



Prisoner exposure to nature: Benefits for wellbeing and citizenship[☆]

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ABSTRACT

The direct or indirect experience of crime can cause individuals to feel vengeful against the perpetrator(s). The prison system reflects this sentiment by creating austere environments that are dehumanizing, punitive, and hopeless. Prisons are, therefore, environments in which retribution and punishment take priority over rehabilitation. Frequently, prisoners are believed to be untreatable because of their antisocial orientation. However, several factors influence an antisocial orientation such as socioeconomic status, family of origin, and mental health. The ubiquitous nothing works misbelief has resulted in prisoner marginalization and increased recidivism because of insufficient treatment. In 2015, 10 million individuals were incarcerated worldwide with around 30 million circulating through prisons each year. The prison environment decreases prisoner life expectancy and overall health. Sadly, prisoner benefits from treatment post-incarceration dissipate after 3–6 months and many prisoners die by suicide or drug overdose. Prison overpopulation, as well as poor outcome post-incarceration, requires more effective treatment. We hypothesize that Prisoner Exposure to Nature (PEN) can transform prisons into environments that are conducive to maintaining and improving physical and mental health. In prior work we proposed the continuum Nature Exposure Sufficiency (NES) versus Nature Exposure Insufficiency (NEI). Prisons are impoverished environments that limit Nature Exposure (NE) which results in NEI. Individuals experience fluctuations in mental and physical health as a result of NEI. Numerous studies have shown that direct and indirect NE can improve mood, physical health, and facilitate connectivity with self and society. It is necessary to consider ways in which we can incorporate NE for prisoner wellbeing. Additionally, it is crucial that prison personnel and prisoners develop a therapeutic/helping relationship (i.e., alliance) that is facilitated by friendliness and warmth to foster social change and citizenship. Many prisoners experience isolation and disconnection with society upon reentry. Given that most prisoners are eventually released into the community, we are obligated not to make them worse. Hence, it is important that prisons create programs that develop citizenship to engender prisoner volition to become positive and active citizens. We focus on the prison and prisoners, however our work is relevant to all total institutions (e.g., mental hospitals, nursing homes, schools, etc.). The prison system favors punishment and mass incarceration over treatment and decarceration. The deleterious effects of incarceration are clear and it is time to implement treatments based on the principles of PEN to improve prisoner wellbeing and citizenship.

Introduction

Prisons are monuments to a vengeful society and time period. Systemic punishment, dehumanization, and hopelessness [1,2] have culminated in a prison culture that is defined by the convict code of ethics (i.e., con code) which maintains hostile relations amongst prisoners and prison personnel. Fyodor Dostoevsky epitomizes this view with the statement that “the degree of civilization in a society is

revealed by entering its prisons” [3,p. 478]. That is, more often than not, prisons reflect cruel and inhumane societies.

Initiatives directed towards prison design and treatment enhancement are polemical because prisoners are allotted little public sympathy [4]. Specifically, few would approve funding prison condition improvements over other groups such as crime and natural disaster victims, children living in poverty, and refugees. Moreover, advocates for humane treatment may change their beliefs after being directly or

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indirectly impacted by crime (e.g., a relative or friend was murdered). Hence, systemic retribution is reinforced and perpetuated [2,5].

Furthermore, the persuasive “nothing works” generalization, typified by Martinson, undermined prisoner mental health treatment programs during and post-incarceration for decades [6]. Specifically, Martinson’s assertion unfortunately bolstered the movement towards punishment over rehabilitation in many prisons [7]. For example, extremely strict prisons (i.e., tough on criminals) limit services (e.g., education) and use solitary confinement as a means to gain control and compliance [7–9].

Solitary confinement is an especially ubiquitous punishment in several total institutions (i.e., closed worlds such as army barracks, mental hospitals, monasteries, nursing homes, prisons, and schools) [1]. For example, seclusion is the term used in mental hospitals for patients who are segregated and isolated from others for a period of time [10]. In schools, students with behavior concerns are sent to “time-out” rooms to stay alone for misbehavior. Following solitary confinement many individuals are more aggressive and hostile because of the lack of stimulation and social interaction [11]. Solitary confinement, seclusion, and time-outs are therefore abusive, unethical, counterproductive, and ineffective for improving prosocial behavior and alleviating behavioral concerns [10–14]. Consequently, we are proposing that these austere confinement rooms be replaced with Nature Exposure Rooms in which an artist utilizes the Lazure technique to paint the walls with nature scenes that include birch trees and other green vegetation, a stream flowing down a hill, and clouds, etc.

Numerous studies have shown that treatments can be effective [7,15–17]. For example, cognitive-behavioral therapy (CBT) and mindfulness-based therapies can decrease depression and anxiety symptoms in prison populations [17]. Alarming, prisoner benefits from treatment post-incarceration dissipate after 3–6 months [17]. This suggests that mental health treatments can be successful in the short-term. However, mental health professionals (i.e., addiction counselors, nurses, occupational therapists, pastoral counselors, physicians, psychologists, recreational therapists, social workers, and vocational counselors) will need to consider other strategies to aid in the long-term success of prisoners after reentry. It would also be desirable to provide ongoing mental health training to the guards and other prison personnel.

Another concern in relation to the nothing works assertion is the frequent diagnosis of antisocial personality disorder (ASPD) in prison populations [18,19]. Particularly, the ASPD label and associated symptoms (e.g., pathological lying, lack of empathy) create pre-conceptions for prison personnel and mental health professionals which may subvert rapport and hinder treatment [20]. As Toch once stated “I recall not a single instance in which my understanding of an offender I have known would have benefited from adjudging the person a psychopath” [20,p. 155]. Historically, the psychopath label has been used inconsistently and it is commonly used interchangeably with ASPD which has further obfuscated its purpose in the rehabilitation of prisoners [21].

A well-established theory for understanding personality disorders and human interaction is interpersonal theory [22–24]. Interpersonal theory utilizes the interpersonal circle which is a two-dimensional circular continuum [23,24]. On the horizontal (abscissa) axis, the interpersonal behaviors are Hostility (West) versus Friendliness (East). On the vertical (ordinate) axis, the interpersonal behaviors are Dominance (North) versus Submission (South). An individual’s personality and rapport with others can be represented in this two-dimensional space. For example, gregarious individuals are Dominant-Friendly while passive-aggressive individuals are Hostile-Submissive [22].

Interpersonal theory defines the antisocial orientation (AO) (i.e., attitudes, beliefs, and values which have antisocial consequences) as a dimension of personality along the interpersonal circle continuum [22]. Individuals with an AO are generally Hostile-Dominant towards others [22]. Serious crimes such as murder and sex crimes [25] are often

perpetrated by individuals with AO and substance use disorders [26] who have utilized the Hostile-Dominant behavioral approach throughout their life to obtain their financial, psychological, and social needs in order to survive in various dysfunctional environments [22].

The AO usually begins in childhood with unstable and poor familial relations and dynamics [20,21,27] which may foster the development of children with conduct disorder (CD) [18]. CD like ASPD creates a stigma that is reinforced by consistent punishment and rejection by familial and school supports [20,21]. Conceivably, the child’s aggression and AO are worsened by the CD diagnosis and universal harsh treatment by teachers, school administrators, parents, and other authority figures (e.g., police officers and judges) [20] which maintains the child’s lifelong AO. Therefore, becoming a career criminal is often inevitable for the child with CD.

It should come as no surprise that treatment for individuals with AOs are lacking because of the common misbelief that they are untreatable [20,22]. In rare circumstances, the severe cognitive, emotional, and volitional deficits [28] of AO can impede treatment. Specifically, there are individuals who are so impervious to treatment that any likelihood of being successfully rehabilitated is miniscule (e.g., Charles Manson, Jeffrey Dahmer, Ted Bundy, etc.). Fortunately, irreparable individuals are the exception rather than the rule.

In general, prison populations can be treated if mental health professionals focus on their dysfunctional interpersonal interactions and distorted schemas of people and society which result in violence and aggression [22,29,30]. Moreover, mental health professionals can analyze the social climate (i.e., the unique personality) of the prison environment [31]. Specifically, the social climate [31,32] in prison culture is characterized by hostility, dominance, and maintenance of disrespect. Frequently, prisoners monitor explicit and subtle acts of disrespect in diverse ways given their own levels of hostility and dominance. For example, prisoners who are hostile and low in dominance will typically retaliate to disrespect with defiance. In contrast, prisoners who are hostile and highly dominate will typically respond with violence. Interestingly, the majority of violent crimes can be attributed to individuals or groups experiencing shame and humiliation [33–35]. The experience of shame is a difficult emotion to overcome, especially in prison, because prisoners are in a constant state of competition for dominance. Consequently, violent and aggressive behaviors follow a series of events with shame as the central driving force. The movement away from violence and hostility to friendliness and warmth is challenging. Some prisoners lack insight with respect to their anti-social beliefs. Mental health professionals and prison personnel must therefore facilitate existential discussions (i.e., topics about freedom, isolation, meaninglessness, or mortality) for prisoners to confront their anxieties and antisocial schemas about self, others, and society [36]. For example, group or individual therapies could involve questions that explore control and inability to change past events that led to the reinforcement of the AO.

Despite personal, political, and psychological concerns, many recognize that overpopulation in prisons is a pressing global issue. In 2015, 10 million individuals were incarcerated worldwide with up to 30 million circulating through prisons each year [37]. Upon reentry many prisoners are forced to wear electronic monitoring devices to serve the remainder of their sentence or to be forever monitored because of their crime (e.g., sex crimes) [38]. In some jurisdictions (i.e., Belgium) individuals are put under house arrest with an electronic monitor during remand [39,40]. As well in Belgium, individuals with short sentences (i.e., less than 3 years) are generally entitled to serve their sentence with an electronic monitor. Unfortunately, the current system widely favors mass incarceration over decarceration [41].

Several studies have shown that time spent in prison often results in a decrease in life expectancy and overall health [42–47]. Disturbingly, many prisoners often die by suicide or drug overdose post-incarceration [37,48,49]. This troubling finding reinforces the notion that prisons generally facilitate the development of mental illness or worsen

individuals with pre-existing mental illnesses [50]. For example, the increase in drug overdoses post-incarceration may reflect a reduced tolerance to narcotics as a result of abstinence while in prison but it can also be due to exacerbated symptomatology on reentry [48]. In addition, the opioid crisis is a contributor to drug overdoses worldwide and especially to prisoners with a propensity to consume opioids post-release [51,52].

Clearly, there is a need for improved mental health screening prior to incarceration, health services during incarceration (i.e., improved physical activity opportunities, dietary needs, and mental health supports), and supports for reentry into communities to reduce recidivism [17,42,53–59]. The improvement in prisoner quality of life is a humanitarian issue that relies upon halting the continued abuse, marginalization, and rejection of this population. Most prisoners are eventually released into the community. Consequently we are obligated not to make them worse. Therefore, we must consider ways in which we can create prisons that are conducive to rehabilitation [60–62].

Hypothesis

In a recent paper, we addressed the rising global concern with climate change, and the need for nature preservation for humanity to garner the physical and mental benefits of Nature Exposure (NE) [63]. We proposed the continuum Nature Exposure Sufficiency (NES) versus Nature Exposure Insufficiency (NEI) to describe individuals who experience fluctuations in cognition, energy, mood, and physical health as a result of insufficient NE.

The basis for the healing power of nature comes from the ancient medical principle “*Vis medicatrix naturae*” [64]. The ancient principle suggested that every organism can heal when left alone because of internal physiological processes that repair and rebuild injuries, wounds, or any other changes in wellbeing and health [64]. Many centuries later, the biologist Sir John Arthur Thomson expanded the nature term to include the natural environment [64]. Thomson’s reinterpretation was significant because NE has been integral for the ascension of human civilization given that early humans assessed their environments to avoid harm, and to acquire shelter and resources [63,65]. Additionally, the rejuvenating qualities of NE are widely known and can be found in several documents. For example, Florence Nightingale observed that the circulation of fresh air and the adornment of flowers in patient rooms improved patient wellbeing [63].

Prisons are impoverished environments for NE which can result in an individual experiencing NEI. For example, prisoners are often limited to their concrete, poorly ventilated, and poorly illuminated cells. Therefore, we are proposing that attention be called to the benefits of Prisoner Exposure to Nature (PEN) for physical and mental health. This is in accordance with the famous landscape architect and avid NE supporter Frederick Olmsted who transformed cities (e.g., designed Central Park in New York City), communities (e.g., stipulated that homes be set 30 feet from the road to allow for landscaping), and national parks (e.g., designed Yosemite National Park in California) [63]. Our hypothesis promotes the transformation of prisons with the implementation of PEN which includes a humanitarian approach that could be instrumental in the facilitation of treatments focused on prisoner citizenship, wellbeing, and social inclusion post-incarceration [66–70]. Particularly, PEN, Nature Exposure Informed Therapy, and other treatments can be directed towards citizenship, wellbeing, and Nature Exposure Informed Living which could help prisoners develop a positive life-course and foreseeably end the vicious cycle of recurring imprisonment.

Nature exposure in prison design and prisoner wellbeing

Many studies have shown the benefits of direct and indirect NE on mental and physical health in several settings (e.g., hospitals, schools) [63]. With respect to prisoner health, it is important for mental health

professionals to assess prisoner attitudes towards and experiences with nature. We presented the term, Nature Exposure Aversion (NEA) as a potential impediment to NE treatment [63]. Specifically, the individual’s negative NE experiences and subsequent adverse cognitions are obstacles in NE treatment [63]. To screen for NEA (sometimes referred to as biophobia), mental health professionals can develop or utilize nature questionnaires [71,72]. Alternatively, mental health professionals and prison personnel can consider ways in which they can foster biophilia (i.e., an affinity towards living things) and phytophilia (i.e., an affinity towards vegetation) amongst prisoners [63,73]. For example, many prisons have already enhanced biophilia through animal-assisted therapy. Animal-assisted therapy has proven to be beneficial for fostering social communication (i.e., cooperation), improvements in mood, and decreasing stress in prison populations [74–80].

Prison interiors and exteriors can facilitate biophilia and phytophilia [81] as well through development of green spaces (i.e., planting trees, shrubs, and flower beds) and using pictures of nature throughout which can have a restorative effect [63]. For example, direct and indirect NE increases blood flow to areas of the brain responsible for experiencing empathy and altruism [82]. In addition, NE reduces rumination [83], aggression [84], and increases prosocial behaviors [85]. Interestingly, NE has shown some evidence for long term and sustained mental health benefits for individuals [86]. PEN in conjunction with other treatments could be important for prisoners to help reduce relapse post-incarceration [17].

Previously, we mentioned the benefits of nature walks and increases in blood flow due to sunlight [63]. Naturally the human body responds to exercise and sunlight by increasing body temperature and blood flow [63]. In our discussion about the benefits of natural light [81,87] we neglected to mention that many facilities have converted their lighting from incandescent to light-emitting diode (LED) lighting. LED lighting unlike incandescent is more energy efficient and allows for full spectrum lighting (i.e., all wavelengths) which is reported to be more preferential [88,89] and has been beneficial for mental and physical health [90]. For example, LED lighting is easier on people’s eyes, and increases alertness, focus, and mood [90].

Numerous prisons have converted to LED lighting but it may be beneficial for prisons to have more natural light as well [81]. Many individuals report stress reduction, and increases in productivity in areas with natural light [87]. One caveat to natural light is that the sun emits ultraviolet (UV) radiation which can cause skin cancer [87,90]. Accordingly, sun screen must be made available to reduce the likelihood of skin cancer and burns due to excessive sun exposure. Furthermore, cells with windows without bars (if security permits) allows for more light which may facilitate a more tranquil experience [81]. In addition, LED lighting throughout prisons would maintain the benefits of natural lighting throughout the year. Some individuals experience Seasonal Affective Disorder (SAD) during the winter months because of the limited amount of sunlight thereby resulting in depressive symptoms [18,19]. More natural lighting paired with LED lighting may lessen the impact of SAD symptoms [91].

Beyond the incorporation of natural and LED lighting, NE can improve prisoner wellbeing. For example, gardening (i.e., horticultural therapy) [92–94] fosters a holistic appreciation of nature [95], provides exercise which contributes to physical and mental health, and can promote a sense of accomplishment while reducing boredom which can lead to interpersonal conflict [63]. Mental health professionals and prison personnel can enhance NE by having prisoners maintain vegetation around the prison. Also, development of greenhouses and edible vegetation (e.g., fruit and vegetables) along prison trails, prison pod gathering areas, and recreation yards could support a sustainable food source and a therapeutic outlet for prisoners. Nature Exposure Informed Living could transform prisoner eating habits and further amplify the importance of nutritious meals to improve mental and physical health.

A novel approach to PEN may involve a reliance upon virtual or augmented reality [63]. Virtual NE, as we theorized, could act in a

similar way to Snoezelen or comfort rooms [63]. Given the limitations of confinement upon NE, it is possible for prison personnel to reward good behavior with a temporary “escape” from prison. Particularly, virtual NE could allow well-behaved prisoners to explore beaches, forests, and other natural settings around the world by wearing virtual reality goggles. In addition, virtual NE may be a viable option for mental health professionals treating prisoners with NEA [63]. For example, prisoners who were shown nature videos for 45 min once per day for no more than 5 times a week over 1 year [11] were less likely to be in violent incidents compared to prisoners who did not watch nature videos. In addition, prisoners reported less agitation and felt calmer and more empathetic. Prison personnel also reported improved rapport with prisoners in the study and utilized the nature videos to reduce prisoner irritability and aggression. As previously mentioned, solitary confinement results in increased aggression and violence post-confinement [10,12–14]. However, virtual NE could provide stimulation for prisoners in solitary confinement to lessen the likelihood of prisoner aggression and violence upon reentry into the prison population [11].

A call for prisoner citizenship

Incarceration over time dehumanizes an individual through power dynamics amongst prisoners and prison personnel. The famous Stanford prison experiment has been widely analyzed because of its replication of the prison environment with college students [96]. Shockingly, college students who were assigned guard roles were ultimately abusive, and severely punitive towards students who were assigned prisoner roles who displayed symptoms of mental illness as a result of their maltreatment. The Stanford prison experiment suggested that the prison context rather than individual disposition was the cause for the drastic personality change in participants [97,98]. It is unfortunate that the prison context would develop extremes in behavior and punitive response. Conversely, an informative rule that prison personnel could make standard is that “the carrot is mightier than the stick” [38,p. 23]. This, in the context of PEN, would reinforce positive behaviors and facilitate a friendly and warm therapeutic/helping relationship (i.e., alliance) [99] between prisoners and prison personnel that is directed towards social change, and citizenship within and beyond the prison environment. Moreover, existential discussions and treatment could further diminish antisocial beliefs and behaviors and, therefore, develop affiliation and citizenship [36].

NE for many individuals facilitates connectedness and a profound sense of place in the world [95]. PEN can develop personal growth but more importantly renewed prisoner and prison personnel alliances can be directed towards citizenship [66–70]. Citizenship involves the development of a strong connection to the 5 Rs that society offers which are Rights, Responsibilities, Roles, Resources, and Relationships [100]. The 5 Rs can be dichotomized into instrumental (i.e., “acquiring practical knowledge and skills for gaining access to opportunities and resources”) and affective (i.e., “experiencing a sense of membership in a community through relationship-building and role achievement”) [101,p. 115]. Marginalization, prior homelessness, and lack of mental health supports in prison populations makes reintegration into society and achievement of citizenship difficult [102]. Specifically, the prison environment provides shelter and structure which are absent upon release. Furthermore, the lack of prison programs for citizenship results in a continued disconnect with society and lessens the opportunities for positive regard for self and others.

Mental health professionals, prison personnel, and prisoners must collaborate in the development of programs that can allow for citizenship. The act of creating an object could aid in the development of connection with society by giving the prisoner purpose which can later be applied post-incarceration. For example, prisoners could learn woodworking skills and make bird houses or other items that connect to nature for sale in the community. The prisoners could learn horticultural skills by working in the prison greenhouse and learn marketing

skills by advertising and selling their bedding plants, etc. Art therapy programs during and post-incarceration have been effective in diminishing mental health stigma in communities [103].

The goal of citizenship should be to reduce recidivism by helping individuals discover their personal and vocational passions to attain financial security and affiliation. The prisoner post-incarceration would be empowered by a new responsibility to be a contributing and lawful member of society.

PEN could benefit

Prisons are heavily overpopulated worldwide [37] which has made management of antisocial behaviors challenging. For example, one of the toughest prisons in the world is Danli prison in Honduras [104]. Danli is so overpopulated and difficult to manage, prison officials decided to give prisoners control of the prison to maintain social order.

With respect to NE in prisons, there are many prisons near bodies of water, mountains, and forests. Nature has been used to deter prisoner escape if one considers the infamous Alcatraz Penitentiary off the coast of San Francisco. In addition, to combat overpopulation some prisons have forced prisoners to live outdoors. NE in this instance is used in an unethical manner because prisoners are exposed to harsh temperatures and other natural elements (e.g., insects). In Maricopa County, Arizona prison warden Joe Arpaio ran for 24 years the infamous “tent city” jail which closed in 2017 [105]. Tent city had prisoners exposed to the extreme sunlight and desert heat. Moreover, prisoners were underfed and shamed by being forced to wear pink clothing [105].

Arguably the most widely cited prisons in the world that promote humane treatment, citizenship, and PEN can be found predominately in Scandinavian nations [106]. For example, Norway’s Halden Prison is often held as the model prison because of their belief that rehabilitation is the responsibility of the state [107–109]. Prisoners live in cells that resemble apartment dorms with their own private bathroom, shower, and refrigerator which allows for privacy and a sense of comfort [107–109]. It is believed that the cells maintain normalcy and allow for easier transition post-incarceration (i.e., prisoner institutionalization is reduced). Additionally, prisoners eat nutritious meals and are allotted seconds if they are still hungry [107,109]. Halden prison personnel are qualified in the area of mental health and regularly interact with prisoners in their living quarters. Notably, prisoners have to share space with other high-security inmates which can be deleterious to their mental health and disruptive for prison social cohesion. Nevertheless, the atmosphere at Halden is one of calmness and respect with an emphasis on a therapeutic/helping relationship between prison personnel and prisoners.

With respect to NE, Halden has almost no barred windows which allows for more natural light and views of nature scenery. Conversely, indirect NE in prison appears to be more counterproductive than beneficial for wellbeing [108,110]. Specifically, prisoners have reported feelings of frustration because of their close proximity to nature that is ultimately out of their reach [110]. Despite Halden having several opportunities for direct NE (e.g., a therapeutic garden), prisoners are often prohibited from these areas or there is insufficient staff to escort prisoners. Halden, therefore dangles a carrot that is unreachable. Moreover, indirect NE functions more as a double punishment and reminder of incarceration [110]. Halden may be well known for its unorthodox accommodations, however Halden will need further improvements for PEN access to attain nature’s therapeutic benefits.

Conclusion

Prisons are in need of a moral renaissance that hinges upon making prisoners into law abiding citizens who have the tools to cope with their mental health concerns [111,112]. We have focused on prisons and prisoners, however the implications of our work are relevant to all total institutions, residences, and, for that matter, all of humankind as was

our prior work [1,63]. For example, Singapore incorporates green and blue spaces in their city and building designs to not only preserve the environment but facilitate mental and physical wellbeing for its citizens [113].

We presented PEN as a possible modifier of prison design because of its wide benefits for physical and mental health. It is also likely that PEN could improve the institutional alliance and therefore enhance therapeutic transactions [114,115]. However, PEN is not a panacea. Prisoners must see the errors in their ways to learn from them and must take responsibility for their future. This parallels Norman Cousins insistence that patients must take responsibility for their illness and take an active role in achieving wellbeing [116]. Prisoners must take the initiative in ending their involvement in the prison system and managing their mental health concerns.

We (John R. Reddon and Salvatore B. Durante) declare that we have no conflicts of interest regarding this manuscript entitled Prisoner Exposure to Nature: Benefits for Wellbeing and Citizenship.

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