

Administrative Segregation: Scoping Review of the Literature for Quality of Study Designs

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Abstract

In recent years, significant attention has been given to the purported effects of administrative segregation (AS)—previously known as solitary confinement (SC)—on mental health. These effects have been the subject of commentary by courts, legislators, politicians, and the press. However, research into this area has been limited, and studies have lacked strong evidentiary design.

In this paper, we review the research into the purported effects of AS. We evaluate the strength of each study's design by the presence of certain elements: baseline measures, standardized tests, control groups, statistically significant subject numbers, and longitudinal designs. Our findings reveal that few studies satisfied these requirements. Lack of quality design diminishes study relevance, significantly reducing the weight that can be given to findings. The findings of these studies can, therefore, not be used as conclusive evidence that AS produces negative effects on the physical or mental health of inmates. We anticipate our findings will be useful in determining the best course of action for appropriately implementing AS in prisons. In a subsequent paper, we review the same studies for evidence supporting a specific time limit of stay in AS and for evidence of enhanced effects on inmates with mental illness.

Keywords: administrative segregation, solitary confinement, inmates, study design, quality of design

Administrative Segregation: Scoping Review of the Literature for Quality of Study Designs

Introduction

In recent years, the use of administrative segregation (AS)—previously known as solitary confinement (SC)—has become a public point of contention among politicians, legislators, and the press. In 2015, President Obama ordered an extensive review of the overuse of SC in American prisons. Although the review resulted in a widely-publicized ban on the use of SC for juvenile offenders, President Obama later clarified that the review had determined SC was a necessary tool in some circumstances.

In Canada, the issue of AS has entered the public arena more recently. In January 2018, a judge in British Columbia ruled the practice of indefinite SC to be unconstitutional. This ruling echoed that of an Ontario judge, Superior Court Justice Frank Marrocco. In December 2017, Judge Marrocco ruled AS longer than five days to be unconstitutional. Interestingly, Marrocco did not find the practice of AS itself to be unconstitutional. He, in fact, refused to declare segregation for more than 15 days unconstitutional, stating in his 38-page ruling that proper

monitoring of inmates by health professionals would be “sufficient to negate the potential cruelty of indefinite segregation.” Such seemingly contradictory opinions have fuelled recent debates between those for and against the use of AS in prisons.

Method

Literature Retrieval

The purpose of this paper is to evaluate studies for strength of design to identify which may accurately be used as evidence of the effects of AS. To do this, a research assistant conducted a search for the key terms “administrative segregation,” “solitary confinement,” “supermax,” and “restrictive housing.” Several online databases were used, including Google Scholar, Hein Online, SAGE Journals, Psych net, and Wiley Online Library. The research assistant also used University of Toronto library resources and communicated directly with librarians to identify

and obtain relevant studies. In some cases, where digital copies of older studies were not available, the research assistant contacted the study authors directly to obtain copies. In addition to key term searches, an ancestry approach was used whereby the reference lists of the identified studies were used to locate additional relevant studies. These procedures identified 66 relevant studies. A handful of the identified studies were published in Scandinavian languages. In these instances, digital translation and PDF conversion software were used to obtain English versions of all available documents, and English reviews of and references to these studies were used to cross-check the accuracy of the translations.

It should be noted that this review was not intended to be exhaustive, but rather to be inclusive of and to target studies that are often referenced by lawmakers, advocacy groups, and the public in the ongoing debate regarding AS, as well as studies in the literature. We should note that in presentations of this research in various places, as well as in cross-examination, we have not been presented with any additional studies that we have failed to consider. We deliberately did not use a method of systematic analysis since two meta-analytic reviews on this issue have already been published (Morgan et al., 2016). This review differs from these fairly comprehensive meta-analyses in that it included some of the studies that might not necessarily qualify for scrutiny under a systematic analysis because these studies are frequently relied on in the public discourse of court proceedings and the press. We have used some of the criteria described by the PRISMA guidelines and Cochrane Reviews in reviewing the strength of the studies included in this paper. However, papers have been included that would otherwise be rejected, so as to broaden this review, as a complement to the meta-analyses. We have critically reviewed these papers since they are frequently part of the public discourse.

Establishing study criteria. There is a consensus of opinion among researchers that for a study to be considered scientifically sound and have reliable results, it must feature an evidence-based design (Cochrane reviews intro). It is crucial that researchers be without bias, as, in many instances, extant research has been sponsored by a legal team or advocacy group working to advance a particular position.

Eligibility criteria. To be included in this analysis, studies had to meet certain criteria. Studies were not, however, excluded on the basis of weakness of design, as that is the subject the current study seeks to evaluate. First, the model of segregation had to basically resemble the current model. As such, studies detailing older models (such as those that first emerged in America in the late 18th century) were excluded, as were studies looking at war-time confinement of prisoners. Second, the study had to be original or, if a sub-study, present new and relevant findings. Again, as this study specifically seeks to evaluate the design quality of studies that are referenced in public discourse, certain typical exclusionary criteria do not apply here; for instance, the original language of the study was disregarded as long as an adequate translation could be obtained.

We would like to emphasize again that we specifically chose not to perform a meta-analysis, since a major one has already been performed by Morgan et al. (2016) As noted above, the use of meta-analytic techniques would necessarily exclude many of the articles that are commonly quoted in the courts and public discourse. We felt it important to include these studies in our review. Additionally, not all study subjects

in the variety of studies included were required to have experienced the same type of AS (some subjects were volunteers, others were on remand) as long as the effects of AS were examined. Of the 66 identified studies, 25 were deemed suitable for analysis. Reasons for exclusion were that the studies were reviews or compilations of previous work, or included only opinions rather than evidence-based conclusions. It should be noted that many additional articles were reviewed for background and a deeper understanding of currently held opinions.

Results and Discussion

In the following sections, key terms are presented and studies are evaluated for the methodological criteria discussed earlier in this paper. Studies have been classified as those that claim to demonstrate the negative effects of segregation and those that found no such effects could be proven.

Key Terms

This study does not attempt to equate the multiple classifications of inmate isolation, merely to evaluate some of the studies often referenced in the current debate. Therefore, a range of terms are used throughout this paper, according to the terminology used by the studies under discussion.

Solitary confinement (SC). Isolated confinement for typically 22 to 24 hours a day. Traditionally intended as a punitive measure, contact and privileges are extremely limited. This term has fallen out of use as institutions have instead adopted AS and DS policies.

Administrative segregation (AS). Isolated confinement imposed as a last resort to ensure the health and safety and security of an inmate, the general prison population, or the institution and staff. AS may be used for medical reasons (e.g., suicide watch) or may be the prisoner's choice.

Disciplinary segregation (DS). Isolated confinement imposed upon prisoners who have committed a serious disciplinary offence.

Remand segregation. The practice of segregating a prisoner while in pre-trial custody to ensure a secure investigation of his or her offence, prevent collusion between inmates, and prevent the continuation of criminal activity behind bars.

General population (GP). The primary population of inmates within a prison, not subject to any special conditions, such as isolation.

Studies That Claim to Demonstrate Negative Effects of Segregation

In one of the first studies on the modern use of segregation in prisons, Grassian (1983) conducted open-ended interviews with 14 subjects in SC. It must be noted that he was retained by the plaintiffs in a civil action; the subjects were aware of his association. He did not use any standardized measures, and there were no baseline measures taken. It is, therefore, unclear if any subjects had pre-existing mental disorders. This study was not a longitudinal study, and there was no control group.

In the study, Grassian claims that subjects initially used rationalization and denial to minimize the effects of their experiences. He later says that after further questioning—including “confrontation and encouragement” (1983, p. 451) the subjects disclosed further complaints. He notes generalized hyper-responsivity to external stimuli; perceptual distortions and hallucinations; affective disturbances; difficulties with thinking, memory, and concentration; disturbances of thought content; and

problems with impulse control. He speculates that this suggests a distinct clinical syndrome.

Labrecque et al. (2020) surveyed the peer reviewed literature that referenced Gaussian's (1983) article. They found that 81% of articles cited the study without any discussion of its "fatal methodological limitations" (Labrecque et al., 2020, p. 3). They note that, although Gaussian's (1983) study did receive criticism when published more than 30 years ago, recent articles have become increasingly less critical. Dr. Grassian should be given credit for raising this issue. However, this paper, on its own, can only be considered a preliminary qualitative study with severe methodological limitations that does not provide scientific evidence of any harmful effects attributable to SC.

The Danish studies. In the 1980s and 1990s, a series of studies on the effects of SC was carried out in Denmark, including a large-scale study of prisoners in pre-trial custody in the largest remand prison in Denmark (Andersen et al., 1994). Several important articles and follow-up studies were subsequently published based on these studies (Andersen et al., 1996; Andersen et al., 1997; Andersen et al., 2000; Andersen et al., 2004; Sestoft et al., 1998).

The original study looked at 367 pre-trial detainees and compared the occurrence of psychiatric symptoms in individuals in SC to a control group (Andersen et al., 1994; Andersen et al., 2000). This study was longitudinal, with sufficient numbers for statistical analysis. Standardized measures were used. This study is one of the few that specified the inclusion of both male and female subjects.

The authors found that the incidence of psychiatric morbidity, mainly adjustment disorders, was highest in the SC group (28%) compared to the non-SC group (15%). The rate of psychiatric morbidity was highest (43%) among a group of prisoners who had been in SC for more than 2 months (Andersen et al., 2000; see also Smith, 2006, 2011). However, the authors noted that the psychiatric morbidity scores for those in SC remained unchanged over their time in isolation. Scores of the control group exhibited gradual improvement over the same period, and the scores of those in SC improved upon their release. Psychotic disorders were rare—in fact there were none—in SC. Andersen et al. (2000) noted that 76% of new (incident) disorders appeared at the first examination, which was within one or two days of initial incarceration. It was further noted that one SC subject developed an acute and transient psychotic disorder after transfer to non-SC; one non-SC subject also developed a transient psychotic disorder.

One limitation of this study was the high attrition rate, which reduces the strength of the longitudinal analysis. Among the SC group, 133 subjects were examined after one or two days, but only 37 were examined after 3 weeks. Only two remained after 4 months, as participants were released, transferred, or completed their sentences. This is the best study that could be interpreted as demonstrating a relationship between SC and mental disorder, most commonly an adjustment disorder. An adjustment disorder is the development of emotional or behavioral symptoms in response to an identifiable stressor. There are several possible stressors that an inmate might encounter before being admitted to SC, including the experiences of arrest, trial, and incarceration. Since these disorders mainly arose in the first two to three days after incarceration, it is likely that these common effects of incarceration contributed to the disorder.

One issue not discussed in the papers on this study is whether assignment to SC, by definition, suggests that an individual was having difficulty adjusting to the institution and was, therefore, demonstrating emotional or behavioral symptoms. The authors note that the higher levels of psychopathology did not appear to worsen over the time spent in SC but were present at the first interview (Andersen et al., 2000). This supports the interpretation that those with more psychological disturbance, perhaps caused by the above-noted stressors, may have been placed in SC for safety purposes. Thus, the conclusion of this study that SC caused psychiatric symptoms is not supported by strong evidence.

A follow-up study (Andersen et al., 1997) based on questionnaires was conducted with 41–49% of the original 367 participants. The authors found that, retrospectively, 38% of those who had been in SC found their remand imprisonment extraordinarily straining; of those who did not experience SC, 12% found their time in remand imprisonment to be straining (Smith, 2006). Additionally, those who had spent time in SC reported more psychological reactions (which were not specified) after their remand imprisonment than those who had not experienced SC.

Sestoft et al. (1998). In the second part of Andersen et al.'s original 1994 study, looking at the same experimental group, Sestoft et al. (1998) used a survival analysis to compare prisoners in SC with those not in SC. This was a complicated study. A retrospective review included 345 prisoners, 33 of whom were female. Of this cohort, 124 subsequently participated in an interview study. A sub-study of this looked at the risk of hospitalization for psychiatric reasons among segregated and non-segregated inmates. The study took place over 15 months and used several standardized measures. Sestoft et al. (1998) noted that, during the 15-month study, eight of the 345 prisoners were admitted to a hospital outside of the prison, and 41 others (12%) were admitted to the prison hospital. They noted that admissions to the outside hospital almost always took place within the first few weeks of custody. They found no difference between SC and non-SC of this occurrence. They noted that the likelihood of being admitted to the prison hospital for a psychiatric reason increased with the amount of time spent remanded. A total of 11 prisoners from SC and 26 from non-SC were admitted to the prison hospital. One person from SC had psychosis compared to seven from non-SC. We do not know the criteria used to determine which inmates were admitted to hospital or to which hospital they were admitted (prison hospital or outside hospital); therefore, it is unclear what to make of these results. Sestoft et al. (1998) concluded that the risk of admission to prison hospital increases with time in SC, although the published figures do not seem to substantiate this conclusion.

The Norwegian studies. Between 1991 and 1993, Gamman conducted a study on 63 isolated remand prisoners in Norway. A longitudinal follow-up study was conducted in 1995 with 54 remand prisoners, including a control group of 27 non-SC subjects (Gamman, 1995). These results of both the 1993 study and 1995 follow-up were summarized in a comprehensive paper (Gamman 2001). In this paper, Gamman acknowledges differences between the 1995 groups: the SC group had a 5-year higher average age, had been charged with more drug offences, and was physically and mentally healthier than the control group. It should be noted that Gamman chose to exclude inmates with a known intolerance for SC (11 in total). Gamman reported that 94% of prisoners suffered adverse effects after 4 weeks in SC. Widespread health problems

included depression, anxiety, stomach pains, and the inability to concentrate.

It was noted that 13% of those in SC had self-mutilated, which was higher than the non-SC controls. Again, the question arises as to why these people were in SC. It is often common practice in prisons to isolate those at risk of harming themselves, so the argument may be tautological. If they were placed in SC because of a history of self-harm or because of a reported plan to self-harm, then it would be expected that those in SC would have a higher incidence of self-harm.

Gamman used interviews and observations, as well as the Montgomery-Asberg Depression Rating Scale for inmates who appeared to be depressive, but has been criticized for not using other standardized instruments (Andersen, 2004, p. 39; Smith, 2006, p. 447). While the experimental timeline for the 1993 study was four weeks, some of the subjects were in segregation for as many as nine weeks (Gamman, 2001). These studies, taken together, provide weak evidence that SC (the exact nature of which is not well described) may cause some physical and mental health effects.

Haney (1993). Haney published a series of papers regarding his research on a convenience sample of 100 subjects in a supermax prison (Haney & Lynch, 1997; Haney, 1993; 2003). No baseline, standardized, or longitudinal measures were used. Results indicated a high level of symptomatology among subjects in SC. Some participants endorsed hallucinations and perceptual distortions (41%) and anxiety (91%). Although the study did not include a control group, the researchers refer to a comparison group from Brodsky and Scogin's (1988) study, which recorded a 42% incidence of hallucinations in a protective custody sample. These exceptionally high figures invite skepticism about the results and the methodology. In the absence of standardized measures, the lack of a definition of symptoms is also a limitation.

It should be noted that, as Denzin and Lincoln say, "qualitative research is endlessly creative and interpretive" (2011, p. 14). The same authors also note that "the interpretive practice of making sense of one's findings is both artful and political" (p. 15). In addition, we note that the findings of a qualitative research study should not be applied to other populations or considered generalized findings. These studies, given the perception of bias, qualitative method, and lack of matched control group, provide weak evidence of a negative effect of SC.

Jackson (1983). One of the more frequently cited publications in the public debate and legal discourse on segregation is a paper by Jackson (1983). Jackson—who is a law professor, not a psychiatrist or psychologist—interviewed seven subjects who were in SC in Canada. This was in a legal context. The subjects described various effects of their confinement, ultimately leading to the winning of the legal case. No baseline measurements or standardized measures were used. There was no control group, and the measures were not repeated over time. This paper cannot be considered an academic study but could be considered background information for a book or a legal case.

Kaba et al. (2014). In an analysis of data from the New York City jail system, Kaba et al. (2014) found that 7.3% of total admissions included SC. However, 53% of total self-harm acts and 45% of potentially fatal self-harm acts took place within this segregated 7.3%. Kaba et al. noted that acts of self-harm committed before admittance to SC predicted the occurrence of self-harm in SC. This is a tautological construct. We do not

know whether the subjects were placed in SC precisely because they were a threat to themselves, having a history of harming or threatening to harm themselves. Another explanation may be that inmates with impulsivity problems, which may manifest as harm to self or others, would likely be placed in SC explicitly because they are at high risk for self-harm. This study was based on records review; no direct measurements or control group were used.

Korn (1988a, 1988b). Based on two visits to a high-security unit in Lexington, Kentucky, in 1987, Korn conducted a study resulting in two papers (1988a, 1988b). It should be noted that he was "accompanying attorneys" of the National Prison Project. Korn interviewed staff and five segregated female inmates. He reported serious psychological and psychosomatic effects, which he concluded were caused by the confinement, including severe depression, hallucinations, anxiety, apathy, weight loss, and dizziness. This study cannot be considered as adding to the argument. He does not define confinement. His subject group was also extremely small. In addition, he did not use standardized measures, had no controls, and accompanied attorneys in relation to a case.

Toch and Gibbs (1992). In their book, based on hundreds of interviews with inmates in five New York state prisons, Toch and Gibbs (1992) refer to over 900 interviews and a research instrument administered to 2,650 inmates. They conducted interviews with a random 4% sample of inmates in "sub environment" living conditions (presumed to mean SC), yielding 418 interviews. They applied the Self-Anchoring Striving Scale and the Prison Preference Inventory (which are not standardized psychological instruments). No control or longitudinal measures were applied. A second book (Toch, 1992) discusses the same interviews with inmates, an unknown number of whom were in segregation. Toch and Gibbs report that many inmates hid their symptoms; they had to be "drawn out." This presumably means that they were encouraged to report more symptoms or were asked leading questions. This weakens the findings of the study. The authors also use the term "isolation panic" to describe a range of symptoms, including panic, rage, loss of control, and complete breakdown. This provides only weak evidence of the negative effects of segregation.

Miller (1994) and Miller and Young (1997). In a study conducted in a Kentucky prison, Miller (1994) compared three groups: 10 inmates in DS, 10 in protective custody (AS), and 10 in GP. No information was collected regarding past mental illness. Miller found no significant difference in the number of symptoms reported by those in different levels of restriction; Miller concluded that higher levels of distress correlated to higher levels of restriction. Miller and Young (1997) conducted a follow-up study of general psychological distress levels for the same cohort of inmates. This study supported the previous findings. It identified increased distress among participants in DS within three of the nine primary symptom dimensions of the Brief Symptom Inventory (a standardized measure). The authors found that "psychological distress increases with the increase of restriction" (p. 92). However, differences between groups were only slight.

Volkart et al. (1983). In a Swiss study, Volkart et al. (1983) reported on 203 male patients at a "psychiatric clinic." The study was primarily based on medical and criminal records. Interviews were conducted with seven representatives of the psychiatric and judicial institutions; only six of the detained patients were interviewed to develop a theory of deviant Behaviour described in a separate paper. Of the 203 patients, 102 were

committed from prison, and 76% of these were from SC. It was the first psychiatric hospitalization for 71% of the 102 inmates. Those who were hospitalized from SC had experienced, on average, 86 days of imprisonment before their hospitalization, as opposed to 173 days experienced by the 24 inmates from GP. Of those sent directly from SC to a psychiatric clinic, 36% were hospitalized within their first five days of SC. The result suggests that over a third of the SC hospitalizations were related to adjustment disorders. The authors concluded, "Remand prisoners in solitary confinement are proportionally much more often in need of psychiatric hospitalization compared to sentenced prisoners not in solitary confinement" (Volkart et al., 1983, p. 374; translation by Smith, 2006). As the original study is not published in English, interpretation is difficult. This was not a controlled, longitudinal study. It was based on medical and criminal records as well as a limited number of interviews. Additionally, as little is known about this cohort, such as the reasons that they were in SC or their trajectory, little credence can be given to this paper.

Studies That Claim No Negative Effects of Segregation

Gendreau et al. (1968, 1970, 1972). In three early studies in Canadian penitentiaries, Gendreau and others examined the effects of confinement as an experience of sensory deprivation. All studies used inmate volunteers. The first study looked at the stimulation seeking of inmates after seven days in confinement (Gendreau et al., 1968). This study used a control group of ten inmates in isolation cells that were painted black with constant, low levels of light and sound. The authors concluded that, after deprivation, subjects sought lower levels of visual input, but their desire for auditory input remained the same as pre-test behaviour. In the second study, Gendreau et al. (1970) examined the eyelid response frequency for nine inmates after 48 hours in deprived confinement. Again, volunteer inmates were confined to darkened cells with constant noise levels. No control group was used. The authors concluded that monotonous confinement did not enhance discriminative conditioning and therefore produced no negative effects. In a third study, Gendreau et al. (1972) looked at the effects of SC on 10 inmates, with 10 controls. Volunteers were rejected if they had a previous record of psychiatric or behavioral problems or had a Beta IQ below 80. The electroencephalograms (EEG) of the subjects were recorded in confinement cells. The authors concluded that SC produced significant changes in subjects' EEG. These do not represent significant or permanent effects. The significant limiting of stimulation was no doubt a major contributor to the findings, but this is not reflective of the nature of modern segregation. Therefore, these three studies lend only a small contribution to the current debate.

Ecclestone et al., (1974). In a similar study co-authored by Gendreau, the effects of 10 days in SC—specifically, the effect on inmates' personal constructs and adrenocortical activity—were examined (Ecclestone et al., 1974). Eight inmate volunteers maintained institutional routine (GP), while eight were placed in SC for 10 days. The stability of personal construct rankings increased for confined inmates. This effect was more pronounced for "good" than for "bad" constructs independently rated as "simple" concept types. This suggests that these inmates psychologically stabilized. Adrenocortical function, measured by plasma cortisol levels (a measure of stress response), indicated that SC was not more stressful than a GP experience. This study was not longitudinal but did use a control

group. Taken together, these studies are of interest but provide only weak evidence due to their experimental nature.

Walters et al. (1963). In an early experimental study, Walters et al. (1963) investigated the effects of isolation. Forty long-term prisoners volunteered, 20 of whom were placed in isolation cells for four days. One left before the 96-hour experimental period expired. Isolated subjects were tested immediately before and after isolation; controls were tested on two occasions four days apart. Three tests of susceptibility to social influence were used: a Body Sway Test, Autokinetic test, and a condition of meaning technique (devised by Staats and Staats). Results showed some increase in anxiety but no mental or psychomotor deterioration or increased susceptibility to social influence. This study involved an experimental situation, despite taking place in a prison. Furthermore, isolation lasted only four days. This study adds to the body of literature but is methodologically weak.

Brodsky and Scogin (1988). Three studies on the effects of "protective custody," as described below, were conducted in three different U.S. prisons in Brodsky and Scogin (1988). Brodsky acted as an outside expert retained by attorneys in a class action lawsuit against the prison regarding conditions. The first two studies included 45 prisoners. In this first study, several prisoners were in SC (some double-celled). No control group was established. The sample was apparently randomly selected. A standardized procedure—the Omnibus Stress questionnaire and an isolation-effects checklist—was used. In a second study, an Isolation Sentence-Completion Test was devised and used; this is not a standardized measure. The authors recorded a high prevalence of psychological (and physical) symptoms. The first study showed nervousness (84%), hallucinations and delusions (42%), and suicidal thoughts and depression (77%). The second study showed physical symptoms (79%), anxiety (45%), and depression (36%). The authors could not assert the cause of these symptoms since they concluded that many subjects could have had pre-existing pathologies. Additionally, a significant proportion of inmates in these studies had chosen protective custody for themselves. In a third study involving inmates in protective custody with spacious two-man cells and access to programmed activities, there were no complaints. It was concluded that protective custody was not necessarily harmful but had "strong potential for harmful effects" (1998, p. 279). As the authors were retained by the lawyers for the plaintiffs, it is therefore especially noteworthy that they could not attribute harmful psychological effects to the conditions of restriction. The third study did not use established standardized measures and provides only weak evidence of harmful effects.

Suedfeld et al. (1982). In a study of five American and Canadian prisons, Suedfeld et al. (1982) collected data from volunteer respondents using interviews and questionnaires. The authors used a structured interview; a questionnaire about ways of coping; and measures of personality, intelligence, mood, subjective stress, and creativity. They used standardized assessments: CPI, MAACL, Quick Test, version of Alternate Uses Test, Subjective Stress Scale, and Solitary Confinement Questionnaire. There were no longitudinal measurements. They found no differences between the experience of SC participants and the control group. They concluded that the data "do not support the view that SC in prisons is universally damaging, aversive, or intolerable" (p. 303).

Ward and Werlich (2003). The authors looked at records of inmates held in supermax at Alcatraz and Marion in the U.S., cases that likely represent

isolated conditions. They found that only 8% of the 1,550 inmates in Alcatraz were “clinically diagnosed as manifesting evidence of psychosis,” and suggested that “most of the men . . . were able to survive their years in super maximum custody without suffering psychological damage serious enough that they could not adjust to life in other prisons or in the free world after release” (p. 65). This study was based on records review; no direct measurements or control group was used.

Zinger et al. (2001). In a study of 60 inmates in Canadian penitentiaries (23 segregated and 37 non-segregated), Zinger et al. (2001) hypothesized that segregation would negatively affect mental health and that involuntary placement subjects would be more affected. Initial testing took place, on average, 3.6 days after admission to segregation, and then again at 30 and 60 days. Those in segregation had significant previous segregation experience (on average, 12 previous experiences). Of the 23 segregated prisoners, 39% were segregated voluntarily, 61% involuntarily. Only 10 inmates in the final were isolated involuntarily. Both groups had significant increases in most function scores and decreases in symptom scores over time. In other words, their mental health and psychological functioning improved. According to the authors, “this research revealed no evidence that administrative segregation for periods of up to 60 days was damaging” (p. 63). As is the case with many studies of this nature, there was a high refusal rate (44% for segregated offenders, 40% for non-segregated offenders) and a high attrition rate (data was only complete for 28% of segregated offenders and 70% of non-segregated offenders since many probands left AS during the study period). This was a controlled, longitudinal study conducted within the Canadian penitentiary system.

Chadick et al. (2018). Another recent study used the most comprehensive testing of any study available (Chadick et al., 2018). The authors used the MCMI-III, which has been validated in corrections and is recommended for measuring treatment change, to measure whether those in AS fared worse than those in GP. The study included 24 match-paired male inmates from the GP and 24 from AS. The length of time in AS was 1 to 4 years, with a mean of 1.9 years. The results showed that serving time in segregation did not lead to significantly more problematic psychological distress than serving time in GP.

O’Keefe et al. (2010). A study by O’Keefe and others (O’Keefe et al., 2010; O’Keefe et al., 2013), which study looked at the effects of AS, stands out for its evidence-based design and current relevance. A total of 270 participants gave informed consent to participate. Subjects were given a standardized test measuring a variety of psychiatric constructs relevant to the hypothesis of the harmful effects of AS. The measure was a self-report scale, which was validated and standardized. Consent to testing was gained from subjects; tests were administered by a research assistant trained to administer the instrument. Inmates were tested at approximately 3-month intervals for a total of six testing sessions. The hypothesis was that inmates in segregation would develop psychological symptoms “consistent with the SHU syndrome” (Secure Handling Unit syndrome, as defined by Grassian and Haney) and would deteriorate over time. The results did not support the hypothesis. Baseline testing showed that segregated inmates had more symptoms than their GP comparison group. Measurements indicated a significant decrease in psychological symptoms over time, with fast improvements early on stabilizing over time. This pattern of change was similar in all five study groups.

O’Keefe et al. cautioned that this study could only be applied to literate adult male offenders. It is possible that the subjects had previous segregation experience. It should be noted that there was a research advisory group for this study that included advocates for the mentally ill who participated in the design and oversight of the study to assure a balanced study design. This study represents the best example of what can be described as a reasonable real-world study of this issue. The study used reasonable numbers, standardized testing, baseline measurements, and a longitudinal design with controls.

Walters (2018). In an attempt to address a criticism of the O’Keefe et al. (2010) study that has been frequently reported in court proceedings (that the study relied too heavily on self-reports), Walters (2018) employed an analysis of clinician ratings rather than self-report scores. Participants in Walters included 266 of the 270 inmates from the original O’Keefe study. The findings demonstrated that there was a small but clearly defined group of inmates who suffered significant mental health deterioration whether they were in AS or in the GP. The findings also demonstrated that mentally ill inmates housed in both AS and in GP (or even Nj in a special mental health unit) showed equivalent levels of psychological deterioration. He concluded that psychological deterioration in a small group of incarcerated individuals is dependent upon prior mental health difficulties rather than where the individual is placed.

The Morgan Review Paper

The most comprehensive analysis of research in this field is the 2016 systematic review by Morgan et al. (2016). This study conducted two meta-analyses of relevant literature to determine if AS produced an effect on the physical and mental health functioning of inmates. The standardized procedure—widely recognized and accepted as the primary basis for guiding medicine and health science professionals—involves searching for, and including or rejecting, research literature (the systematic review) before statistically analyzing the data (meta-analysis). The first review identified 150 relevant studies and then eliminated those that were not of sufficient quality. Fourteen studies were included in the final sample. In the second review, the authors located 40,589 relevant academic articles. They then eliminated book chapters, those that did not report original results, and those that did not evaluate mental health outcomes, leaving 61 articles. The strengths of the remaining studies were evaluated. In this paper, we chose to capture some of the papers that Morgan et al. (2016) rejected because many of are some of the studies often cited in the broader public discourse regarding AS. We are, therefore, not disregarding the scientific rigour of the meta-analytic process; we, in fact, give significant weight to the findings of Morgan et al. (2016), and hope our present findings add to their conclusions.

The Morgan paper rated the O’Keefe et al. (2010) study as having a strong design quality, with comparison groups having spent, on average, 361 or 373 days in AS. Zinger et al. (2001) was also rated as a strong study with a sample of 136 and 60 days in AS. Comparatively, Miller and Young (1997) and Suedfeld et al. (1982) were considered weaker studies, but still worth including. Analysis of these studies and articles revealed “considerably smaller effect sizes among studies with stronger research designs compared to those with weaker designs” (Morgan et al., 2016, p. 439). Morgan concludes that “these results do not support the popular contention that AS is responsible for producing lasting emotional damage. Rather, these findings tentatively suggest that AS may not produce any

more of an iatrogenic effect than routine incarceration” (p. 439). The conclusions of this study should be given due consideration.

Conclusion

The initial transition from community into jail or prison can be stressful. However, transitions within prison, from the GP or a special needs unit to segregation, are not as dramatic a change. Many inmates see this as part of prison life and come to terms with the situation. Recent surveys have demonstrated that at least 50% of those in segregation are there by their own request (Sapers, 2017). In some cases, introverted inmates prefer solitude to participating in the GP. Others recognize they are more likely to achieve better Behaviour, and therefore a shorter sentence, if they are separated from others.

In conclusion, there is a body of research that demonstrates no negative effects on mental health produced by being in segregation. Of the limited number of studies that do suggest negative effects, only two of these used standardized instruments and repeated longitudinal measurements. The rest are largely qualitative, based on interviews often tainted by the context of legal proceedings, and should be viewed with caution. A subsequent paper will extend the line of questioning conducted in this review. We anticipate that the findings of these two reviews will be useful in determining the appropriate use of AS in prisons and in guiding the design of future relevant studies.

We would like to make it clear that we are not advocates of AS, except as a last resort for managing certain difficult persons who represent a threat

to the safety and security of themselves or the institution. In the correctional environment, it appears that public policy, fuelled by the lay press, is moving toward decreasing this resource. It is unclear whether this is matter has moved beyond the evidence to support it. We strongly support the concept of diverting mentally ill people away from jails and prisons using police diversion schemes, mental health court diversions, and the facilitation of transfers of the mentally ill to secure psychiatric hospitals.

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Appendix

The following tables detail the design elements of each study reviewed. If the same empirical material is presented in multiple publications by authors, only the first publication (or the most relevant and accessible study) has been included. Studies have been labelled according to the following key:

- i. study based on quantitative data
- ii. study based on qualitative reviews
- iii. study based on empirical review of records

Y Yes

N No

Study	Sample Size	Baseline Measures	Testing	Control Group	Longitudinal Structure	Conclusions
Brodsky & Scogin, 1988	69	N	i + ii	N	N	Concluded that protective custody was not necessarily harmful, but it had “strong potential for harmful effects.”
Chadick et al., 2018	48	Y	i	Y	N	Concluded that rather than causing significant psychological damage, segregation is likely a barrier to opportunities for growth, as inmates in GP showed functional improvement while those segregated remained largely the same.
Eccleston et al., 1974	16	Y	i	Y	Y	Concluded SC was not more stressful than normal institutional life. Trends actually showed lower cortisol levels for confined inmates.
Gendreau, 1968	20	Y	i	Y	Y	Results indicate subjects did not desire a greater amount of sensory input after a period of deprivation, supporting the contention that some subjects in long-term confinement can adapt to a deprived situation.
Gendreau, 1970	9	Y	i	N	N	Concluded that SC produced significant changes in subjects’ EEG and VEP levels.
Gendreau, 1972	20	Y	i	Y	Y	Concluded that SC produced significant changes in subjects’ EEG and VEP levels.

O'Keefe, 2010	270	Y	i	Y	Y	Found that "mentally ill inmates in segregation were fairly similar to their comparison groups." Subjects in AS with mental illness did not deteriorate more rapidly than those without mental illness.
Suedfeld et al., 1982	115	N	i + ii	Y	N	Found no major psychological damage among SC groups. Concluded that "the situation is tolerable and, in some cases, may even be perceived as beneficial," and that that data "do not support the view that SC in prisons is universally damaging, aversive, or intolerable."
Walters, 2018	266	Y	i	Y	Y	Found that "psychological deterioration in mentally ill inmates may have less to do with AS than with incarceration in general." "Inmates with a history of mental health need were just as likely to experience severe psychological deterioration in general population as in AS."
Walters et al., 1963	40	Y	i	Y	N	Concluded that social isolation does not result in mental or psychomotor deterioration. Results suggest that "the deleterious consequences of social isolation have been too greatly emphasized."
Ward & Werlich, 2003	1,550	N	iii	N	N	Concluded most subjects were able to survive time in supermaximum custody without suffering psychological damage serious enough to affect adjustment to life out of prison or in other prisons.
Zinger et al., 2001	60	N	i	Y	Y	Research revealed no evidence that AS for periods of up to 60 days was damaging. Both GP and AS had significant increases in most function scores and a decrease in symptoms over time.

Table A1: Studies Reporting No Negative Health Effects

Study	Sample Size	Baseline Measures	Testing	Control Group	Longitudinal Structure	Conclusions
Andersen et al., 1994	367	Y	i + ii	Y	Y	Found that mental health scores of subjects in SC remained unchanged throughout the isolation period, while subjects in GP demonstrated gradual improvement.
Andersen et al., 2000	228	N	i + ii	Y	Y	Found a higher rate of psychiatric morbidity for subjects in SC than the control group. Concluded remand in general could be a stressor.
Gamman, 2000	63	N	ii	N	N	Found that 94% of prisoners suffered adverse effects after 4 weeks in SC.

Gamman, 1995	54	Y	ii	Y	Y	Found that isolated prisoners reported more health problems than the control group.
Grassian, 1983	14	N	ii	N	N	Found isolated inmates suffered numerous symptoms constituting "a major, clinically distinguishable psychiatric syndrome."
Haney, 1993	100	N	ii	N	N	Found very high prevalence of mental health symptoms in SHU inmates.
Jackson, 1983	7	N	ii	N	N	Concluded that segregation was "the most individually destructive, psychologically crippling and socially alienating experience that could conceivably exist."
Kaba et al., 2014	244,699	-	iii	Y	Y	Found that self-harm significantly correlated with subjects who were in solitary.
Korn, 1988a	5	N	ii	N	N	Found serious psychological and psychosomatic effects, including severe depression, hallucinations, anxiety, apathy, loss of weight, and dizziness. Concluded that confinement and mistreatment by staff were major factors.
Miller, 1994	30	N	i	Y	N	Found level of psychological distress increased with level of restriction. Subjects in DS and AS reported significantly more psychological distress than GP.
Miller & Young, 1997	30	N	i	Y	N	Found that inmates in DS reported more feelings of inadequacy, inferiority, withdrawal, and isolation.
Sestoft et al., 1998	345/124	N	i + ii + iii	Y	N	Concluded that SC "does not result in any considerable number of admissions to psychiatric care outside the prison," but the relative risk of admission increased with time in SC compared to non-SC.
Toch, 1992	600	N	i + ii	Y	N	Concluded isolation can "dramatize the pains of imprisonment."
Volkart, Rothenfluth, et al., 1983	203	N	ii	Y	Y	Found that prisoners in SC were more often hospitalized for psychiatric reasons than GP.

Table A2: Studies Reporting to Demonstrate Negative Health Effects.

Conflict of Interest:

Dr Glancy has been retained by the province of Ontario in a number of class-action cases involving use of AS.

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