

**AN EXPLORATION OF THE EFFECTS OF SOLITARY CONFINEMENT IN
THE CRIMINAL JUSTICE SYSTEM**

By

KEIRA GRACE MONTGOMERY

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Approved by:

Dr. Andrew Perkins
Department of Psychology

Abstract

Psychology, which is the study of the human brain and its involvement in thought processes, personality, and characteristics, has always been relevant in considering the motives, methods, and decisions of criminals. It is especially pertinent when studying corrections, which often involves an attempt to change someone's behavior through punishment. A specific type of punishment is solitary confinement, which entails the nearly complete isolation of an individual from human contact, including from other inmates and prison staff. Though it may be imposed for a variety of reasons, it almost always includes complete social isolation and some degree of sensory deprivation. The effects of solitary confinement on individuals have been studied in controlled experiments, in the natural environment, on volunteers, both in and out of prison settings. This review both outlines the findings from decades of research and provides suggestions for future research.

Keywords: solitary confinement, correctional psychology, corrections, punishment.

AN EXPLORATION OF THE EFFECTS OF SOLITARY CONFINEMENT IN THE CRIMINAL JUSTICE SYSTEM

Though it has been a tool used in penitentiaries for a significant period, the concept of solitary confinement only became widely known during the first half of the nineteenth century (Smith, 2006). Solitary confinement, which is also often referred to as administrative segregation, isolation, or restrictive housing, is a construct that many modern-day facilities have adopted. The term does not have a concrete definition since different institutions put it into practice in varying ways. Still, several vital elements are universally associated with solitary confinement. At its core, solitary confinement involves the removal of an inmate from the rest of the prison's general population and placement in a separate area. As the name suggests, the inmate is severely restricted from access to other individuals; their segregation controls their access both to other inmates and to staff in the institution. This segregation may occur for one or more of the following reasons: To discipline or punish problematic inmates; to minimize the inmate's risk of harm or disruption, either to staff or other inmates; to improve the security of an inmate who is considered an escape risk; or, in the case of remand prisons, to prevent the tampering of evidence or to coerce a confession (Andersen et al., 2000; Arrigo & Bullock, 2008; Smith, 2006). Additionally, an inmate may be placed in solitary confinement, either voluntarily or otherwise, to protect him or her from violent or vengeful behavior from other inmates (Andersen et al., 2000; Smith, 2006). It should be noted that it is virtually impossible to isolate an inmate from all types of human contact, and thus even the most severe forms of solitary confinement involve brief interactions with others (Smith, 2006). Moreover, not all experiences in solitary confinement are created equal, as some inmates can access certain regulated items, such as material possessions and sources of entertainment (Chadick et al., 2018; Shalev, 2011).

However, in general, solitary confinement includes starkly reduced stimulation and little human contact.



Figure 1. An example of a cell used for solitary confinement. Photo by Donna McWilliam.

A specific sub-category of solitary confinement involves what is termed “supermax” conditions. Supermax conditions can involve up to twenty-three hours per day of strict isolation, which normally takes place in a carefully designed, barren cell (see *Figure 1*) (Arrigo & Bullock, 2008; Chadick et al., 2018; Haney, 2003; Pizarro & Narag, 2001; Shalev, 2011; Shalev, 2014). In these cells, inmates have little to no control over their surroundings; many cells lack windows, and in some cells, the lighting is artificial and powered on for the entirety of the day, thereby disorienting the inmates and making it nearly impossible to accurately perceive the passage of time (Arrigo & Bullock, 2008). These cells are often placed under twenty-four-hour surveillance and lack most methods of communication with the outside world (Shalev, 2011). For example, inmates may receive few, if any, phone calls from relatives or friends, and are denied access to

the rest of the general population (Arrigo & Bullock, 2008; Shalev, 2011; Shalev, 2014). Moreover, their interactions with prison staff are generally brief and restricted (Arrigo & Bullock, 2008; Haney, 2003; Pizarro & Narag, 2001; Shalev, 2011; Toch, 2001). In general, inmates in these conditions interact with prison staff only to be served meals, escorted to bathe, or escorted to exercise (Arrigo & Bullock, 2008; Smith, 2006; Shalev, 2011). That being said, communication is not impossible, as inmates may interact through methods such as shouting to one another or knocking on shared walls (Haney & Lynch, 1997; Shalev, 2011). Perhaps most concerning, inmates are unaware of exactly how long they will be in solitary confinement, and there is no way to predict when they will be able to leave (Arrigo & Bullock, 2008).

A crucial component of solitary confinement, specifically in supermax conditions, is what's called "sensory deprivation." This term is used to describe "conditions aimed at reducing, altering or by some means or other, interfering with a person's normal stimulation from, and commerce with, his environment" (Haney and Lynch, 1997, p. 106). In other words, an individual is placed in an area where he or she is bereaved of visual, auditory, somatosensory, olfactory, gustatory, or vestibular stimulation. A cell that is used for solitary confinement lacks the stimulation needed to satisfy these senses, especially because the cell itself is static and unchanging, unintended to provide sensory stimulants (Toch, 2001). Haney and Lynch (1997) argue that, according to the definition provided above, essentially every form of solitary confinement includes sensory deprivation to some degree.

Among the research that has been completed on solitary confinement, some findings contradict one another. Some research states that solitary confinement is severely damaging to an individual, while other research says that solitary confinement appears to have no ill or long-lasting effects. Other studies have found that some elements of solitary confinement, namely

sensory deprivation, can be beneficial for individuals with certain preexisting psychological conditions, such as schizophrenia. Lastly, amongst those who believe that solitary confinement is harmful, the extent to which that is true varies considerably. The aim of this review is to provide a comprehensive summary and analysis of the existing literature regarding solitary confinement's psychological effects, specifically those resulting from administrative or punitive segregation and including supermax conditions. I will look at results from different studies and compare them to see what trends or patterns exist. I will also identify areas that we can further study and provide ideas for how we can accomplish this task.

Review and Analysis

Methodologies of Solitary Confinement Studies

The methodology used to study real prisoners in solitary confinement has varied greatly. In many ways, the results of inquiries into solitary confinement are often less a result of solitary confinement itself, but more a product of decisions made about who to study, how to study them, and how long the study should be conducted.

For example, a 1983 cross-sectional study by Volkart and colleagues included few, if any, interviews and no longitudinal data. The study found that inmates in solitary confinement tended to exhibit more psychopathological symptoms, such as increased anxiety, heightened emotional sensitivity, thought disorders, and persecutory delusions, in comparison to inmates who were in the general population. Another study by Gamman (1995) included a control group set against the group in solitary confinement. While there were key differences in the two groups, the most notable was that at the beginning of the study, the isolation group was significantly healthier than the control group, both in terms of psychological and physical health. Moreover, Gamman's (1995) study excluded inmates who were known to react adversely to solitary confinement, the

inmates in the solitary confinement group were older and tended to skew more towards drug crimes. The study also used no standardized instruments besides the Montgomery-Åsberg's Depression Rating Scale. This study found that when placed in solitary confinement, inmates tended to display more health issues than those who were not placed in solitary confinement. These issues included body aches, headaches, anxiety, and depression (Gamman, 1995).

Another study included 100 randomly selected inmates in the Pelican Bay SHU; these inmates were interviewed twice (Haney, 2003). The findings of this study showed that inmates in solitary confinement tended to experience very high levels of psychological distress, including, but not limited to: Nervousness, anxiety, emotional instability, chronic lethargy, and trouble with sleeping (Haney, 2003). Haney's study in 2003 did not include a control group, nor was there longitudinal emphasis placed in the study. The issue with a lack of a control group is that there is no other data to compare the findings of the study with, and thus the scale of the effect of solitary confinement cannot be determined. One of the most cited studies was the 1983 study by Stuart Grassian, who studied fifteen inmates as part of a court case. The fifteen inmates were the plaintiffs in the case, which presents a potential issue of selection bias. Nevertheless, Grassian's 1983 study was noteworthy in that it both replicated previous findings, which was that solitary confinement carried a great risk of psychological harm, and sparked additional interest in conducting future studies.

It's important to note that some studies involving inmates included self-selection amongst participants (i.e., the inmates volunteered to be part of the study), such as the 1963 study by Walters, Callagan, and Newman. Other studies, such as the 2020 study of mortality rates after being released from prison by Wildeman and Andersen, involved no informed consent. The study by Walters, Callagan, and Newman (1963) found that "while social isolation may produce some

change in subjective feelings, it does not result in mental or psychomotor deterioration or increased susceptibility to social influence” (p. 772). It is possible that this finding could be related to the fact that the participants in this study had self-selected and thus may have been more resilient.

The longitudinal study by Wildeman and Andersen (2020) involved information obtained from Danish administrative and probationary centers; this information was designed to compare the mortality of former solitary confinement inmates with general population inmates. What was found was that those who were registered to have spent time in solitary confinement were vulnerable and had higher mortality rates than those who had not (Wildeman & Andersen, 2020). Because this study involved only statistical data that was obtained from a register, Danish legislation did not require informed consent (Wildeman & Andersen, 2020). For that same reason, it is unlikely that the lack of informed consent had any bearing on the data and results of the study.

Overall, the relationship between finding or not finding negative effects seems to have been somewhat dependent on external factors beyond the contents of the study itself. Some of the deleterious effects appeared to be lessened by variables such as the duration of the study, the subject’s knowledge of the passage of time, and the degree to which the subject was familiar with the experimenter and experimental conditions (Haney & Lynch, 1997). Other variables that appeared to impact the results of their respective studies included: The general atmosphere of the laboratory and/or environment in which the study was taking place, the appearance and behavior of the researchers, and the subjects’ degree of comfort and familiarity with both (Haney & Lynch, 1997, p 115). These variables specifically had an impact on how subjects viewed the

study and how they were emotionally able to react to the effects of sensory deprivation (Haney & Lynch, 1997).

One factor that is extremely important in the study of the effects of solitary confinement is the setting in which the study takes place. For example, a laboratory study and a study in prison have the potential to have very different results. A laboratory or artificial setting has the benefit of being much more controlled; it is less likely for undesirable or extra variables to affect the data. Through this, an independent variable can be established, helping an experimenter establish a cause and effect relationship. This type of study also allows for a standardized procedure to be used. A benefit of this is that the study can be replicated if needed, which could either support or refute the previous data. In general, the laboratory studies relating to solitary confinement have focused largely on sensory deprivation, in which participants have been placed in situations that have lacked both social and somatosensory stimuli (Grassian & Friedman, 1986).

The obvious shortcoming of a study that examines sensory deprivation in an artificial setting is that it varies considerably from the experience that an inmate will have in solitary confinement. For one, solitary confinement, especially punitive segregation, is something that is imposed upon oneself, whereas in a study, the participants are generally self-selected volunteers. For another, a study includes an artificial construct in which the experimenter has almost complete, if not complete, control over the situation and the variables that come into play. It is unlikely that even the strictest of experiences in solitary confinement will match the levels of sensory deprivation that occur in a study (Haney & Lynch, 1997). The time for which one experiences sensory deprivation in a study is generally much shorter than one's stay in solitary confinement, and unlike in a study, inmates in solitary confinement may not be aware of when or

if their stay will end (Haney & Lynch, 1997). Moreover, the connotation between a voluntary study and a prison sentence is vastly different and such a difference can have a huge impact on how one responds to the duress that he or she is placed under (Haney & Lynch, 1997). That being said, this type of research is nonetheless beneficial to understanding the effects of sensory deprivation, and, by extension, solitary confinement. It shows that the effects of sensory deprivation can be dramatic but varied, as every individual will have a different reaction, even under extreme circumstances (Haney & Lynch, 1997; Smith, 2006).

Perhaps a less expected shortcoming of studying the effects of solitary confinement in a prison environment is the phenomenon of prisoners hiding their conditions to the best of their ability (Grassian, 1983; Smith, 2006; Toch, 1992). Several potential explanations for this behavior exist: For one, inmates may be afraid that displaying any behavior indicative of an adverse condition would be seen by the prison staff as a weakness (Smith, 2006). Another potential explanation is that some inmates may fear skepticism from the prison staff, as the staff may believe that the inmate is malingering in an attempt to con or manipulate the staff (Smith, 2006). Because some inmates have attempted to exploit prison staff in hopes of obtaining special treatment, many prison employees are concerned with avoiding anything that might be able to be used as leverage. Thus, they may perceive any displays of concerning, extreme, or otherwise abnormal behavior – including acts of self-harm – as an attempt at a con (Smith, 2006).

Another limitation of a prison-based study is the potential for bias amongst the studied population. Studying solitary confinement can be innately biased due to the population's much higher prevalence of mental health issues than the general prison population (Arrigo & Bullock, 2008; Haney, 2003; Smith, 2006). These preexisting mental health conditions may result in

skewed results, and the effects of solitary confinement can thus be presented in either an exaggerated, understated or otherwise completely inaccurate manner. Moreover, it is possible that participants will self-select by volunteering to be in a study. While this limitation is also seen in a laboratory study, an inmate may perceive benefits from participating, such as the chance to talk with researchers or disrupt his or her highly regimented routine.

Given all of the pros and cons of the prior studies, it is arguable that the methodologies of most of the studies had the potential to create bias. Perhaps the study with the lowest amount of bias might have been the study done by Wildeman and Andersen in 2020. This study included statistics garnered from databases and contained several comparison groups. A study design that might have the potential to yield interesting results would take elements from some of the other previously conducted studies; for example, taking a group of randomly selected inmates in solitary confinement (i.e., Haney, 2003) and comparing them with a control group (i.e., Gamman, 1995) might be beneficial to the study of solitary confinement. However, care would have to be taken to avoid cherry-picking individuals for each group, as seen in Gamman's 1995 study.

The Effects of Solitary Confinement and Sensory Deprivation on Physical Health

Some research has suggested that the effects of solitary confinement may not be limited only to psychological and mental well-being. Research has found that a host of deleterious physiological effects may correlate with time spent in solitary confinement (Grassian, 1983; Grassian & Friedman, 1986; Haney & Lynch, 1997; Koch, 1982; Korn, 1988a; Korn, 1988b; Shalev, 2011, Shalev, 2014). The physiological effects found in these studies include but are not limited to gastro-intestinal and genito-urinary problems, diaphoresis, joint pains, migraines, the deterioration of one's eyesight, lethargy or fatigue, and tremulousness (Grassian, 1983; Grassian

& Friedman, 1986; Shalev, 2011; Shalev, 2014). In two 1998 studies by Korn, prisoners in solitary confinement reported additional symptoms such as weight loss, which might result at least in part from the digestive issues mentioned above; heart palpitations, as well as an increased risk of cardiovascular issues (American Psychological Association, n.d.); dizziness; and dehydration, which was said to be very severe in some cases. Other studies have reported discomfort in the chest (Smith, 2004), abdomen, neck, and back (Gamman, 2001). Some studies have also observed inmates in solitary confinement fainting (Haney, 2003). However, it's possible that this is a result of another negative effect, such as gastrointestinal problems, or unrelated altogether. If one had preexisting medical conditions, these could be aggravated or exacerbated (American Psychological Association, n.d.; Shalev, 2014); however, it's possible that this effect could also be seen in the general prison population, as prisons are not generally conducive with world-class medical care.

Some physiological effects may also be linked to psychology; it is possible that poor appetite and insomnia, which are other effects mentioned by Shalev (2014), may be physical effects due to one's psychological state. Depression and anxiety are other commonly found phenomena amongst inmates in solitary confinement (American Psychological Association, n.d.; Haney, 2018; Haney & Lynch, 1997; Koch, 1982; Shalev, 2011). Shalev (2014) states that it is likely that some of these consequences are at least partially due to the lifestyle that one leads while in solitary confinement, which is largely sedentary and lacking in fresh air and sunlight. This finding is corroborated by a 1988a study by Korn, who added that it was likely that these conditions were only made worse by the treatment of some inmates imposed by some prison staff. It's important to note that an elevation in self-harm, as well as suicidal thoughts or actions,

are also positively correlated with solitary confinement (American Psychological Association, n.d.; Haney, 2018; Haney & Lynch, 1997; Shalev, 2014; Smith, 2006).

All of the above having been stated, not all research suggests that solitary confinement results in negative effects. A study by Walters, Callagan, and Newman (1963) found that no negative physiological effects, nor psychological effects, arose in participants after four days of isolation. However, it is important to note that in this study, all forty of the participants had volunteered to be in the study, and the duration was only four days, which is much shorter than most stays in solitary confinement (Walters, Callagan, & Newman, 1963).

The Effects of Solitary Confinement and Sensory Deprivation on Psychological Health

One's psychological reaction to solitary confinement is contingent on a variety of factors, including, but not limited to: The personal background and existing mental health issues of the individual; the environmental factors of the confinement; the regime and schedule of the individual; the circumstances of the isolation; and the duration of the isolation (Metzner & Fellner, 2010; Shalev, 2011). Moreover, there is a stigma that surrounds solitary confinement, and inmates who are sent to solitary confinement are often considered to be the "worst of the worst" (Haney, n.d., p. 12). The negative psychological effects that can arise are often related to some of the physiological effects. These could include depression, anxiety, lethargy, insomnia, and poor appetite; these can both overlap with, influence, or be influenced by the physiological consequences of solitary confinement. Multiple studies have found that perceptual distortions are another potential example of the negative effects of solitary confinement (Grassian & Friedman, 1986; Haney, 2003; Haney & Lynch, 1997; Metzner & Fellner, 2010; Smith, 2006; Shalev, 2011). Some individuals may experience hallucinations or delusions (Haney, 2003; Haney & Lynch, 1997; Metzner & Fellner, 2010; Shalev, 2011), which are often

either auditory or visual, but may also be olfactory (Grassian & Friedman, 1986). One of the most notable effects of solitary confinement, anxiety, was briefly touched upon earlier. Among individuals who are in solitary confinement, anxiety levels can reach extremely high levels (Grassian & Friedman, 1986; Haney, 2003; Haney & Lynch, 1997; Shalev, 2011). Nervousness, depersonalization (i.e., a feeling of being an outside observer of one's mind or self), lack of control over the emotions, hallucinations (i.e., a perceived experience that does not exist beyond one's mind), anxiety, and paranoia (i.e., an intense feeling of suspicion that may be irrational) was discovered by Koch (1982) to appear after a few weeks in solitary confinement. Toch (1992) coined the term "isolation panic" to describe a host of symptoms that he'd noticed amongst inmates in isolation, including panic, rage, the loss of control, and a complete psychological breakdown. Problems perceiving the passage of time, boredom, issues with concentration, confusion, loss of the sense of reality, stress, bitterness, delirium, acute psychosis, and issues with memory have also been reported (Andersen et al., 2000; Grassian & Friedman, 1986; Haney, 2003; Koch, 1982; Korn, 1988b; Smith, 2006).

These negative symptoms are so prominent that Dr. Stuart Grassian, a psychiatrist at Harvard University Medical School, designated a syndrome to describe some of them. The syndrome, called "SHU syndrome" (for which "SHU" stands for "secure housing unit"), contains six basic tenets: "(1) hypersensitivity to external stimuli; (2) perceptual distortions, illusions, and hallucinations; (3) panic attacks; (4) difficulties with thinking, concentration, and memory; (5) intrusive obsessional thoughts; and (6) overt paranoia" (Grassian, 2006, p. 337)

Notably, solitary confinement can cause long-lasting and significant mental trauma. Koch (1982) found that many individuals who had previously spent time in solitary confinement found it difficult to discuss – and therefore relive – their experiences. A discussion of such experiences

was, for some individuals, traumatic and painful; only in-depth, personal interviews in a certain atmosphere helped coax former inmates to talk (Koch, 1982). Moreover, Koch (1982), Haney (2003), and Story (2014) found that even after isolation had ended, many individuals continued to live their lives alone, and may have felt socially handicapped or limited. During interviews conducted by Story (2014), inmates used words such as “broken,” “insanity,” “lost,” “closing of mind,” and “living death” to describe their experiences in solitary confinement (p. 358). Those interviews also described the acute mental anguish felt by many inmates. For example, one inmate said that his experience caused him to lose a part of himself, and he stated that it was something that he, along with many other inmates, would never be able to recover from (Story, 2014). Solitary confinement can, in a sense, lead to an inmate losing his or her sense of self and, thus, his or her place in the world (Haney, 2003). Such a reaction may be a result of an inmate’s inability to use social contact as a means to validate and determine what is real and what is not, or what is external versus what is internal (Arrigo & Bullock, 2008). Amongst some former inmates, the loss of understanding appeared to lead to a complete loss of grasp on reality and the subsequent creation of a fictitious fantasyland (Haney, 2003).

Not every inmate will suffer each one of these effects. The symptoms and the severity of said symptoms can vary widely in accordance with both the individual and the individual’s experiences (Metzner & Fellner, 2010). In a minority of studies, the results deviated greatly from those discussed above. A 2018 study by Chadick et al. found that the levels of distress, anxiety, and depression exhibited by the participants did not seem to significantly differ from those expressed by inmates in the general population. Moreover, a study in 1963 by Walters, Callagan, and Newman found that after four days, none of the participants appeared to exhibit any severe negative psychological changes. Furthermore, it should be emphasized that the majority of the

findings stated above came from extended periods, such as a few weeks, of solitary confinement, and there is less evidence that shorter periods in solitary confinement, such as a few days, will produce the same results (Arrigo & Bullock, 2008). That being said, many of the short-term studies that have been conducted thus far have been very highly controlled and regulated, and thus may not be accurately representative of an inmate's true experience in solitary confinement (Arrigo & Bullock, 2008). Nevertheless, there is a consensus that solitary confinement is a direct cause for these symptoms to appear, most likely due to the lack of social contact, the lack of stimulation, and the lack of sensory input (Arrigo & Bullock, 2008; Gamman, 2001; Grassian, 1983; Haney & Lynch, 1997; Koch, 1982; Smith, 2006).

Self-harm and Suicide in Solitary Confinement

Self-harm is not a concept exclusive to any single environment. Self-harm has been documented in individuals both in and out of prison, but there are certain environments where the behavior is certainly more common. Shalev (2014) notes that self-harm incidences, which are already higher in prison populations than in the un-incarcerated population, spike even higher amongst those in solitary confinement. Multiple studies have found that there is a positive correlation between the risk of self-harm and solitary confinement (American Psychological Association, n.d.; Arrigo & Bullock, 2008; Gamman, 2001; Haney, 2003). According to Haney (2003), psychosis, suicidal actions, and self-mutilation are commonly seen among prisoners in long-term solitary confinement. The American Psychological Association (n.d., p. 1), the world's largest professional association of psychologists, asserted that "solitary confinement is associated with severe harm to physical and mental health among both youth and adults, including the increased risks of self-harm and suicidal thoughts." Interestingly, these issues subsided following their release from solitary confinement (Arrigo & Bullock, 2008).

Self-mutilation or self-harm may manifest itself in multiple ways; an example would be a prisoner harming himself or herself by intentionally slamming his or her body into the walls of the cell (Toch, 1992). Slashing was one method of self-mutilation discovered by Scott and Gendreau (1969). They hypothesized that self-harm was caused by inmates' frustration at their inescapable routine and situation. Additionally, numerous researchers have found a correlation between solitary confinement and behaviors, thoughts, or actions related to suicide (Shalev, 2014; American Psychological Association, n.d.; Haney, 2003; Haney, 2018). Daza, Palloni, and Jones (2019) cite the ingestion of toxic substances and attempts at hanging oneself as two behaviors that have been seen among inmates in solitary confinement.

However, the extent to how often this phenomenon occurs is disputed. One Norwegian study looked at remand (i.e., pretrial incarceration) prisoners who had been in solitary confinement for approximately four weeks. Among those, 13 percent of the studied population displayed traits of self-harm (Gamman, 2001). Another issue of contention is the reasoning behind self-mutilation; Smith (2006) suggested that it could be seen as an attempt at conning or tricking prison staff, though it should be noted that this is pure speculation.

An interesting question that is raised is whether or not self-harm leads to solitary confinement, or whether it is solitary confinement that triggers self-harm. Coid et al. (2003) suggested that it was the former; according to their research, prisoners "with severe mental disorder, suicidal tendencies, and a history of deliberate self-injury were more likely to report having been placed in special ('strip') cell conditions" (p. 335). However, other research suggests that it is solitary confinement that drives inmates to self-harm, especially if the inmate is in solitary confinement for a considerable period (American Psychological Association, n.d.; Gamman, 2001, Toch, 1975). The psychological effects of isolation, such as rage, panic, loss of

emotional control, psychological regression, and unresolved physiological or psychological tension may result in inmates mutilating themselves in an attempt to find some form of release (Toch, 1975). It is important to note that many inmates in solitary confinement have some sort of preexisting psychological condition, and such psychological conditions can potentially influence one's likelihood to engage in self-destructive behaviors (Haney, 2003; Toch, 2001).

Long-Term Consequences and Mortality

Studies have shown that the effects of solitary confinement may not just be limited to the time which one has spent there; it is possible that the effects can be long-lasting and life-altering. A study conducted by Wildeman and Andersen (2020) looked at Danish individuals who had been incarcerated in solitary confinement for a minimum of seven days and a maximum of five years. Furthermore, the subjects were studied for a follow-up period of five additional years after their release. The mortality statistics in this cohort were compared with a randomly-selected sample of the general, non-incarcerated Danish population; these individuals were chosen from a pool of those with similar observation years, ages, and sex distribution. The study found that those who had been in solitary confinement tended to have a much higher five-year mortality rate than those in the general population; these results showed that the individuals in solitary confinement had a mortality rate that was almost ten times higher than the studied sample of the general population (Wildeman & Andersen, 2020). Moreover, spending time in solitary confinement was correlated with a higher likelihood of dying from non-natural causes; however, these statistics didn't account for additional factors, such as mental health or life circumstances, that may have contributed to this phenomenon (Wildeman & Andersen, 2020). While more research is needed to support or refute this notion, current research suggests that there is a correlation between solitary confinement and five-year mortality rates, especially those that are

not due to natural causes. It is recommended that more research be done in this area to gain a better understanding of this potential connection.

Preexisting Mental Health Diagnoses and Solitary Confinement

Because solitary confinement can be used as a form of punishment, for the inmate's protection, and the protection of others, there is the possibility that some of the inmates in solitary confinement also had preexisting conditions (Arrigo & Bullock, 2008; Haney, 2003; Smith, 2006; Toch, 2001). Some estimates place the percentage of prisoners in solitary conditions with preexisting mental health issues at up to 50% higher than those found in the general prisoner population (Haney, 2003). Many inmates who have mental health issues find it difficult to adjust to a life of incarceration, and as such, have trouble regulating their behavior (Haney, 2003; Metzner & Fellner, 2010). They may incur more rule infractions, which increases the likelihood of solitary confinement being used as a punishment (Arrigo & Bullock, 2008; Metzner & Fellner, 2010). Such examples include: Refusing to obey orders, destructive behavior, including arson and the spreading of excrement, and self-mutilation (Arrigo & Bullock, 2008). This leads to the increased probability that these individuals could experience solitary confinement at one point or another during their sentence (Haney, 2003; Metzner & Fellner, 2010). Another potential reason for this phenomenon is because mentally ill inmates may be more at risk both for violent behavior towards and from other prisoners (Arrigo & Bullock, 2008). Moreover, individuals with preexisting mental health issues are more at risk for permanent or chronic and often much more severe damage to their mental health (Haney, 2003).

Interestingly, some studies have reported finding positive consequences as a result of solitary confinement. More specifically, the effects of sensory deprivation have been found to benefit some individuals with schizophrenia (Grassian & Friedman, 1986; Smith, 2006). Past

literature has thus brought about the idea of sensory deprivation as a method of therapy in certain situations (Smith, 2006). However, it should be emphasized that these positive symptoms occur much less frequently than negative effects. It should also be noted that this notion has been contested and that other studies have found solitary confinement to have significant deleterious effects on people with major mental disorders, including schizophrenia (Metzner & Fellner, 2010).

Future Directions

Most of the research that presently exists has included volunteer participants. The participants have come from a variety of different populations; some participants were prison inmates at the time of their respective studies, while others were members of the general non-incarcerated population. There is a clear gap in the results of these studies, given the wide variety of methods used and populations studied.

The most obvious way to rectify this gap in the literature also runs the risk of being potentially unethical. Such a study would involve purely randomizing prisoners in the general prison population to either be in solitary confinement or to a general housing unit. The experiment should last for a set period, during which the effects (if any) could be recorded, as well as when the onset of such effects. Of course, subjecting prisoners to what is, essentially, an extreme punishment would be questionable from an ethical perspective.¹

However, there are other avenues to expand our knowledge in this area. One hypothetical study would ideally contain elements that are as similar to an inmate's real experience as possible. One possibility would be a meta-analysis of case studies. The case studies should

¹ Of course, the general findings in the literature may suggest that solitary confinement as a condition of scientific study could be seen as unethical in and of itself. This raises questions about the participation of psychologists in such activities, but a discussion of these issues is beyond the scope of this review.

involve inmates who are being involuntarily placed into solitary confinement. To clarify, the inmates should not be placed in solitary confinement for this proposed study. The participants should come from a pool of inmates who have been administratively assigned to solitary confinement and have been briefed and consented to be included in this study. Researchers would note why the individual is being placed into solitary confinement; for example, is the inmate being isolated as a punitive measure, for his or her own protection, or both? The inmate's history should also be taken into account; has the inmate ever displayed any signs of any sort of mental illness? By including this information in the study, researchers will have the opportunity to see if and how solitary confinement affects preexisting conditions. For the studies and results to be as cohesive as possible, ideally, the participants should come from a variety of different backgrounds, be different ages, be placed into solitary confinement for differing reasons, and have different histories of mental health.

Finally, it would be interesting if a study were conducted to examine whether or not solitary confinement is even effective in achieving its purpose. Generally, an inmate in prison will be placed into solitary confinement either as a punishment for an infraction, for the inmate's safety, or the safety of other inmates and prison staff. The question in such a study would be to examine whether or not both the inmate and those around him or her were safer as a result of solitary confinement. This type of experiment would likely involve case studies; preferably, the participants in this study would be inmates who were being observed before being assigned to solitary confinement. To eliminate bias as much as possible, it would be recommended that the inmate be assigned to solitary confinement purely as a response to his or her actions, and completely independently from the study. The subject in question would be observed for some time – preferably for a minimum of three or so weeks – and the inmate's and staff's level of

safety would be documented over time. If it became apparent that solitary confinement led to behavior or conditions that were unsafe either for the inmate or for others, it would be worth exploring other options to promote inmate and staff safety.

Conclusion

The literature regarding solitary confinement has thus far included both laboratory and prison-based studies. The laboratory studies have mainly focused on sensory deprivation; currently. Findings indicate a consensus that sensory deprivation, especially lasting for a minimum of several weeks, is detrimental to individuals. Interviews and observational studies in prisons have lent credence to the claim that solitary confinement can be detrimental to an inmate's psychological and physical well-being. Several of the most common psychological effects appear to be anxiety, depression, hallucinations, perceptual distortions, and paranoia (Grassian & Friedman, 1986; Haney, 2003; Haney & Lynch, 1997; Koch, 1982; Metzner & Fellner, 2010; Smith, 2006; Shalev, 2011). Sometimes this becomes physically harmful to inmates, as self-harm and suicidal actions have also been recorded amongst inmates in solitary confinement (American Psychological Association, n.d.; Arrigo & Bullock, 2008; Coid et al., 2003; Daza, Palloni, & Jones, 2019; Gamman, 2001; Haney, 2003; Haney, 2018; Scott & Gendreau, 1969; Smith, 2006; Toch, 1975; Toch, 1992; Toch, 2001). Other physical effects may not relate directly to an inmate's psychology, but they are equally important to note. A few examples of commonly observed physical effects are gastrointestinal issues, body aches and pains, and chronic lethargy (Gamman, 2001; Grassian, 1983; Grassian & Friedman, 1986; Smith, 2003; Shalev, 2011; Shalev, 2014). Moreover, according to Wildeman and Andersen's 2020 study, solitary confinement is something that can impact one's mortality, even after being released from prison.

Of course, there are limitations to these studies. In some ways, the symptoms appear conditional. They tend to happen several weeks after one has been put into solitary confinement, and they subside once the individual is removed from that environment. The current research can primarily demonstrate a correlation between the two. At the same time, while solitary confinement may not be the definitive cause of these symptoms, it appears to have some sort of relation to them.

As such, it is also important to recognize the potential relationship between preexisting mental health conditions and solitary confinement. There appears to be a positive correlation between preexisting mental health issues and an inmate experiencing solitary confinement at some point during his or her incarceration (Arrigo & Bullock, 2008; Haney, 2003; Metzner & Fellner, 2010; Smith, 2006; Toch, 2001). While not every inmate with mental health conditions will spend time in solitary confinement, there is still a correlation between the two, and that should not be discounted. In some cases, solitary confinement has been noted to have had positive effects on people who have been diagnosed with certain mental health conditions, such as schizophrenia (Grassian & Friedman, 2003; Smith, 2006). However, these positive effects have not been seen on every individual with this condition; in fact, one study found that those with certain mental disorders, including schizophrenia, appeared to experience a worsening of the symptoms associated with said disorders (Metzner & Fellner, 2010).

Based on the literature thus far, it appears as though a significant majority of studies have noted at least some negative effects from solitary confinement. No studies have found any overtly positive outcomes arising from solitary confinement, and only one study has found there to be no effects whatsoever. These studies have differed greatly in duration, participants, and methodology, which might have contributed to the differences in results. That being said, there is

a majority of studies that have found deleterious effects arising from solitary confinement. These effects, the populations in which they occur, their long-term consequences, and the extent to which they happen should be further investigated in future studies.

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