health of experimental subjects.

In summary, while no meta-analysis has been carried out on the perceptual literature SD studies, our estimate from Suedfeld's (1975) narrative review suggests that overall there is likely a small negative effect of SD. Admittedly, the duration of SD exposure in these studies was much less than that seen in prisons. At the same time, experimental SD subjects were totally unfamiliar with the process. This stands in contrast to the experience of offenders who may find themselves in prison SD conditions that are typically far less forgiving than those presented to college students (Zubek et al. 1969). Moreover, this literature is very strong methodologically (e.g., true experiments and quasi-experimental designs) with careful attention paid to measurement. There is also a valid theory in support of the findings.

Last—and this is a crucial point regarding the generalizability of results from SD nonprison settings to SC in prisons—it has been found that the SC situation within prison is a reasonable facsimile for the SD literature. The replicable findings found in SD experiments (e.g., EEG and plasma cortical stress levels, arousal to sensory input, perceptual adaptation, and health outcomes) have also been corroborated in prison SC settings (e.g., Ecclestone, Gendreau, and Knox 1974; Gendreau et al. 1972). Next we explore the prison AS studies, the ultimate test of the two schools of thought on the effects of AS.

IV. Prison AS studies

The debate over the reputed harmful effects of AS gained momentum 30 years ago with the publication of a study by Grassian (1983). His assessment of 14 inmates in AS alleged that they suffered from massive free-floating anxiety, aggressive fantasies, and paranoia,

among other responses. This study was an instant classic in the field and became a mantra in the media (Gawande 2009; Keim 2013). Fast-forward to 2010 and the publication of O'Keefe et al.'s (2010) Colorado AS study, later published in the *Journal of the American Academy of Psychiatry and the Law* (O'Keefe et al. 2013).[5] This study has quickly become infamous, especially among its detractors.

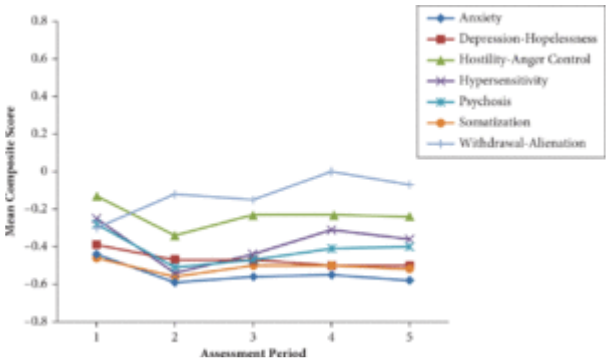

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Figure 1. Mean scores on the seven composite measures over time for segregated group of inmates with no mental illness

Source: Figures based on data reported in O'Keefe et al. (2010)

In our view, the Colorado study was an outstanding example of applied correctional research. It was planned with great care, the choice of dependent variables for measuring mental health symptoms were state of the art, and the design was rigorous with repeated measures encompassing a variety of constructs within a one-year follow-up. The sample size (n = 247) was impressive for a study of this type. The results are about as conclusive as possible that the experience of AS within the Colorado penitentiary studied did not result in an escalation of psychological problems. The data for this study are presented in two composite figures (see Figures 1 and 2), which we adapted from O'Keefe et al. (2010). As can be seen in Figure 1, with the exception of one outcome, inmates with no mental illness demonstrated an initial *decline* in symptomology with a subsequent rise to approximately initial levels.

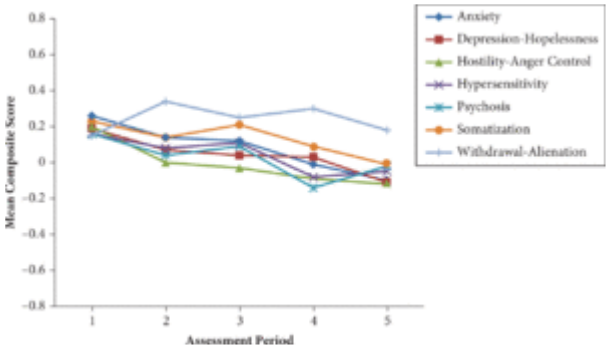

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Figure 2. Mean scores on the seven composite measures over time for segregated group of inmates with mental illness

Source: Figures based on data reported in O'Keefe et al. (2010)

Figure 2 depicts that mentally ill inmates reported, as expected, more symptomology at the first assessment period, but, with one exception, there was a slight decline in six of the seven symptom domains. Overall, 20 percent of the inmates showed improvement over time while 7 percent continued to get worse (Metzner and O'Keefe 2011).

Not surprisingly, some of the reactions to O'Keefe et al.'s (2010) findings were histrionic. Grassian (2010, p. 4) and Grassian and Kupers (2011) accused O'Keefe et al. of gross incompetency for producing "garbage in and out" results. What is more, they claimed that the findings were biased because of the "attractiveness" of one of the investigators, which apparently intimidated inmates in AS from revealing their "real" feelings so as to protect their self-worth. Some of the other criticisms of O'Keefe et al. (see Gendreau and Thériault 2011; Grassian and Kupers 2011; Metzner and Maureen 2011) were characteristic of standard knowledge destruction techniques commonly used in corrections where information is accepted and/or rejected according to moral and/or personal values, raising suspicions about errors in measurement and claiming a phenomenological inquiry is superior because human experience cannot be captured by checklist measures (e.g., Beck Depression Inventory) even if they are well validated. Interestingly, the only researchers to use a phenomenological measure that interprets people's experience from their own perspective (i.e., Repertory Grid Technique) in AS studies was led by the first author (see Ecclestone et al. 1974). This study found no adverse effects of AS on inmates' personal constructs. For the record, O'Keefe et al. provided a cogent defense of their methodology and discussed the limitations of their research.

In contrast to the Colorado study, what is the quality of the evidence touted by critics as being the "truth" about AS? And what is their theory? Regarding the evidence, there are two issues. One concerns response bias and the second study quality. We have already provided two persuasive examples for one type of response bias (e.g., Jackson and Kelly 1962; Orne 1962). A second form comes from the field of cognitive psychology, where

memory researchers have demonstrated that it is easy to influence how people respond to questions (Gudjonsson 1986; Fisher and Geiselman 1992; Gudjonsson 1992; Loftus 2003). Participants are often eager to take the path of least resistance and provide the answer that they believe is acceptable to the experimenter, whose position of authority has a powerful influence. The interviewee does this to protect his or her self-esteem and/or because it serves some instrumental gain. Moreover, subtle wording of questions and instructions, even the altering of one subtle word, can change recollections of past events (Loftus 2003). Ultimately, research has shown that poor questioning practices can produce unreliable information. Could any of these processes been in effect in the Grassian (1983) and Haney (2003) studies? How reliable were the responses that they obtained? No mention was made of accounting for the influence of response bias factors. In fact, interrogators in these two studies appeared to encourage response bias. They commented that some inmates did not seem to be aware of the dire stress they were experiencing so they had to be prompted to divulge the appropriate symptoms. A third variation of response bias found in the Grassian study, and one frequently cited in support of his results (see Brodsky and Scogin 1988), was that inmates were involved in a lawsuit against the state at the time of the interviews. It is plausible that they had much to gain by responding negatively to the interviewers' questions.

Next we turn to a frequently cited review of the AS literature. This review relied on 11 studies that used quantitative data that included a comparison group and 17 that were qualitative (Scharff-Smith's 2006).[6] The author used a vote-counting method to summarize studies, a procedure that has historically led to substantial inaccuracies in summarizing the magnitude of ES (Hunter and Schmidt 2004). The qualitative studies were treated at face value despite the fact they were based on simple common-sense heuristics (see Gendreau et al. 2002).[7] No criteria were reported for what constituted a minor versus serious effect.

Regarding theory, Scharff-Smith (2006) seem to maintain that inmates are blameless victims of the situation; in other words, AS is the primary driving force that creates the psychological malaise of inmates who, prior to the experience of AS, had no such problem (O'Keefe et al. 2013). In essence, this reasoning is textbook radical behaviorism, a theory that once dominated the field of learning (Bowers 1973). We are not denying the potential for situations to significantly shape behavior, but psychologists now acknowledge that both situations and traits meaningfully contribute to behavior (Bowers 1973; Fleeson and Noftle 2009).

In an effort to test this theory, we submitted the quantitative studies cited by Scharff-Smith (2006), plus others located from an ongoing analysis of the effects of AS, to the meta-analytic test (Labrecque, Smith, and Gendreau 2013).[8] The inclusion criteria

required that the study take place in a correctional setting with prisoners, had a comparison group, and contained sufficient data to calculate an ES. Of the 150 studies located, 15 met the criteria and were suitable for analysis. Two hundred and forty-six ESs from the 15 studies were collected and categorized by type of outcome: behavioral (k = 9), physiological (k = 24), or psychological (k = 213). The majority of ESs for length of stay in AS were 60 days or more. The mean ESs for each category are presented in Table 1, where a positive valence indicates an iatrogenic effect (i.e., AS correlates with an increase in the outcome of interest).

Table 1. Mean effect sizes by outcome category type

Outcome	***K***	***n***	***r***	**95% CI**
Behavioral	9	6,267	.04	[.02, .07]
Medical/Physiological	24	1,046	.15	[.09, .21]
Psychological	213	11,608	.03	[.01, .05]
Total	246	18,921	.04	[.03, .05]

Note. CI = confidence interval.

The overall mean effect of AS was r = .04 (CI = .03, .05), with the largest negative effects coming from studies with the weakest research designs[9] (r = .06 as compared to r = .02 for studies of stronger design). The largest negative effects were reported for medical/physiological outcomes, although this magnitude is deceiving as increases in visual-evoked potentials and a decline in EEG were coded as negative outcomes. From a psychophysiological perspective the direction of these results represents an appropriate response by the organism to SD (Helson 1964; Myers 1969; Zubek 1969).[10]

The second highest magnitude of AS effects was for behavioral outcomes, as measured by institutional misconduct and postrelease recidivism (r = .04, CI = .02, .07). Recall that the deterrence theory predicts a suppression effect, while the school of crimes view is the opposite. Despite the relatively weak effect of AS on behavioral indicators, this domain deserves some additional comment. There were five studies in this category that correlated AS experience with recidivism. The ES for recidivism was an r of .07 with a CI of .04 to .10. Is this convincing evidence in support of the school of crime view? It would be tempting to think so, but the lack of information about the comparison groups in AS studies raises some doubts. This is not a criticism of the investigators involved, as they

had to rely on the limited evidence provided by prison authorities. It is likely that the offenders in AS were already assessed as higher risk to reoffend unless these samples were comprised of largely low-risk inmates, which would be most unlikely. Risk to recidivate in the five studies was generally based on one or two static variables, notably criminal history and age. Dynamic risk factors (e.g., antisocial attitudes, antisocial values), which are useful predictors of risk (Gendreau, Little, and Goggin 1996; Andrews and Bonta 2010), were not available to the researchers involved. Inmates are also sent to AS based on situational factors involving prison management (e.g., sudden transfers of inmates) and the quality of life (i.e., prison climate; e.g., Gendreau, Goggin, and Law 1997; Goggin 2009), but this information also was not available to the researchers. Finally, theory states that for a school of crime effect to occur, many opportunities for social learning and modeling must be present, which would necessarily be limited due to the social isolation conditions inherent to AS. Last, the weakest data in support of adverse outcomes for AS were found in the psychological domain ($r = .03$; CI = .01, .05) with the majority of the outcomes emanating from the Colorado study.

In keeping with our objective at the outset, we have confirmed the convergent validity of the effects of AS from the available literature on confinement. Two sources of data on confinement are consistent with the results of the AS studies in establishing that the effects of confinement are negative but do not produce “lasting emotional damage, if not full-blown psychosis and functional disability” (Kupers 2008, p. 1006). But that is not the end of the story. To cite an old cliché, there remains an elephant in the phone booth regarding the AS issue. In the next section we identify the culprit and then outline the type of research that will be required to determine the conditions under which AS may have differential effects. Last, we present several clinical practice and management guidelines to limit the use of AS.

V. Identifying the Elephant and Deciding What To Do About It

In our opinion, the driving force behind most of the irrational behavior that clinicians and correctional staff witness on the part of AS inmates is the result of how they are treated (Gendreau and Thériault 2011; Valera and Kates-Benman 2015). Observers representing both schools of thought (e.g., Jackson 1983; Brodsky and Scogin 1988; Wormith, Tellier, and Gendreau 1988; Haney 2009; Gendreau and Thériault 2011; Grassian and Kupers 2011), as well as those who were ostensibly “neutral” before being asked to conduct special investigations on prison life (e.g., Vantour 1975; Arbour 1996), agree on one key

point. When inmates are treated mean spiritedly and capriciously, kept in a fog of uncertainty about their circumstances, and generally feel that they have been treated unjustly, then negative effects are much more likely to manifest themselves (Gendreau and Bonta 1984; Jackson 2001). In effect, we are faced with a human relations and programming problem much more so than a prison architectural design issue (Gendreau and Thériault 2011). As Haney (2008, p. 982) admitted, it is folly to think that "mere tinkering with its [AS] design can produce a beneficial or palliative response." As testimony to this observation, Jackson (1983) documented that when physical living conditions where improved considerably (e.g., access to TV, recreation, more programming), inmates still complained of cruel and unusual punishment for the reasons noted previously.

So what is to be done? Some advocate that AS should be banished entirely (Andersen et al. 2000). This sentiment is well intended but is it politically realistic, especially in the United States, where supermax facilities have become a standard way of doing business that traps correctional administrators into short-term thinking and primitive solutions to handling inmates (Gendreau 2012a; F. Porporino, personal communication, June 30, 2014)? Nevertheless, we cannot cavalierly dismiss the reality that there are a meaningful proportion of inmates who are truly dangerous and psychopathic or minimize the difficult job that prison managers encounter in settings where gang culture dominates the lives of inmates and staff alike. All the same, AS will always be part of prison operations; it can be relied upon to a much lesser extent in the future using strategies that are described in the forthcoming section on clinical practice.

VI. Being Proactive About AS: Research and Clinical Practice

Despite all that has been written about AS, recommendations regarding what research to pursue in order to better understand its effects and the clinical practices that need to be in place to reduce potential harm have been lacking (see Gendreau and Bonta 1984; Haney and Lynch 1997; Gendreau and Thériault 2011). We begin this section by outlining the research questions that need to be addressed.

A. Research

Gendreau and Thériault (2011) affirmed that for any progress to be made, a meta-analytic perspective is necessary. Otherwise, policy decisions about AS will be of little utility as

they will be based on the law of small numbers and hampered by sampling error and bad common-sense reasoning. The meta-analysis reported here must be replicated, hopefully with additional studies.[11] While the estimates of the effects of AS from our database are precise and unlikely to change to any marked degree, the Colorado study, which contributed a substantial amount of data to our meta-analysis, has provided a limited number of point estimates. It is imperative researchers assess other AS settings whose standards of care are much less than that witnessed at the Colorado site.[12] We understand that some of the research we recommend will likely meet with resistance from many correctional authorities and may not be undertaken for quite some time. Nevertheless, asking the following questions might prevent a rush to judgment and help us to rethink the putative effects of AS. The clinical implications of this research, where they are relevant, are discussed later.

1. Is AS Really an SD Condition?

Click to view larger

Figure 3. A maximum-security cell

Clearly, that was the conclusion from the Ontario evaluations (Gendreau et al. 1972) and no doubt applies to many AS cells in use today. Figure 3 shows an AS cell in a maximum-security penitentiary, which was almost identical to the 1960s' versions used by Gendreau et al. (1972) and Ecclestone et al. (1974).

Some AS settings, however, do not meet the definition of SD because inmates may have access to radio, TV, books, other inmates, and activities, which better approximates the sensory input level found for non-AS inmates. Meanwhile, we are aware that prison administrators use euphemisms (e.g., intensive support units, secure living environments) to hide the fact that they have cell accommodations that have unnecessarily low levels of sensory input (Zinger 2013). Future studies on the effects of AS must first make an objective determination as to whether the conditions of restricted environmental stimulation are present. If the conditions do not apply, researchers are likely addressing a research question relevant to the effects of prison life in general rather than AS per se.

2. Individual Differences.

As noted at the outset, AS inmates are a heterogeneous group. Based on our experience and the Canadian data (Public Safety Canada 2013), it is possible that about 20 to 30 percent of inmates are in AS for reasons of personal preference. We predict that future studies will find that the reactions to AS of such "volunteers" are different from those who are sent there against their will. Second, whatever the case, some percentage will cope badly under AS conditions; whether it is less than 10 percent as Metzner and O'Keefe (2011) discovered remains to be seen.

As of yet, we are unable to predict with any certitude which inmates will react poorly to AS. Gendreau and Thériault (2011) have listed just a few of the characteristics (e.g., biochemical, stimulation seeking, conceptual level, risk level) of offenders that may enhance their vulnerability to the negative effects of AS. To that list we would add measures of coping style (e.g., task oriented, avoidance, and reactive coping styles) that predict prison adjustment and might well apply to AS (Gullone, Jones, and Cummings 2000; Zamble and Porporino 1988). In addition, there is recent work that demonstrates the coping styles that inmates may use to adjust to AS (O'Donnell 2014; Valera and Kates-Benman 2015). Research that examines the interrelationships among reasons for being in AS and individual differences will make a truly significant contribution to the literature. Any correctional system that is at all concerned about its inmates should be able to generate individual predictive validities fairly readily, assuming they are using intake assessment protocols that collect such information.

3. Assessing the Contribution of "the Real Culprit" to ES Estimates.

The quality of interaction between correctional officers and inmates should be evaluated via videotape and, where possible, factored into the designs of future AS studies. To prove our point made previously, we predict that when relations markedly deteriorate between the keepers and the kept, negative behaviors will increase substantially over the results reported in our meta-analysis. Similar assessments of the inmate–staff interactions should be taken of non-AS prison settings. For example, experts working as prison ombudsmen, whose role is to investigate the quality of prison life, have commented that, in some instances, living conditions in "regular" prison accommodations are actually more uncomfortable and stressful than those in AS (I. Zinger, personal communication, October 10, 2013). In this regard, more research on the "climate" of prisons, whatever their designation, particularly when there appears to be a culture of harm (see Haney 2008) is urgently needed (see Wright 1991; Goggin 2008).[13] If more prisons followed the guidelines suggested by Toch (1992) for managing prisons in a safe and humane fashion, the reliance on AS to control behavior might diminish.

4. AS as a Punisher.

Some anecdotes suggest that AS serves as an effective punisher for suppressing antisocial behavior within prison (Pizarro and Narag 2008). One study, conducted by Briggs, Sundt, and Castellano (2003), found that US states with supermax prisons did not have lower levels of inmate-on-inmate violence, but did find mixed support for its ability to increase staff safety. We can see no possible reason for results that produced a reduction of inmate-on-staff assaultss in view of how the laws of punishment function.[14] Such a finding is probably a result of sampling error, the nature of the comparison group, and the use of aggregate-level data, which can inflate ES (Gendreau and Smith 2007). Moreover, for a percentage of inmates, living in AS might be seen as a reinforcer given some of the negative aspects that occur in routine prison life. More recently, the second author examined the impact of disciplinary segregation on institutional behavior in a sample of inmates (n = 14,311) in the Ohio prison system and found that neither the experience of segregation, nor the number of days spent in the setting, had any significant effect on the subsequent occurrence of violent, non-violent, or drug misconduct (see Labrecque 2015).

5. Researcher Accountability.

It is one thing to recommend these research agendas, but what of the responsibilities of the research communities? Who is going to conduct the studies? Very few prisons have the staff with the inclination or skill set to do so. Haney and Zimbardo (1998) recognized this point and called out criminologists and psychologists for abandoning the study of prisons, the reasons for which were summarized by Gendreau and Smith (2012). On the other hand, we recognize that there are serious barriers to conducting research in prisons. Some correctional jurisdictions have been antagonistic to external parties "meddling" in their affairs (Ward and Werlich 2003; Bauer 2012b). Given the inherent problems of relying on prison officials for secondary data, researchers must gather the necessary data on-site themselves, or at least work in collaboration with prison officials to establish better record-keeping and clinical documentation. Otherwise, AS research will continue to be plagued by the limitations of the available data in regard to the myriad of personal and situational variables that determine critical outcomes.

B. Clinical Practice

Clinical practice refers to ethically defensible and humane plans of action that can be taken by those staff (e.g., psychologists, social workers, correctional officers) whose duties focus on encouraging inmates to adjust to prison life in a prosocial manner.

1. Mentally Disordered Offenders.

Much of the focus on the effects of AS has focused on mentally disordered offenders (MDOs). The assumption that time spent in AS will exacerbate their illness is naïve and one that is not predicted from theory (Bentler 1990). Mentally disordered offenders function best in quiet environments, which reduce confusing perceptual and cognitive stimuli, a point made by Grassian and Friedman (1986) and one reinforced in the Colorado study (see data for depression-hopelessness and psychosis in Figure 2).

Is AS the appropriate placement for MDOs? Obviously not, as MDOs require clinical supervision to ensure that they take their medications, a major predictor of relapse along with that of expressed emotion (Smith, Gendreau, and Goggin 2007). Mental health care should take place in a psychiatric hospital wing of the prison run by mental health professionals who are bound by the mental health acts of their state or province. It is vitally important that these professionals are also responsible for security decisions. Otherwise, the mental health unit will become just another prison. Typically, when MDOs misbehave because of their illness, prison officers react as one would expect they would, which is to use AS as a punisher (Office of the Correctional Investigator 2013). A worthwhile example of a mental health model for MDOs can be found in the Mississippi State penitentiary treatment program (Kupers et al. 2009).[15]

Once MDOs' symptoms are under control, clinicians then face two crucial decisions. If MDOs are assessed as low risk to reoffend, they should remain in the psychiatric unit to prevent the schools of crime effect from occurring by mixing them with high-risk inmates. If they are low risk, treatment for criminogenic needs is a low priority. High-risk MDOs should be returned to regular cell accommodations once their symptoms abate and also be enrolled in programs designed to reduce their antisocial behaviors (Gendreau 2012b).

A final point concerns the identification of MDOs. In our view, the difficulties in this area have been glossed over. First, it seems that almost any malaise ranging from antisocial, comorbidity, dysthymic, oppositional, and posttraumatic stress disorder makes one eligible for an MDO classification. Throw in alienation, attention deficient hyperactivity disorder, low self-esteem, mental retardation, self-injurious and suicidal behaviors, and substance abuse into the diagnostic pot, as some are wont to do, and one would not be surprised to find that almost all offenders would qualify for the MDO designation (Smith et al. 2007; Andrews and Bonta 2010). We are traditionalists in this matter and adhere to the *Diagnostic and Statistical Manual of Mental Disorders* (fifth edition) criteria for MDOs (i.e., schizophrenia, debilitating depression, and bipolar disorder; American Psychiatric Association 2013). Second, there is another problem when it comes to identifying MDOs: just because a measure purports to assess the *Diagnostic and Statistical Manual of Mental Disorders* symptoms does not mean that it necessarily has predictive validity. As

of several years ago, there were 419 measures used to assess mental disorders (Smith et al. 2007). Sadly, Smith et al. found only 17 percent reported any predictive validities and just 1 percent had more than 10 ES with relapse and/or rehospitalization. Of the latter 1 percent, a measure of expressed emotion (the Camberwell Family Interview) far surpassed the others in predictive accuracy.

2. Inmate Monitoring.

For whatever reason, some observers have argued for AS stays of up to 90 days with a maximum of monthly on-site clinical reviews (Jackson 1983; Haney and Lynch 1997). Those who have worked in prisons and monitored inmates in SC as part of their clinical duties have adopted even stricter guidelines, such as limiting the length of stay to 14 days and performing daily clinical check-ups (Gendreau and Bonta 1984; M. Bettman, personal communication, October 10, 2013). Interestingly, a quarter of a century later some authorities are proposing the same recommendation (Kates 2014). The reason is that small effects of AS should not go unheeded as they could have serious consequences later on.[16] An additional issue that affects the humane care of inmates in AS has been the lack of communication and consistency in decision-making by staff regarding inmates' needs, due to brief duty rotations. This factor alone causes inmates distress, as they are unsure of where they stand and their requests get lost in the shuffle because good case management practices are not in effect. For case management to work effectively, it is therefore recommended that correctional staff have the training needed to deal with the presenting problems that are typical of AS inmates (e.g., acting-out behavior, social withdrawal) before being assigned to an AS inmate caseload.

3. Prevention.

Administrative segregation was initially used to house a prison's most disruptive inmates. Treatment programs modeled on Andrews and Bonta's (2010) risk-need-responsivity model of rehabilitation has been shown to be highly effective in reducing prison misconducts (French and Gendreau 2006). In addition, reducing misconducts has substantial cost-saving benefits (Lovell and Jemelka 1996). There are also risk measures available for clinicians to identify inmates who are at risk for misconduct behaviors and who can then be placed in programs (Gendreau et al. 1997; Campbell, French, and Gendreau 2009; Gendreau and Goggin 2013).

Two other policies can help limit the use of AS. One is to design prison environments in such a way as to discourage the assaults that lead to AS (see Wortley 2002). No doubt cynics will ridicule the following suggestion as being unrealistic—maybe so, but why not limit the number of AS cells and length of time in AS? In one prison in which the senior author has worked as a clinician/administrator, five AS cells were available and inmates had to leave within a week. With these policies in place, staff and inmates learned to cope

with this reality. Waiting lists all but disappeared and inmates returned to their normal living accommodations. When the AS accommodations were increased later on by another administration, AS cells were quickly filled to capacity despite there being no changes in the inmate composition or the prison climate. The cliché “build it and they will come” was proven once again.[17]

4. Incentives to Leave AS.

Once inmates find life in AS to be tolerable, it can be extremely difficult to encourage them to return to the general population. One form of programming that, unfortunately, has been relegated to the dustbin of offender treatment methods is what is known as contingency management. By far the most common strategy of this type of programming is the token economy, where receipt of tangible and social rewards is made contingent on inmates’ behavior. Forty years ago in corrections, token economies were in great favor, but they were attacked as being unduly coercive and later were supplanted by the cognitive behavioral revolution (Gendreau et al. 2014). These authors revisited this literature to determine the magnitude of the effect of token economies on a variety of inmate behaviors. The results were truly impressive, with a 64 percent improvement recorded for a variety of within-prison prosocial behaviors. Having said that, token economies, in particular, are vulnerable to being easily sabotaged unless there is wholehearted support from all stakeholders in the prison and the contingencies are followed to the letter (see also Liebling 2008). For the interested reader, Gendreau et al. (2014) provides a detailed list of the “dos and don’ts” of successful token economy management. We have also been made aware of a recent attempt to establish a token economy-like program at Alger Correctional Facility in Michigan that has had marked success in returning inmates to the regular population (C. Bauman, personal communication, August 9, 2013).

VII. Conclusion

This essay examined the two opposing schools of thought on the effects of AS. We searched for convergent validity from diverse empirical and theoretical literatures as a means of assessing the relative consistency of the findings to establish the validity of these two perspectives. First, we examined the general prison life literature, which revealed support for the schools of crime hypothesis. Prisons, in general, are criminogenic primarily for low-risk offenders (i.e., increased antisocial behavior in prison and postrelease recidivism) but do not produce much in the way of adverse mental health outcomes.

Next we reviewed the SD literature in the field of sensation and perception. Although the McGill experiments in the 1950s reported cognitive deterioration and visual and auditory hallucinations within a relatively short time (see Gendreau and Thériault 2011), the vast majority of studies in this area found only weak negative effects and that only in the areas of textual, visual, and kinesthetic sensation (Suedfeld 1975). One of the potential causes for extreme results in this area is participant response bias (see Orne 1962). It is rather unfortunate that this SD literature has largely been ignored in the AS debate despite its obvious relevance. For example, the replicable findings found in SD experiments (e.g., EEG and plasma cortical stress levels, arousal to sensory input, perceptual adaptation, and health outcomes) have also been corroborated in prison SC settings (e.g., Gendreau et al. 1972; Ecclestone et al. 1974).

Finally, we explored the SC studies involving offenders in custodial settings. In the 30 years since the publication of the Grassian (1983) study, there has been a contentious debate regarding the harmful effects of AS on inmates. Although some of this literature has been limited in terms of the methodological quality, the recent O'Keefe et al. (2010) Colorado study was of particularly high quality (e.g., quasi-experimental, repeated measures, variety of mental health constructs, one-year follow-up). The results of this study indicated that the majority of inmates in the Colorado prison did not experience any escalation of psychological symptoms (Metzner and O'Keefe 2011). In our meta-analysis of this literature, we discovered relatively weak effects of AS on inmate outcomes (r = .04; Labrecque et al. 2013). In addition, more extreme effects were noted for studies employing weaker designs (r = .06), compared to those with stronger designs (r = .02). Our contention is that when negative effects occur in AS, it is primarily due to how inmates are treated by correctional staff and managed in general by prison administrators.

We caution policymakers, however, to be leery of basing decisions about AS exclusively on the results of any one particular study and most certainly on those that are qualitative. Instead, we maintain that a meta-analytic perspective is necessary in order to understand the effects of AS on subsequent inmate outcomes. Future investigations on the effects of AS should be conducted with greater methodological quality and with the careful attention to clinical outcomes typified by the Colorado evaluation. It is also imperative that forthcoming evaluations investigate moderators (e.g., inmate and prison characteristics, the relationship between keepers and kept); we expect that these factors combined with excessively long periods (i.e., >30 days to several years in U.S. prisons) in AS will produce iatrogenic consequences that will violate reasonable standards of humane care. In the meantime, several clinical practice and programming policies should be initiated to ensure that inmates are treated humanely and to discourage prison authorities to rely on the use of AS.

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Notes:

([1]) The life-span psychology literature has generated considerable evidence that personality traits are consistent over the lifetime and relatively impervious to environmental influences (Costa and McCrae 1997).

([2]) These studies were of a form of SD called perceptual deprivation whereby the sensory environment is made as monotonous as possible. Student volunteers in the McGill studies were instructed to lie on a bed wearing translucent goggles and body cuffs to reduce tactile stimulation. There was a constant buzzing noise. For an example of even more extreme restrictions see Zubek, Bayer, and Shephard (1969). The other type of SD, typical of prison environments, is that of restricted environmental stimulation where sensory stimulation is much lower than "normal" (Gendreau et al. 1972; Suedfeld 1980). Perceptual deprivation seems to produce more cognitive impairment (Zuckerman 1969).

([3]) Based on supporting evidence from his own work with offenders and research results from developmental psychology and the psychiatric literature, Suedfeld (1980) has proposed that restricted environmental conditions can have beneficial effects. Oddly enough, Grassian and Friedman (1986) are in agreement with Suedfeld on this point for some mentally disordered offenders.

([4]) Even under the most extreme SD conditions (e.g., up to 14 days of perceptual deprivation) tolerance levels were high (i.e., 67 percent) and hallucinatory reactions were almost totally absent (Zubek 1964). One condition of SD that does seem to affect tolerance rates is the addition of kinesthetic immobilization (i.e., students placed in coffin-like boxes) to visual and auditory deprivation (Zubek et al. 1969). In that study, tolerance rates were 40 percent.

([5]) While this study has drawn almost all of the attention, we also recommend the reports by Suedfeld et al. (1982) and Zinger, Wichmann, and Andrews (2001), which reported results similar to the Colorado group.

([6]) The Grassian (1983) and Haney (2003) studies were included in his review. The former did not include a comparison group, and the latter compared his results to a nonprison nonoffender sample; neither study empirically assessed previous mental health histories of their inmates.

([7]) Examples of common-sense arguments include relying on testimonials from authority, "what everybody knows" claims, resorting to explanation by naming, and accepting ideographic laws of behavior. Scharff-Smith (2006) also accepted the validity of the McGill studies.

([8]) Interested readers can access the final report from the second author. Data presented in this document may slightly deviate from Table 17.1.

([9]) Labrecque et al. (2013) defined weak designs as those that did not use a comparison group that was similar to the treatment group on at least five empirically relevant characteristics.

([10]) Coding the studies in this way reversed the ES to *r* of –.25 with a CI of –.42 to .07.

([11]) Robert Morgan and colleagues are conducting a separate meta-analysis, and the results analyzed to date are similar to ours (see note 7).

([12]) Consider the deplorable third-world physical conditions in AS at Mississippi State Penitentiary (Kupers et al. 2009, p. 1039). In another southern state, the first author of this chapter was asked to bring basic toiletries (e.g., soap, toothbrush, etc.) for inmates. These kinds of conditions should produce psychological problems greater than our meta-analysis indicates.

([13]) Mention must be made of the Goggin (2008) analysis of a correctional climate survey in the Canadian correctional system. Its scope was extraordinary. Forty-three prisons contributed data; the sample sizes were 4,283 inmates and 2,717 staff.

([14]) There are 14 steps that must be fulfilled to ensure the maximal effect of punishment (e.g., escape from the punishing stimuli is not possible, punishment is administered immediately with maximum intensity at every occurrence of the target behavior; see Matson and DiLorenzo 1984).

([15]) While we obviously have our points of contention with Dr. Kupers, all credit is due to him and his colleagues for their innovative program (which must have had any number of serious barriers to overcome) that has resulted in robust effects for reducing rule violations besides improving inmates' mental health. Their description is also noteworthy for detailing how many inmates were misclassified for AS in the first place (see also Ward and Werlich 2003).

([16]) Determining what would qualify as a significant clinical effect is very difficult. From a research perspective, just because a large sample of inmates show an increase of a few points on a clinical scale may demonstrate only statistical conclusion validity.

([17]) As a point of emphasis regarding the overuse of AS in the United States, Canada, a country with a population about the size of California's, has only one maximum security supermax housing unit (SHU). This facility houses 72 inmates at any given time. The country also has other units designated as AS, which house about 5 percent of the prison population. Two-thirds of these inmates spend less than 60 days in AS (Public Safety

Canada 2013). In the past year, Public Safety Canada reduced their admissions to AS by 50 percent (I. Zinger, personal communication, February 25, 2016). In comparison, California's Pelican Bay state prison alone has approximately 1,300 inmates in SHU (King, Steiner, and Ritchie-Breach 2008). Across the entire Canadian federal system, 6 percent (of approximately 15,000 inmates) are in an AS cell at any one time, 48 percent have been in AS for less than 30 days, and 17 percent less than 120 days. Naday, Freilich, and Mellow (2008) reported that there were 23,252 SHU inmates in the US state prisons alone (which does not include the number of federal inmates in SHU). Bauer (2012b) reported that 563 inmates were in the Pelican Bay SHU for at least five years. For other indices of overuse of AS in other states, see Mears and Bales (2010).

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