Addressing Violence in Prisons: An Analysis of Situational Crime Prevention and its Theoretical Application to the Canadian Correctional System

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Abstract

Canadian penitentiaries have remained much the same from the creation of Kingston Penitentiary in 1835, the first official correctional facility in Canada (Correctional Services Canada [CSC], n.d.), to current times. With a growing number of complaints around the maximum- and medium-security prisons, it may be time to change the narrative around retributive architecture. Situational crime prevention (SCP), defensible space (DS) and crime prevention through environmental design (CPTED) all have previous proven successes in their application in schools, hospitals, and public spaces to reduce criminality and aggression. In this honours thesis, a literature review and content analysis were conducted to explore the applicability of SCP, DS, and CPTED to correctional settings. Six articles were analyzed using the pre-operationalized definitions as set out by Cozen et al. (2005), Clarke (1997), and Moran and Dolphin (1986). Nine strategies were found to have applicability to correctional settings, with eight of those found to reduce aggression or violence within an institutional setting. Recommendations from the selected eight strategies were completed to create a checklist for Canadian institutions to aid in the implementation of SCP, DS, and CPTED strategies. A theoretical discussion was conducted around the broader applicability of SCP, DS, and CPTED. While it is acknowledged that the instrument created through this thesis does not capture all the possible recommendations or solutions that would fit into a SCP, DS, or CPTED framework, it is hoped that it creates the start of a political change towards that of a focus on rehabilitative architecture.

Acknowledgement

I would like to acknowledge that this Honours Thesis was written and completed at Moh'kinsstis, the confluence between the Bow and the Elbow Rivers, the traditional Treaty 7 territory. I am a settler in the traditional Treaty 7 territory and of the Blackfoot confederacy (Siksika, Kainai, Piikani, the Îyâxe Nakoda and Tsuut'ina nations). I would also like to acknowledge that this territory is home to the Métis Nation of Alberta, Region 3, within the historical Northwest Métis homeland. In honour of the spirit of respect, reciprocity and truth, I would like to honour the sacred gathering place that the land provides us with the ability to engage in reconciliation.

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List of Abbreviations

Abbreviations	Full Word/Phrase
CPTED	Crime Prevention Through Environmental Design
DS	Defensible Space
SCP	Situational Crime Prevention
OCI	Office of the Correctional Investigator
SIU	Structured Intervention Units
CSC	Correctional Services Canada
CCTV	Closed-Circuit Television

Chapter I: Introduction

In Canada, there has been a growing rate of complaints about the conditions in maximum- and medium-security prisons and structured intervention units through the Office of the Correctional Investigator (OCI) (Zinger, 2021, 2022). In Edmonton Institution, findings reported by the Commissioner of double-bunking, warehousing, and lack of access to education and mental health services (Zinger, 2022) have highlighted the flaws within the Canadian correctional system and further the oppressive designs of institutions that have been built into our criminal justice system.

Gaols, jails, prisons and penitentiaries as places for confinement and isolation were implemented as a substitute for capital and corporal punishments. While the architecture of Canadian penitentiaries has remained much the same, from the creation of Kingston Penitentiary in 1835, the first official correctional facility in Canada (Correctional Services Canada [CSC], n.d.), to the Leclerc Detention Facility, Canada's most recently approved penitentiary scheduled to open in 2030 (Rowe, 2022). Current trends have seen a push towards rehabilitative approaches from the historic retributive style seeking to root out the "evil" from those behind its bars. Since their creation, situational crime prevention (SCP), defensible space (DS) and crime prevention through environmental design (CPTED) also focus on changing the environment to reduce the hold that criminality may have on individuals by removing targets or changing the feelings that surround specific spaces.

SCP, DS, and CPTED have all been utilized in unique settings to reduce violence and aggression and mitigate criminal activity (Clarke, 1997). These approaches are successful in their applications in schools, dementia and psychiatric wards in hospitals (Clarke, 1997; MohammadiGorji et al., 2021; Vagi et al., 2018), as well as in more classical applications of

SCP, DS, and CPTED, such as parks, malls, and public spaces (Clarke, 1997; Hedayati Marzbali, 2016; Sohn, 2016). Wood's original four principles of SCP, through Jeffery's three natural CPTED strategies, focus on using informal social control to reduce crime.

Research Questions

This honours thesis will examine the following research questions: What SCP, DS, and CPTED strategies exist that reduce violence in spaces, and can they be evaluated? How can those evaluated SCP, DS, and CPTED strategies be theoretically applied to correctional facilities?

Rationale and Significance

Through this honours thesis, the body of literature can grow surrounding the carceral architecture's impact on the behaviours of inmates and the creation of more restorative environments. While the application of SCP, DS, and CPTED may not correct the current complaints regarding double-bunking, warehousing, and lack of access to education and mental health services, as noted by the OCI (Zinger, 2022), inmates' abilities to better contribute to their programming and interaction with others due to a reduction of aggressive behaviour may contribute to fewer individuals being returned to correctional facilities. Future research into the effects of the built environment on the success of correctional outcomes should be focused less on the target hardening measures that have been implemented in the past and more on the ability of correctional environments to aid in rehabilitation.

Methodology

This thesis was based on an environmental criminology theoretical paradigm used in previous research, which focused on the relationship between crime and the environment individuals operate within (Andresen & Hodgkinson, 2021; Wortley & Townsley, 2016). A semi-systematic literature review will be conducted to set the historical context for the proposed

thesis. Another semi-systematic literature review will be used to gain qualitative data for content analysis to identify strategies that have been shown to reduce aggression and violence to form an instrument that can be used for the theoretical application of SCP, DS, and CPTED in prison environments. These methods have been selected for flexibility while ensuring the demarcation of the scope bounds for this thesis as per Cavanagh's (1997) and Hsieh and Shannon's (2005) research.

Required Ethical Approvals

This thesis did not require ethical approval as it is a project focused on the literature surrounding SCP, DS, and CPTED.

Chapter II: Historical Architecture of Canadian Penitentiaries

A look at carceral architecture would be amiss without concurrent discussion of the penal philosophy of the time. Without understanding the history of correctional architecture and the thought process behind its development, we cannot look forward to designing more inclusive and restorative facilities. This chapter will outline the history of Canadian correctional facilities and recent trends in carceral design.

Before the retributive culture shift of the 1700s, prison facilities were created as a holding service for those awaiting trial and punishment, with institutions acting more so as a holding area than any correctional facility of the modern day (Al-Hosany & Elkadi, 2002; Evans, 1982; Nadel & Mears, 2020; Paetz, 2014). However, through the 1800s, the expected punishment shifted from that of corporal treatments (such as whipping, birching, and flogging) to finding the correctional facilities a punishment in itself (Al-Hosany & Elkadi, 2002; Moran et al., 2016; Nadel & Mears, 2020). This penal excess was used to show the public the "tough on crime" approach nations were taking on as a means of public accountability (Al-Hosany & Elkadi, 2002; Moran et al., 2016; Nadel & Mears, 2020). Many penal philosophers of the early 1800s believed that isolation and patience would leave inmates with a reduced desire to re-offend (Nadel & Mears, 2020).

This early approach to tough-on-crime correctional environments in Canada was based on increased capitalism within the western system (Goff, 1999; Nadel & Mears, 2020). Jails acted as an endless supply of factory labour and aided the growing expansion of the industrial revolutions (Goff, 1999; Nadel & Mears, 2020). This, however, did not last, and the Quakers introduced solitary confinement as a tool for reform – with the main focuses being “isolation, silence, obedience and the need for some type of reformation” (Goff, 1999, p. 71). The first

carceral system implemented was the separate system, which focused on using long hours of manual labour and separating inmates from each other and the world outside to conduct "moral quarantine" (Goff, 1999, p. 71). A secondary system, called the Auburn system, came into effect shortly after, which also kept inmates confined separately during the evening hours but allowed for congregation without any sound (Goff, 1999). The Auburn system also focused on a specialized architectural model of tiers of cells that would be built on top of each other, as shown in the design of Kingston Penitentiary (Goff, 1999).

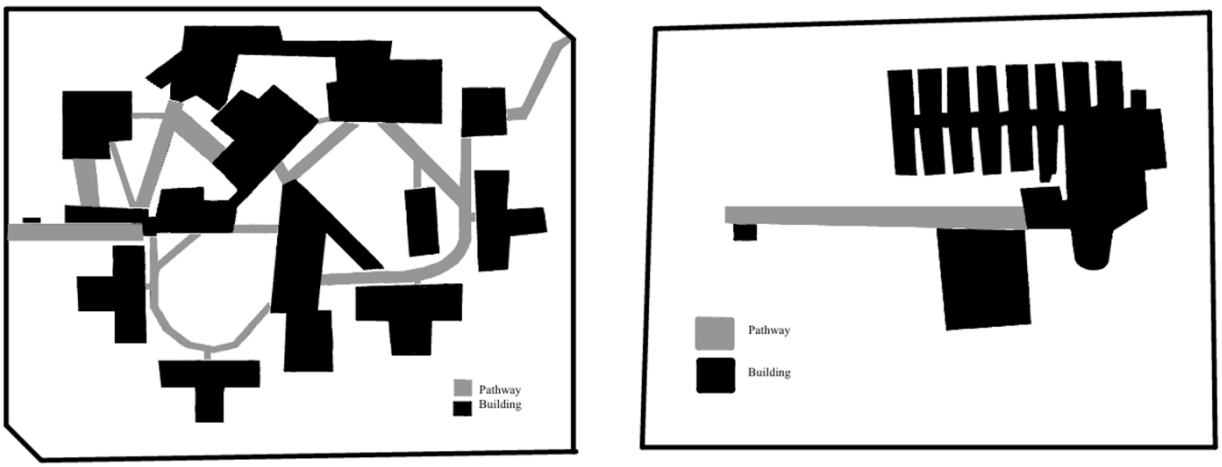
Perfecting the Craft of Carceral Design

Between the late 19th century and the modern day, the changes in carceral systems became few and far between, with most European and North American nations solidifying their chosen justice system (Johnston, 1961). Facilities were further developed after World War II due to the boom in inmates housed in correctional facilities caused by the growing crime rates and population growth of the 1950s to 1960s (Johnston, 1961). World War II also introduced inmate trade training and education as part of the larger developing penal philosophy of the time, causing correction facilities to once again go through updates and development (Johnston, 1961; Nadel & Mears, 2020).

After World War II, Canadian maximum prisons were almost exclusively designed following a telephone-pole plan while minimum security institutions were based on the campus style of correctional architecture (see Figure 1).

Figure 1

Telephone Pole & Campus Designed Penitentiaries. Adapted from Morris & Worrall, 2010.



Campus Design Telephone Pole Design

As noted by Johnston (1961), the focus on separating the cell from the rest of the prison facilities had shifted the design of facilities from surveillance within the cells to a broader focus of surveillance in the common areas. This design change added complexity and heightened the need for "hard security measures" from the past days when inmates spent their entire sentences in solitary confinement in their cells. Wener (2012) notes the shift of solitary confinement into a communal focus to working out in prison yards, indicative of how society approaches prisons (e.g., as punishment). Wener (2012) comments on this change in approach to correctional architecture in the following quote:

> [J]ails and prisons represent more than just warehouses of bed space for arrested or convicted men and women. They are more complicated environments than good or bad, comfortable or not. The design of a jail or prison is critically related to the philosophy of the institution or maybe even of the entire criminal justice system. It is the physical manifestation of a society's goals and approaches for dealing with arrested and or

> convicted men and women, and it is a stage for acting out plans and programs for their addressing their future. (p. 7)

This quote addresses the shift in mindset from the pre-war era of carceral design, where inmates were left in solitary confinement without the added training and rehabilitative support in current correctional environments. There was also an added focus on the so-called 'hard' measures to control inmates in correctional facilities. These hard tactics (such as reducing areas where ligatures could be hung to reduce suicide in prisons) — while effective in reducing opportunities for prison inmates—focused on designing out physical harm risks while maximizing controlling factors on inmates with little thought to designing spaces that may reduce the originating reason for the physical harms (Moran et al., 2016).

Recent Trends in Correctional Architecture

In recent years, a focus on the harms caused by correctional facilities have become more prominent in popular media and political agendas. Focus on North America's highly carceral approach to the justice system has been noted through ever-soaring incarceration rates, with Canada growing its prison population by over 4,000 in the last 42 years (Statistics Canada, 2023). Alarms have also been raised about the conditions and harms that certain correctional environments cause, such as those of solitary confinement—previously called administrative segregation in Canada until the program was redeveloped in 2019 to become structured intervention units (SIU) (Public Safety Canada, 2021). Despite this rising alarm, little has been done to dismantle the harsh carceral design of many Canadian institutions. Canada has created smaller institutions focusing on indigenous healing, with the first opening in 1997 (CSC, 2019). Many of these institutions are not based on the European style of penal design and instead focus

on integrating Indigenous Knowledge systems into the design and program offering of such facilities.

However, other carceral designs, such as those of the Norwegian correctional system, have also moved into the limelight, successfully shown through reduced recidivism and inmate aggression within the facilities. Not only do system-change leading nations such as Norway and Finland focus on strategies such as penal exceptionalism, but they also shape many of their prisons in innovative ways through modern designs that highlight the restorative justice approaches that seek to aid in rehabilitation through changing the built environment, much like the indigenous facilities in Canada but without the connection to decolonization and Indigenous healing.

The Norwegian correctional system focuses on the idea of an "open model" (Moran et al., 2016, p. 115) of punishment and "Kriminalomsorgen" (or prisoner care) to mimic society (Ugelvik et al., 2011, p. 238). This system has been shown to reduce recidivism rates and offer offenders the skills they need to reintegrate into society as productive members (Moran et al., 2016). Norway's most prominent example of this is Prison Island, a minimum-security prison designed with a focus on "penal exceptionalism" (Shammas, 2014, p. 104). The prison is designed like a small town, with a grocery store, library and cottages where four to six inmates will like and learn the skills they need to function in mainstream society once released (Shammas, 2014).

Chapter III: The Environmental Criminology Framework and Situational Crime Prevention

While there are many theories for the phenomenon that is crime, many fall within the constraints of the legal or social sphere, from routine activity theory to rational choice theory, and were seen to be the most prolific in the pre-1970s (Andresen, 2010). However, with the rise of C Ray Jeffery's work, a call to focus on the environment in which offenders and victims found themselves was created. As such, the theory of environmental criminology was born, with its exposé as a field in 1981 through Brantingham and Brantingham's (1981) book entitled *environmental criminology* (Sidebottom & Wortley, 2016). Environmental criminology theory has evolved from routine activity theory, rational choice and crime pattern theory as an overarching framework to encapsulate the approaches of crime mapping, situational crime prevention and design against crime (which houses SCP, DS, and CPTED) (Sidebottom & Wortley, 2016).

However, it is not without its psychological roots. The most seminal experiments that highlighted environmental criminology theory were that of Philip Zimbardo et al. (1971) in their Stanford prison experiment and Stanley Milgrams' (1963) electric shock experiment. These experiments highlighted the environmental factors that can be imposed on individuals and, as such, change their behaviour to conform (Sidebottom & Wortley, 2016). Both experiments showed the extent to which 'normal' individuals were willing to go when the conductive environment enables 'bad' behaviour (Sidebottom & Wortley, 2016).

The Strategies Within the Environmental Criminology Framework

The strategies outlined in this thesis come from a basis in environmental criminology theory with much overlap between SCP, DS, and CPTED. SCP, DS, and CPTED has been

applied to schools, dementia wards, and urban environments (See Clarke, 1997; Hedayati Marzbali, 2016; MohammadiGorji et al., 2021; Sohn, 2016; Vagi et al., 2018). However, the application of SCP, DS, and CPTED in the correctional field has been seen as lacking, with little published in the realm of the application of SCP, DS, and CPTED in prison environments. Examining the limited field of correctional SCP, DS, and CPTED and whether situational crime prevention and SCP has a place in Canadian correctional facilities will shape the foundation on which this thesis lies. While this thesis will focus solely on the first-generation, the history of how SCP, DS, and CPTED are known today has been shaped in many ways through thought leaders and foundational criminologists and is still important for this current thesis.

A History of SCP, DS, and CPTED

The history of CPTED is tumultuous as it has turned through the generations from Wood's original four principles of designing for a social structure in SCP that shaped Jeffery's three natural CPTED strategies into a whirlwind shift through second and third-generation CPTED. Crime Prevention Through Environmental Design, "CPTED," was coined by C. Ray Jeffrey in his 1971 publication titled the same (1971). Jeffery built CPTED on the foundation of environmental criminologists, such as seminal thinkers Jane Jacobs in SCP and Oscar Newman in DS, whose work highlighted the use of informal social control to reduce the likelihood of crime by creating defensible spaces (Robinson, 2017).

Situational Crime Prevention

One of the original advocates for using physical design in achieving social objectives was Elizabeth Wood, a social worker and the "foremost practitioner in social design in the field of housing" (Newman, 1973, as cited in Laufer & Adler, 1999, p. 4). Wood's (1961) contributions to the conceptualization of SCP were by considering inviting spaces to increase security through

natural means by using the residence she worked for in the Chicago Housing Authority. Wood (1961) recognized the need for informal social control and natural surveillance in social housing developments. In her "Social Theory of Housing Design," Wood (1961) recognized that the aggregate of individuals in the space was key for increasing safety and bound a group of strangers together for a common purpose of ownership over shared space. To obtain this level of trust in the community, Wood proposed four principles that shaped Jeffrey's natural three natural CPTED strategies ten years later: Design buildings to increase visibility, decrease loitering, increase the creation of informal groups of intended users and finally, design spaces that provide and are provided with social controls to maximize the human condition of being social beings (Wood, 1961).

At the same time Wood was conceptualizing and publishing her social theory, another figure, Jane Jacobs, published her work, *The Death and Life of Great American Cities* (1961). Jacobs' work focused on understanding the environmental conditions and urban decay that affected SCP. Through her work, Jacobs hypothesized that reducing anonymity and isolation could prevent urban residential crime (Robinson, 2017). As summarized by Laufer & Adler (2017), "active streets served as deterrents to crime" (p. 5). Furthermore, she was the first to conclude that many city designs were not built to maintain the informal social control networks necessary for creating a culture of community monitoring (Robinson, 2017).

The work of both Jacobs and Wood was further conceptualized in Schlomo Angel's (1968) *Discouraging Crime Through City Planning*. Angel's work concluded that offenders were more likely to choose areas to offend that offered higher opportunities for crime – a risk versus reward mentality (Angel, 1968). Citizens could take an active role in reducing crime, as seen in both Jacobs and Wood's theories, by reducing opportunity and affording more purposeful use of

the space. While Angel's theory focused on channelling pedestrians and reconceptualizing business zoning to areas of high transient areas, such as transit hubs or parking areas, the ideas he focused on can be seen to be applied through all the generations of CPTED by diagnosing and removing criminal opportunities.

Defensible Space

DS – a term synonymous with environmental criminology and CPTED nowadays – came at the culmination of works previously channelled into Oscar Newman's works (e.g., *Defensible Space, Architectural Guidelines for Crime Prevention, Crime Prevention Through Urban Design,* and *Architectural Design for Crime Prevention*). Newman, a former architect, designed solutions for projects such as public housing estates in New York, offered residents the ability to take responsibility for their neighbourhoods by supervising their own space as well as being seen by potential intruders without taking added steps outside of their normal routines – creating defensible space (Robinson, 2017). Areas that are low in DS, according to Newman, had low territoriality and lacked natural surveillance, would be more likely to be vulnerable to crime as there would be a lack of legitimate, positive social interaction among appropriate users (Newman, 1973, as cited in Laufer & Adler, 1999); as such those spaces would lack the informal social control – a theme that ties all of the previous theories together.

CPTED

Finally, Jeffery's CPTED was a turning point in environmental criminology due to his work's connection to experimental psychology and biology (Robinson, 2017). Highly influenced by Skinner's behavioural learning theory, Jeffery's original iterations of CPTED focused solely on a biological basis – with little thought to the mental and cognitive spheres of the human condition. Through the creation of CPTED, Jeffery built the idea that criminology is an

interdisciplinary work between many fields outside the traditional sociological schools of thought (Jeffery, 2006). Jeffery and Zahm (1993) build on this interdisciplinary focus in the following:

> The response of the individual organism to the physical environment is a product of the brain; the brain, in turn, is a product of genetics and the environment. The environment never influences behaviour directly but only through the brain. Any model of crime prevention must include both the brain and the physical environment. (p. 330)

Jefferey's perspective toward crime prevention as a model including the brain and the physical environment was further narrowed to focus solely on the physical environment (Robinson, 2017). However, Jeffery's CPTED theories and subsequent works did not catch onto the criminological world until the likes of academics, such as Brantingham and Brantingham, further operationalized the concepts proposed by Jeffery. Many academics to this day still pursue conventional criminological theories for the prevention of crime over CPTED. Many in the academic field still blatantly ignore Jefferey's contributions, original and after 1971. Jefferey's original argument against the academic field still holds strong to this day, however; understanding and studying the effects of not only the individual within the environment but also the environment itself, from which much of the literature around CPTED has strayed, is an important thing to advocate (1971). From Jeffery's original conceptualization of CPTED, the theory has evolved into a social ecology model, with newer generations focusing even more on human behaviour's mind and internal functions than the external (Robinson, 2017).

While still not being accepted into the mainstream academic circles, CPTED has been picked up by many outside of the academic world, building a plethora of real-world knowledge and a sector of modern-day CPTED professionals, focusing on creating safer spaces in our built

environments. CPTED has been utilized by many professionals, such as corporate and business initiates, governmental agencies, and urban planners and architects, as a means of crime prevention. In the 51-year time since Jeffery first published *Crime Prevention Through Environmental Design* (1971), there have been many interpretations of the root meaning and development of the CPTED practices leading to the creation of different generations of CPTED, each with their schools of thought.

The common assertion of CPTED is the "proper design and effective use of the built environment that can lead to a reduction in the fear and incidence of crime and an improvement in the quality of life" (Crowe 2000, p. 46). This assertion highlights the focus on the increasing quality of life that is the conceptual core of CPTED (Crowe, 2000). This is a very different strategy from the justice system commonly employed, from policing to correctional services. The focus of CPTED is to "reduce opportunities for crime that may be inherent in the design of structures or neighbourhoods" (Crowe, 2000, p. 46), initially and has been expanded into different contexts, such as schools and dementia wards.

Strategies and Generations of Situational Crime Prevention

SCP focuses on reducing the appeal of criminality to potential offenders (Clarke, 1997). To reduce the appeal for offenders, SCP employs DS tactics and mental opportunity structures (Clarke, 1997). As defined by Clarke (1997), SCP is:

> [O]pportunity-reducing measures that (1) are directed at highly specific forms of crime, (2) involve the management, design or manipulation of the immediate environment in as systematic and permanent way as possible, (3) make crime more difficult and risky, or less rewarding and excusable as judged by a wide range of offenders. (p. 4)

This manipulation of the immediate environment is highlighted through Clarke's (1997) "sixteen opportunity-reducing techniques" to increase the difficulty of committing a crime, reduce the reward for a crime, or affect the implicit rational choice assumptions around a potential crime and increase the shame and guilt that surrounds a crime (pp. 15-16). These 16 techniques mirror many of those from DS and CPTED.

DS and CPTED

Three natural strategies are fundamental to DS inherited by CPTED and have stayed focused throughout its iterations: territorial reinforcement, natural surveillance, and natural access control (Cozen et al., 2002; Cozens & Love, 2017). Territorial reinforcement – or territoriality – was initially conceptualized by Newman as the perceived authority that legitimate users, such as parents and children in a park, have to control and dictate the behaviours within 'their' areas (Cozen et al., 2002; Cozens & Love, 2017; Robinson, 2017). Residents would describe high territoriality as a feeling of pride and ownership of space (Cozens & Love, 2017). This territorial ownership further feeds into the purposeful design of the spaces to facilitate legitimate users' observations – natural surveillance – of the space through physical features and activity (Cozens & Love, 2017). By controlling the space through natural access control, access to targets can be restricted or denied by the design of the space – think of exits/entrances, landscaping, fencing, lighting, textural changes on the ground, and gating to delineate spaces – to create the perception that there is in an increased risk about targeting the areas and as such the risk outweigh the rewards (Cozens & Love, 2017).

Building off the foundational pieces laid by the natural strategies of DS, three generations of CPTED have developed. First-generation CPTED was summarised into six broad concepts, as seen in Figure 3. Territoriality – as previously described, surveillance, access control, image and

milieu, activity support, and target hardening (Moffat, 1983). Of the six key concepts, using territoriality in CPTED and creating the sense of "ownership" of space was the most important, with the other concepts aiding in its creation. Access control and surveillance increase territoriality by using the built environment to separate public and private spaces physically (e.g., fences, artwork, and landscaping/surface texture changes) and allowing for informal social control through surveillance (e.g., windows) from legitimate users of the space (e.g., residents, clients, and neighbours) (Cozens & Love, 2015). Changing the built environment to create delineated spaces – through landscaping or artwork, for example – also aids in the increase in milieu by promoting a positive image of the space from the legitimate users of that space (Cozens & Love, 2015). A favourable milieu also adds to the activity/program support as the appeal and maintenance of the space draw activity and programming (Cozens & Love, 2015). Poorly maintained spaces often act as "magnets" or "crime generators" that are linked to Newman's (1973) concept of "geographical juxtaposition (as cited in Cozens & Love, 2015).

Finally, target hardening is seen as a bullish concept to reduce crime by increasing the risk of being caught in space and the effort for criminals while reducing the reward, which is related to the foundational theory of Environmental Criminology. Many traditional target hardening techniques focus on the increase of cameras, security guards and micro-scale access control (e.g., locked doors, fences, security doors), creating a “fortress mentality” often seen through many institutions, government buildings and corporate high-rises (Cozens & Love, 2015). However, with the proper use of other first-generation CPTED concepts acting as catalysts for informal social control, the need for such hard tactics is reduced to gain the same level of security.

Building from the solely physical approach to crime prevention that was first-generation CPTED, second-generation CPTED focused on social ecology and, as such, was labelled "community CPTED" (Plaster Carter, 2002, p. 18) and "social CPTED'' (Mallett, 2004, as cited in Cozens & Love, 2015, p. 397). Second Generation CPTED moved the informal social control created through the built environment in the natural strategies and first-generational concepts into self-policing and community culture.

The main strategies of second-generation CPTED include social cohesion, community connectivity, community culture, and threshold capacity (Cozens & Love, 2015). Finally, the third generation had many attempts in its creation (see Fennelly & Perry, 2018; Thorpe & Gamman, 2013). Mihinjac and Saville (2019) created the currently accepted foundation – in the neighbourhood Liveability Hierarchy and the Liveability Principle – of third-generation CPTED. The authors move the concepts of second-generation CPTED further towards its social-ecological foundation by focusing on human motivation and the livability of the neighbourhood. The Liveability Hierarchy focuses less on the built space and the prevention of crime as a distinct mode of creating safe neighbourhoods and more on the principles of livability, pro-social activity and Maslow's hierarchy of human needs (Mihinjac & Saville, 2019).

Chapter IV: Methodology and Research Design

Due to the limited nature of prior research, this thesis was conducted using an exploratory design with a qualitative methods approach to analyzing data (Cuthill, 2002; Streb, 2010). Due to the nature of the research questions, qualitative data captured from the literature review was analyzed using content analysis to identify strategies that have been shown to reduce aggression and violence to form an instrument that can be used for the theoretical application of SCP, DS, and CPTED in prison environments. As noted by Hsieh and Shannon (2005), content analysis in the social science setting is helpful in its flexibility yet ensures the demarcation of the bounds of the scope for this thesis (see also Cavanagh, 1997).

Content analysis has been selected for this thesis as it has been used before in creating measurements (Hsieh & Shannon, 2005; Kääriäinen et al., 2019). Environmental criminology theory was used as the primary theoretical paradigm for this research. Environmental criminology as a theoretical paradigm has been used in research relating to SCP, DS, and CPTED to understand the relationship between crime and the environment that individuals operate within (Andresen & Hodgkinson, 2021; Wortley & Townsley, 2016). According to Brantingham and Brantingham (1991), "environmental criminology argues that criminal events must be understood as confluences of offenders, victims or criminal targets, and laws in specific settings at particular times and places" (p. 2).

Conceptualization and Operationalization of Variables

The variables that were addressed in this thesis are the following: aggression, violence, SCP, DS, and CPTED. Aggression and violence conceptual definitions and the operationalized definitions of SCP, DS, and CPTED were utilized in selecting studies through the literature review. Aggression has been conceptually defined as "behaviour aimed at harming others

physically or psychologically" (American Psychological Association, n.d., Aggression). As Graham (2009) noted, the social process of aggression comes from the culmination of dominance being asserted by one or more persons after perceiving a grievance. Violence has been conceptualized as "assault or fighting (or both combined)," "serious threats and/or weapon possession," or "extortion and/or hostage taking" (McGuire, 2018, p. 2). From an environmental criminology perspective, violence is the culmination of a situational process created through a complex phenomenon that brings together a victim, an offender, a law, and a place or space (Andresen, 2019).

SCP

SCP has been operationalized to design buildings to increase visibility, decrease loitering, increase the creation of informal groups of intended users, and finally, design spaces that provide social controls to maximize the human condition of being social beings (Clarke, 1997; Wood, 1961). The operationalized definition of SCP is compartmentalized into the following 25 techniques proposed by Clarke (1997). These strategies were used as codes in the content analysis to determine the most effective strategies for reducing aggression and violence. These codes have been used by Freilich et al. (2020) in their study.

DS

DS has been operationally defined as the "idea that crime can be reduced and community spirit improved through modifications to the physical environment that increase (a) natural *surveillance*, (b) residents' feelings of *territoriality*, and (c) *symbolic barriers* to trespassing by outsiders" (Sorensen, 2003, p. 34). The operationalized definition of DS is compartmentalized into the following three strategies: territorial reinforcement, natural surveillance, and natural access control (Cozens & Love, 2017). Territorial reinforcement – or territoriality – was initially

conceptualized by Newman as the perceived authority legitimate users have to control and dictate the behaviours within 'their' areas (Cozens & Love, 2017; Robinson, 2017). Natural surveillance is the purposeful design of spaces to facilitate legitimate users' observations of the space through physical features and activity (Cozens & Love, 2017).

Finally, natural access control is the ability to control the space through access to targets that can be restricted or denied by the design of the space – think of exits/entrances, landscaping, fencing, lighting, textural changes on the ground, and gating to delineate spaces – to create the perception that there is in an increased risk about targeting the areas and as such the risk outweigh the rewards (Cozens & Love, 2017). In the content analysis, these strategies were used as eleven operationalized codes defined by Moran and Dolphin (1986) to determine the most effective strategies for reducing aggression and violence.

CPTED

Only CPTED's first generation has operationally informed CPTED as first-generation CPTED focuses on the built environment to create delineated spaces as a catalyst for informal social control (Cozens & Love, 2015). The operationalized definition of CPTED was compartmentalized into the following six strategies: territoriality, surveillance, access control, image and milieu, legitimate activity support, target hardening, and geographical juxtaposition (Cozens et al., 2005; Cozens & Love, 2015). These strategies were used as codes in the content analysis to determine the most effective strategies for reducing aggression and violence. These codes have been defined and used by Cozens et al. (2005) and Schneider and Kitchen (2002) in their studies.

Data Collection Methods and Sources

A historical semi-systematic literature review examined how penal architecture has emerged through the decades. This semi-systematic review has been chosen for this thesis section due to the diversity of disciplines that have conducted research in penal architecture. As Snyder (2019) and Wong et al. (2013) noted, semi-systematic literature reviews are helpful for complex, multidisciplinary research topics to provide an overview of the past and current literature.

A further semi-systematic literature review was conducted on SCP, DS, and CPTED based on the environmental criminology theoretical paradigm (Andresen & Hodgkinson, 2021; Wortley & Townsley, 2016). The search strategy, as outlined in Table 1, was utilized for searches in Google Scholar and the Mount Royal University Library search function to collect the data. A flowchart of the search strategy and organization of the literature review can be seen in Figure 4. The following acted as exclusion criteria:

- Articles written before 2015 will be excluded from the selected articles to ensure that only current evidence for the reduction of aggression and violence is being applied.
- Non-peer reviewed will be excluded from the selected articles to ensure the rigour of the findings is reliable.
- Articles written in languages other than English will be excluded from the selected articles due to the limited time of the research to be able to translate other articles.
- Reviews and editorials will be excluded from the selected articles to ensure the original findings can be analyzed.
- Articles that fall under ecological crimes or cybercrimes will be excluded due to the inability to compare to a correctional environment.

Table 1

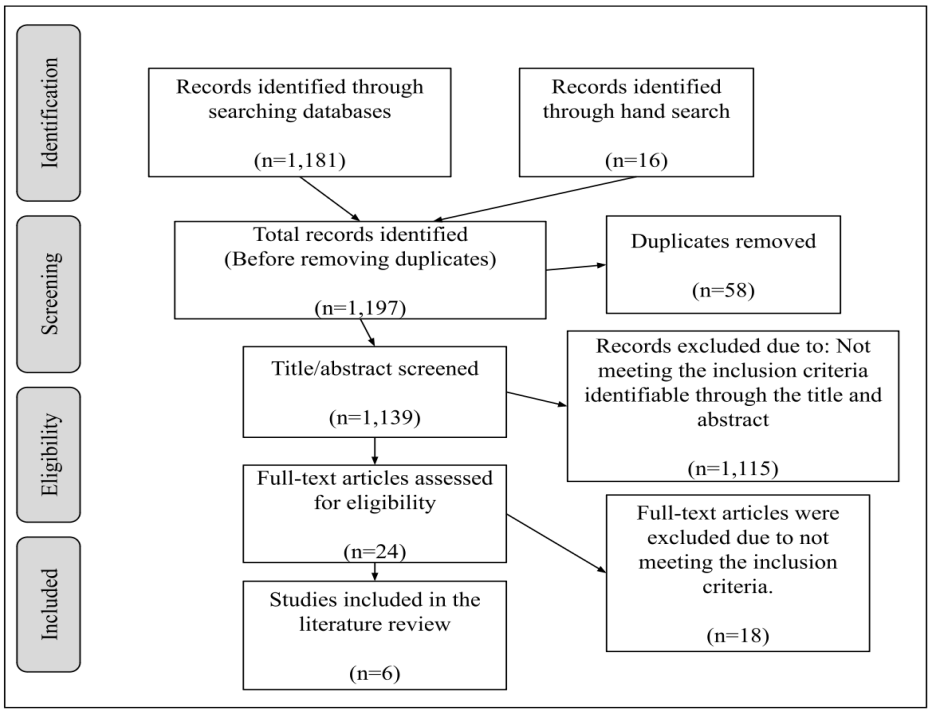
Search Terms Used for Electronic Database Searches

Database	Search Terms
Google Scholar	("situational crime prevention" OR "defensible space" OR (“CPTED” OR “Crime prevention through environmental design”)) AND (violence OR aggression) NOT Cyber NOT Eco
Mount Royal University Library search function	("situational crime prevention" OR "defensible space" OR (“CPTED” OR “Crime prevention through environmental design”)) AND (violence OR aggression) NOT Cyber NOT Eco

Of the 1,181 studies, 24 met the inclusion criteria during the initial review of the titles and abstracts. Of the 24 reviewed studies, six papers were further narrowed down to fit the inclusion criteria.

Figure 2

Literature review search strategy. Adapted from MohammadiGorji et al. (2021).



Once the literature review was conducted, the content analysis focused on the operationalized SCP, DS, and CPTED strategies to code strategies that have been shown to reduce aggression and violence in prior research (see Appendix A). The summary of the included six studies are shown in Table 2. The strategies to reduce aggression and violence were compiled into an instrument that can be applied to prison environments. A discussion followed regarding the theoretical application of the found strategies as they would be applied to correctional environments. The creation of this instrument followed Kääriäinen et al.'s (2019) approach. It followed their three general steps 1) generations of items and conceptual framework through a literature review and content analysis, 2) judgment qualification through the peer and supervisory review process, and finally, 3) the recommendation instrument will be theoretically applied to correctional environments to as a means of pilot testing (Kääriäinen et al., 2019).

Table 2

Summary of Included Studies

Last Name of the First Author	Title	Setting	Codes*	Findings Related to Environmental Design
Bradshaw et al. (2015)	The School Assessment for Environmental Typology (SAfETy): An Observational Measure of the School Environment	School	IM	Bradshaw et al. (2015) found increased rates of bullying, lower perceptions of physical comfort and lower levels of connectivity and support for schools with trash and graffiti/vandalism (IM).
Francis et al. (2022)	School Built Environments and Bullying Behaviour: A Conceptual Model Based on Qualitative Interviews	School	NS, SC	Staff, students, parents, policymakers, and practitioners in Francis et al. study rarely directly linked the built environment to bullying behaviours. However, through their analysis, three themes (NS and SC) for mediation emerged: "(i) visibility and supervision; (ii) physical and psychological comfort and safety; and (iii) social-

Last Name of the First Author	Title	Setting	Codes*	Findings Related to Environmental Design
				emotional competencies" (p. 11)
Lamoreaux and Sulkowski (2020)	Crime Prevention through Environmental Design in schools: Students' perceptions of safety and psychological comfort	School	AC, NS, TE	AC, NS, and TE all increased students' perception of safety and psychological comfort. Overall, CPTED strategies were found to improve the well-being of students and feelings of security. Both students with a history of deviant behaviour or previous exposure to violence and those with no previous history were impacted similarly to the CPTED designs.
Lawrence et al. (2022)	The Impact of Correctional CCTV Cameras on Infractions and Investigations: A Synthetic Control Approach to Evaluating	Corrections	SM	Limited evidence of CCTV (SM) was found to show a change in infractions with the upgrade to the system. Focusing on reducing blind spots did make an immediate impact on infractions. However, the trend did not differ from what was expected. This could be due to individuals choosing areas for premeditated misbehaviours.

Last Name of the First Author	Title	Setting	Codes*	Findings Related to Environmental Design
	Surveillance System Upgrades in a Minnesota Prison			
MohammadiGorji et al. (2021)	Investigating the Impact of Healthcare Environmental Design on Staff Security: A Systematic Review	Healthcare	NS, AC, TE, VI, HZ, QL	In a systematic review, MohammadiGorji et al. (2021) found that NS, AC, TE, VI, HZ, and QL were all design elements that may affect violence against healthcare workers. MohammadiGorji et al. (2021) also theorized that "providing a noninstitutional, soothing environment may reduce agitation" (p. 269).
Vagi et al. (2018)	Crime Prevention Through Environmental Design (CPTED) Characteristics Associated With	School	NS, SC, AC, IM, TE	Vagi et al. (2018) found that when school environments adhered to CPTED principles, namely NS, SC, AC, IM, and TE, students' experiences were potentially improved with feelings of lower risk of verbal or physical abuse perpetration and increased feelings of safety.

Last Name of the First Author	Title	Setting	Codes*	Findings Related to Environmental Design
	Violence and Safety in Middle Schools			

***** *See Appendix A for coding translations.*

Chapter V: Data Analysis

Of the six analyzed articles, nine components were found to aid in reducing aggression or to increase feelings of safety. Of those nine components, access control and territoriality were noted to be effective three times, as shown in Table 3. Natural surveillance was reported in four of the six studies as an effective strategy to reduce incidents of aggression or violence. Milieu and stimulating conscious were recorded as effective twice.

Table 3

Counts of Strategies Found in the Content Analysis

Code*	SCP/DS/CPTED	Count
AC	SCP & CPTED	3
VI	DS	1
HZ	DS	1
IM	DS & CPTED	2
NS	SCP & CPTED	4
QL	DS & CPTED	1
SC	SCP	2
SM	CPTED	1
TE	CPTED	3

** See Appendix A for coding translations.*

Under the environmental criminology framework, four of the strategies were found to fit within the DS model. At the same time, the majority were also found to be within the CPTED model. Finally, four strategies were found to exist within the SCP model. Of the nine strategies, five strategies were found to exist in two of the three models as per the coding definitions set using Cozen et al. (2005), Clarke (1997), and Moran & Dolphin's (1986) operationalized definitions.

The Results from the Analysis

From the analysis of the selected studies, ten main strategies were found to be effective in reducing aggression or fear of harm. In all of the studies selected, institutional formats (correctional, medical, and educational facilities) were used as a baseline for the application of SCP, DS, and CPTED strategies. As noted by Jewkes (2018), "prisons and hospitals traditionally have shared an ethos of discipline and surveillance that dehumanises their occupants and instills feelings of fear and vulnerability" (p. 320). Due to these commonalities, studies outside of correctional environments were selected to look forward to potential options for carceral designs.

In Lamoreaux and Sulkowski's (2020) study, students' perceptions of physical safety and psychological comfort favoured CPTED designs over non-CPTED designs. These findings for preference of CPTED designs versus non-CPTED designs did not vary significantly in students with previous exposure to violence from their peers in perceived psychological comfort and physical safety (Lamoreaux & Sulkowski, 2020). However, students with elevated or previous delinquent behaviour displayed a borderline preference for physical safety and psychological comfort, respectively (Lamoreaux & Sulkowski, 2020). Lamoreaux and Sulkowski (2020) found that CPTED, namely natural surveillance, access control, and territoriality, enhanced students' sense of physical safety and psychological comfort.

Access Control

Access control is a SCP, DS, and CPTED strategy. Access control measures can be used to prevent individuals from the entrance to specific areas (Clarke, 1997). This strategy can exclude potential offenders or deny opportunities to access potential targets (Clarke, 1997; Cozen et al., 2005). Access control was also noted in MohammadiGorji et al.'s (2021) paper to control entrances, exit and accessibility to general spaces to reduce incidents of aggression in emergency department settings. The authors suggest staff awareness training, adding badge swipe access to specific areas and providing a single-path entry system to reduce staff safety concerns.

Lamoreaux and Sulkowski (2021) found access control to aid in the students' feelings of physical safety and psychological comfort when designed to create environments that increase the safety of the school. However, the authors note that "building safer schools does not necessarily equate to building unattractive, prison-like school facilities if CPTED designs are utilized" (p. 484). This is a key finding and should relate to how prisons are created in ways that are not only 'unattractive' but also hinder the psychological comfort of those within them.

Visibility

Visibility and visibility ranges have been found to be crime deterrents as a means of surveillance (Moran & Dolphin, 1986). Visibility fits into the DS framework. MohammadiGorji et al. (2021) found multiple studies that identified a lack of visibility to colleagues in healthcare settings that increased the risk for violence. The authors suggest installing security glass in areas that may lack visibility to increase security for nurses, with the care teams or security close at hand. Pane et al. (1991) found that a majority of violent incidents occurred in the primary treatment areas of the emergency department (as cited in MohammadiGorji et al., 2021).

Ensuring open layouts and avoiding blind spots would increase staff safety and reduce aggressive actions (MohammadiGorji et al., 2021). This was also noted by Francis et al. (2022) to reduce incidents of bullying in schools.

Hierarchy of Zone

Within the DS framework, a hierarchy of zones denotes the idea of territorial definition through real or symbolic means at increasing levels. As noted by Moran and Dolphin (1986), "the more public a space, the greater the range of behaviour and people tolerated and the greater the likelihood that deviant users will go undetected and unchallenged" (p. 400). Creating internal waiting areas in hospitals instead of one large holding area was suggested by Pati et al. (2016) to reduce aggression felt by users (as cited in MohammadiGorji et al., 2021). This suggestion mirrors the idea of single-moving traffic streams to reduce aggression and acts of violence (MohammadiGorji et al., 2021). Furthermore, creating single streams of traffic allow limited access to staff members and reduces the chances of an aggressive individual being able to enter a zone without access (MohammadiGorji et al., 2021), which also denoted a related theme to access control.

Milieu

As a characteristic of DS and CPTED, milieu is the proprietary attribute of the areas that increase feelings of maintenance and a positive image of the built environment (Cozen et al., 2005; Moran & Dolphin, 1986). Bradshaw et al. (2015) found that the positive image of a well-maintained building perceived a lower threat of bullying by students and staff. The authors noted that increased levels of graffiti, vandalism and trash reduced feelings of physical comfort and increased the perception of a disordered environment. Francis et al. (2022) reported similar findings regarding the link between school aesthetics to bullying behaviours and attitudes toward

the school. Bradshaw et al. (2015) also found that a disordered environment due to graffiti, vandalism and trash reduced students' and staff's feelings of connection and support.

Natural Surveillance

In Schlomo Angel's (1968) *Discouraging Crime Through City Planning,* the author predicted the correlation between the level of activity on a street and criminality. This was further expanded by Loukaitou-Sideris (1999) into the understanding that there must be a pinnacle of population density in a setting, not too large, to mask less serious offences (as cited in Cozen et al., 2005). This was integrated into SCP and CPTED through the characteristic of natural surveillance. The concept of natural surveillance capitalizes on the legitimate users of the space functioning as 'eyes on the streets' to observe other users of the space and their activities to reduce the opportunity for crime to occur out of public view (Clarke, 1997; MohammadiGorji et al., 2021).

MohammadiGorji et al. (2021) found that increasing visibility into areas through doors with glass inserts or creating a "level of openness" through transparent dividers and other design elements reduced aggression in clients in the emergency department. Furthermore, Lamoreaux and Sulkowski (2020) found that integrated natural surveillance in a CPTED-designed school setting increased students' perceptions of physical safety and psychological comfort. This finding was consistent with Francis et al.'s (2022) study, which noted that blind spots created hotspots for bullying.

Quality of Light

Quality of light, a DS and CPTED strategy, considers factors that are area specific to increase the efficiency of lighting (Cozen et al., 2005; Moran & Dolphin, 1986). Francis et al. (2022) found that through the use of lights, glass walls, and windows, visibility could be

optimized to increase natural surveillance in a school setting to reduce instances of bullying. The authors also reported that participants felt discomfort or irritability and had reduced visibility in lower-quality light areas. Furthermore, soft lighting was found to be associated with increased feelings of well-being among students (Francis et al., 2022).

Stimulating Conscious

Within SCP, simulating conscious focuses on specific social controls within an area to discourage specific offences rather than broader informal social controls that denote general law-breaking behaviour (Clarke, 1997). Francis et al. (2022) found that specific areas created for mood regulation increased preventative measures against bullying in a school setting. These areas are specifically targeted to reduce feelings of aggression and anger through self-soothing techniques (Francis et al., 2022). Francis et al. (2022) further report that the ability to create these spaces can be added to areas as a post-facto modification and still act as an effective aggression reduction strategy. Furthermore, Vagi et al. (2019) observed that attention to reducing minor inappropriate behaviours prevented the escalation of conflicts or tensions.

Mechanical Surveillance

Mechanical surveillance in the form of closed-circuit television (CCTV) cameras has been a highly debated CPTED measure to reduce criminality. Previously, several studies have found limited or mixed effectiveness with CCTV surveillance (AlHusban & AlHusban, 2020; Coon, 2020; Cozen et al., 2005). As defined by Cozen et al. (2005), CCTV creates an increased risk of detention in the hope that rationality will outweigh the perceived benefits of the crime. Similarly, within this thesis, Lawrence et al. (2022) found limited success with CCTV upgrades to decrease infractions and rule-breaking by offenders in a correctional setting. The authors note

that more must be done for a camera system to become more effective than just upgrading surveillance systems.

It was also noted that while there was an initial decrease in infractions by inmates, the general trend remained the same as inmates found new blind spots and adapted to the updated CCTV system (Lawrence et al., 2022). Lawrence et al. (2022) found that CCTV did not impact the infractions or behaviour of inmates past the first month of the upgraded systems and, as such, was not seen as an effective deterrent to aggression. This was concurred with by Francis et al. (2022), who found that the lack of CCTV cameras in schools increased bullying and vandalism; however, with the changes, students found new areas not covered by the cameras and encouraged these covert behaviours. Francis et al. (2022) also reported that some students felt at higher odds of being victimized by bullying with increased CCTV cameras.

Territoriality

Using the reinforcement of ownership by legitimate users of the space has been a long-standing CPTED strategy to reduce opportunities for potential offenders (Cozen et al., 2005). This use of territoriality was an applicable strategy to staff and patients within medical settings, with MohammadiGorji et al. (2021) observing that areas with low territoriality encouraged aggressive patient behaviour. Many suggested tactics to increase staff's feelings of ownership were suggested through MohammadiGorji et al.'s (2021) review, including increasing desk width as well as increasing the height of barriers to reduce the opportunity for aggressive patients to be able to climb over counters. Furthermore, the authors noted that a "lack of privacy… [can] be perceived as an infringement of one's territoriality" (p. 264). Lamoreaux and Sulkowski (2020) observed that when integrating territoriality with natural surveillance and access control,

students in a school environment generally reported more positive perceptions of physical safety and psychological comfort.

Chapter VI: Discussion

Current research in correctional settings has focused on target hardening to reduce offences within institutions (Ahalt et al., 2019; Brinkley-Rubinstein, 2013; Grant & Jewkes, 2015; Jewkes, 2018). However, target hardening measures' harmful psychological and social effects tend to be brushed aside for a 'safer' environment (Cozen & Love, 2017). While target hardening–a CPTED and SCP strategy– is well-established and commonly applied in many settings, its ongoing application can lead to fortification with increasing restriction and security, leading to a fortress mentality (Cozen & Love, 2017). These fortress environments lead to increased fear (Cozen & Sun, 2018). Morris and Worral (2014) note how "environmental factors such as prison crowding, the ratio of security staff to inmates, prison gangs, sentence length, time to parole eligibility, custody status (i.e., security classification), and facility type each play a role in the relative harshness of the imprisonment experience for any given inmate" (p. 1087). Furthermore, studies regarding the effectiveness of prison design elements and the reduction of violence and aggression are largely unexplored and limited in their external validity outside of an increased security focus (Morris & Worrall, 2014). However, there has been a shift from this retributive, harsh climate of penal management to that of a restorative approach that has been growing throughout North American correctional systems (Ahalt et al., 2019; Jewkes, 2018; Karthaus et al., 2019).

With the publicity of Nordic prison approaches, the psychological effects of correctional environments have been noted regarding not only the harm done to inmates but also the reduction in the successful reintegration of offenders post-incarceration (Ahalt et al., 2019; Brinkley-Rubinstein, 2013; Grant & Jewkes, 2015; Jewkes, 2018). The application of SCP, DS, and CPTED with a mind to the psychological and social impacts of the built environment may

offer an innovative and restorative approach to incarceration as well as correctional theory on a larger scale. While as Karthaus et al. (2019) note that sustainable, rehabilitative behaviour change is dependent upon an individual's decision not to reoffend, …the incentives and support that help maintain that choice are key" (p. 193).

Addressing the Research Question

Through the analysis and further development of the strategies in SCP, DS, and CPTED, research question one has been addressed in the literature review and content analysis. The results of the literature review and content analysis found eight strategies that were effective in reducing aggression and violence in institutional settings. The research questions of this thesis were the following:

> What SCP, DS, and CPTED strategies exist that reduce violence in spaces, and can they be evaluated? How can those evaluated SCP, DS, and CPTED strategies be theoretically applied to correctional facilities?

The secondary research question will be reviewed in the following section. The theoretical application of SCP, DS, and CPTED is assumed to be applicable due to the institutional nature of all of the selected studies as well as the institutional nature of correctional environments. Future research is needed to physically apply SCP, DS, and CPTED principles to concur findings.

Recommended Strategies to Reduce Aggression and Violence in Correctional Facilities

As noted by Seppänen et al. (2018) larger scale, architectural features require early consideration of SCP, DS, and CPTED to be fully utilized. However, interior design features can be more easily modified and, therefore, are less fixed in their utilization (Seppänen et al., 2018). The following strategies have been summarized in Table 4 to form an instrument that can act as an aid for correctional institutions to grade and refurbish their current facilities. This table has

been further refined into Appendix B, which has been created as an instrument for correctional facilities to evaluate their SCP, DS, and CPTED components.

Access Control, Hierarchy of Zone and Natural Surveillance

While through the analysis of the six selected articles, ten strategies were noted to reduce aggression and violence within institutional settings, it is acknowledged that certain strategies within that are already being readily implemented in correctional settings. Of those strategies, access control and hierarchy of zones are readily used by correctional facilities through the use of badge swipe access to specific areas and providing a single-path entry system to reduce staff safety concerns, as associated with MohammadiGorji et al.'s (2021) recommendations. Furthermore, while Lamoreaux and Sulkowski (2021) found access control to aid in the students' feelings of physical safety and psychological comfort when designed to create environments that increase the safety of the school, the applicability of access control that is able to be readily adapted to fit the needs in inmates may become more of a safety hazard than that of other potential suggestions to reduce aggression. While the application of spatial definition to create informal access control and hierarchy of zones may be applicable to specific correctional settings, they must be evaluated on an individual basis. Similarly, natural surveillance – the use of open layouts and clear sightlines– is commonly utilized within correctional and other institutional settings with success (see Lamoreaux & Sulkowski, 2021).

Visibility and Quality of Light

Correctional facilities already operate on a highly visible architectural focus, such as lines of sight for staff. This focus on surveillance denotes the ability of visibility to act as a powerful crime deterrent (Moran & Dolphin, 1986). However, past the basic need for security, visibility has been linked to comfort and safety (Francis et al., 2022). Francis et al. (2022) offer the

reduction of crowding and increased light quality to reduce incidents of bullying as well as feelings of irritability and discomfort. Soft lighting was found to be connected to feelings of well-being and a reduction of bullying behaviours (Francis et al., 2022; Seppänen et al., 2018). Seppänen et al. (2018) also noted that windows providing daylight and ventilation while maintaining security measures are highly successful in forensic psychiatric hospitals. Furthermore, the illumination of spaces may support the principle of visibility and natural surveillance to reduce perceptions of disorder and violence (Lamoreaux & Sulkowski, 2021).

Milieu, Stimulating Conscious and Territoriality

Students' perceptions of social disorder have been found to be highly influenced by maintenance and image (Bradshaw et al., 2015; Lamoreaux & Sulkowski, 2020). Increasing maintenance and speed of removing physical disorganization in the forms of trash, graffiti, and vandalism not only aid in the upkeep of facilities but also creates an understanding of respect for the environment as well as positive associations to learning and staff reports of facility climate (Bradshaw et al., 2015). Francis et al. (2022) observed the link between students' attitudes toward their environment and peers, bullying behaviours, and school aesthetics. Furthermore, Francis et al. (2022) linked a lack of signage and under-utilization to bullying behaviour due to individuals' lack of confidence in navigating the space. The authors also suggest the creation of reflection and mood regulation spaces that, while still integrated into the larger social area, allow individuals to have a sense of privacy and peace.

Ownership and territoriality have been found to increase positive behavioural expectations (Bradshaw et al., 2015). A recommendation by Bradshaw et al. (2015) is the use of murals created by the community to increase ownership of the space. This may be applicable to federal institutions in Canada, as the population is less transient in nature than that of provincial

facilities. Territoriality can also be created through adequate maintenance; “the presence of dirty and deteriorating spaces tends to send a message that individuals do not value such spaces or feel a sense of ownership over them, which can then invite clandestine acts and misbehavior” (Lamoreaux & Sulkowski, 2021, p. 478).

Mechanical Surveillance

Mechanical surveillance, in the form of CCTV cameras, has been shown to have mixed success (See Bradshaw et al., 2015; Francis et al., 2022; Lawrence et al., 2022). While Francis et al. (2022) found the use of CCTV was linked with decreased vandalism and bullying, which is concurrent to the current use of mechanical surveillance within correctional facilities. However, this success is mainly tied to the reduction of blind spots. Lawrence et al. (2022) observed through their study that despite upgrades in equipment and the addition of new cameras to reduce blind spots, eventually displacement of aberrant behaviour was observed in new areas with limited camera coverage.

Other Strategies of Note

While not housed within a SCP, DS, or CPTED framework, ventilation was also found to be frequently connected to bullying behaviour, due to unpleasant body odour, or underlying health and respiratory conditions (Francis et al., 2022; Seppänen et al., 2018). Of note, the temperature was also found to be connected to students with a higher susceptibility to bullying behaviour and irritability due to difficulty regulating their temperature as well as extreme temperatures (Francis et al., 2022; Seppänen et al., 2018). Finally, a reduction in loud or irritating noises or poor acoustics within a space can lead to a reduction in negative social interactions (Francis et al., 2022; Seppänen et al., 2018).

Table 4:

Summary of Recommended Strategies to Reduce Aggression and Violence in Correctional Facilities.

Recommended Strategy	**Reference**
Provide soft, bright lighting in facilities to increase visibility as well as reduce feelings of discomfort and irritability.	Francis et al. (2022); Seppänen et al. (2018)
Optimize the application of spatial definition to create informal access control and hierarchy of zones to specific correctional settings as evaluated on an individual basis.	Cozen et al. (2005)
Ensure the removal of physical disorganization in the forms of trash, graffiti, and vandalism.	Bradshaw et al. (2015); Lamoreaux and Sulkowski (2020)
Ensure the refurbishment of windows to those which provide daylight and ventilation while still maintaining security measures.	Seppänen et al., (2018)
Design increased clarity of order for spaces that may lack signage or may be under-utilized in everyday operation.	Francis et al. (2022)
Create reflection and mood regulation spaces that, while still integrated into the larger social area, allow for individuals to have a sense of privacy and peace	Francis et al. (2022)

Recommended Strategy	Reference
Consider a CCTV camera system audit to reduce blind spots in areas where individuals could not be observed through other observational means.	Bradshaw et al. (2015); Francis et al. (2022); Lawrence et al. (2022)
Create ownership of space created through a communal mural or art project.	Bradshaw et al. (2015)
Ensure temperature-controlled conditions with good ventilation.	Francis et al. (2022); Seppänen et al. (2018)
Consider sound-dampening material to reduce loud or irritating noises or to aid in correcting poor acoustics within a space.	Francis et al. (2022); Seppänen et al. (2018)

Chapter VI: Conclusion

Through this honours thesis, the body of literature can grow surrounding the carceral architecture's impact on the behaviours of inmates and the creation of more restorative environments. While the application of SCP, DS, and CPTED may not correct the current complaints regarding double-bunking, warehousing, and lack of access to education and mental health services, as noted by the OCI (Zinger, 2022), inmates' abilities to better contribute to their programming and interaction with others due to a reduction of aggressive behaviour may contribute to fewer individuals being returned to correctional facilities. Future research into the effects of the built environment on the success of correctional outcomes should be focused less on the target hardening measures that have been implemented in the past and more on the ability of correctional environments to aid in rehabilitation.

Key Findings and Implications

While there are many strategies and designs that may impact aggressive behaviour within institutional settings, this review shows that the noted strategies that have shown to be successful can be applied to a correctional setting. While most of the strategies reviewed were shown to have successful outputs, mechanical surveillance was observed to not show long-term success in reducing infractions (Lawrence et al., 2022). When taken in tandem, territoriality, natural surveillance, and access control can mitigate aggressive and violent behaviours (Lamoreaux & Sulkowski, 2020).

Limitations and Other Considerations

This research will be limited because of its theoretical nature. Due to an inability to conduct a SCP, DS, and CPTED revamp on an operational correctional facility in the time allocated for this thesis, the findings of this thesis will remain purely speculative. A secondary

limitation is the inability of the recommendations instrument developed through this thesis to undergo the full requirements for ensuring its validity and reliability due to the inability of the researcher to conduct a review with a panel of experts and practical pilot study post-development as per Kääriäinen et al.'s (2019) recommendations. Furthermore, due to this project's limited time and resources, not all SCP, DS, and CPTED data may be captured through the semi-systematic literature review of sources. Nor does the instrument in Appendix B capture all the possible recommendations or solutions that would fit into a SCP, DS, or CPTED framework. The author understands that this will require greater scope and expansion than what is available in an undergraduate thesis project.

Suggested Future Research

Future research may consider testing the applicability of SCP, DS, and CPTED strategies in carceral institutions throughout different correctional environments. Furthermore, the use of SCP, DS, and CPTED strategies should not be a singular focus. The use of positive psychology, Indigenous Knowledge, and larger systems thinking approaches should be utilized to understand the applicability of creating a more rehabilitative environment within our correctional settings. It is the hope of the author that this research is expanded and taken up by governing bodies such as the CSC through general upkeep and maintenance to bring purpose-built environments front of mind. Canada has seen the days of retributive, punishment-driven carceral design for too long. The signs of failure for this system are clear. It will not be an overnight shift, but with this thesis, it is the author's hope that Canada can, in fact, move in the right direction.

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Appendix A

Sets of Characteristics Being Coded For

SCP/DS/ CPTED	Code	Description (Rule)
SCP & CPTED	AC	*Access control* - "Access control refers to measures intended to exclude potential offenders from places such as offices, factories and apartment blocks. The portcullises, moats and drawbridges of medieval castles suggest its preventive pedigree may be as lengthy as that of target hardening. It is also a central component of defensible space, arguably the start of scientific interest in situational prevention." Clarke (1997) "Access control is a CPTED concept focused on reducing opportunities for crime by denying access to potential targets and creating a heightened perception of risk in offenders. Access control can include informal / natural (e.g. spatial definition), formal / organised (e.g. security personnel) and mechanical (e.g. locks and bolts) strategies (the latter two are discussed under the sub headings surveillance and target hardening respectively)." Cozen et al. (2005)

SCP/DS/ CPTED	Code	Description (Rule)
CPTED	AS	*Activity Support* - “Activity support involves the use of design and signage to encourage intended patterns of usage of public space. Crowe (2000) notes how within reason, activity generation and support seeks to place inherently "unsafe" activities (such as those involving money transactions) in "safe" locations (those with high levels of activity and with surveillance opportunities).” Cozen et al. (2005)
SCP	CD	*Controlling disinhibitors* - “Crime is not only facilitated by tools such as weapons, but also by psychological disinhibitors, which include: (i) alcohol and drugs, which undermine the usual social or moral inhibitions, or impair perception and cognition so that offenders are less aware of breaking the law (White and Humeniuk, 1994); (ii) propaganda, which can be directed at the dehumanization of target groups (such as Jews — see Bauer, 1990) and can provide the moral certainties and justifications that ordinary people need to commit atrocities and war crimes (Ellul, 1965); and (iii) television violence, which like propaganda, might "reduce or break down those inhibitions against being violent that parents and other socializing agencies have been building up in boys" (Belson, 1978: 17).” Clarke (1997)
SCP	CF	*Controlling Facilitating* - “Saloons in the Wild West routinely required customers to surrender their weapons on entry because of the risk of drunken gun fights. In more recent times, the manufacture of "less

SCP/DS/ CPTED	Code	Description (Rule)
		lethal weapons" in the form of guns that shoot wax bullets, electricity or tranquilizers has been advocated (Hemenway and Weil, 1990).” Clarke (1997)
SCP	DB	*Denying benefits* - “Related to reducing temptation, but conceptually distinct, is denying the benefits of crime to offenders. The recent development of security-coded car radios that require a thief to know the radio's PIN before it can be used in another vehicle constitutes an excellent example of this principle.” Clarke (1997)
DS	DN	*Distance of Nearest Street Light* - “The literature on the relationship between street lighting and levels of crime claims that there is a relationship between high levels of lighting, frequency use of streets for a range of activities, and low crime occurrence (e.g., Jacobs, 1961; Newman, 1972).” Moran and Dolphin (1986)
SCP	DO	*Deflecting offenders* - “At soccer matches in Britain, rival groups of fans have been segregated in the stadium to reduce fighting and their arrival and departure has been scheduled to avoid the periods of waiting around that promote trouble (Clark, 1983). Scheduling the last bus to leave immediately after pub

SCP/DS/ CPTED	Code	Description (Rule)
		closing time, is intended to interfere with another of Britain's less admirable traditions, the closing time brawl." Clarke (1997)
SCP	ES	*Entry/exit screening* - "Entry screening differs from access control in that the purpose is less to exclude potential offenders than to increase the likelihood of detecting those not in conformity with entry requirements. These requirements may relate to prohibited goods and objects or, alternatively, to possession of tickets and documents. Exit screens, on the other hand, serve primarily to deter theft by detecting objects that should not be removed from the protected area, such as items not paid for at a shop" Clarke (1997)
SCP	FC	*Facilitating compliance* - "When Lombroso suggested in the 19th century that people should be locked up for publicly urinating in the streets, his pupil Ferri suggested an alternative more in keeping with the spirit of this book — the provision of public urinals (Hackler, 1978:12). Ferri's suggestion constitutes an example of facilitating compliance, the sixteenth opportunity-reducing technique." Clarke (1997)
SCP & CPTED	FS	*Formal surveillance* - "Formal surveillance is provided by police, security guards and store detectives, whose main function is to furnish a deterrent threat to potential offenders… In addition to their primary

SCP/DS/ CPTED	Code	Description (Rule)
		function, some employees, particularly those dealing with the public, also perform a surveillance role by virtue of their position." Clarke (1997) "Formal (or organised) surveillance is also provided by local stakeholders (shop keepers, security guards). Four studies of increased formal guardianship at parking lots and garages have demonstrated reductions in car-related crime (Poyner, 1991; Laycock and Austin, 1992; Poyner, 1994; Barclay et al., 1996) while one study found no such reduction (Hesseling, 1995). Poyner (1991) notes that strategies to control access may reduce thefts of vehicles, but may do little to impact on theft from vehicles, raising the issue that what guards actually do may be as important as their physical presence." Cozen et al. (2005)
DS	HZ	*Hierarchy of Zone* - "Increasing levels of territorial definition from public, semipublic, semiprivate, and private are communicated by real (e.g., walls) or symbolic (e.g., change of paving) features of the environment (Brown and Altman, 1981). The more public a space, the greater the range of behavior and people tolerated and the greater the likelihood that deviant users will go undetected and unchallenged." Moran and Dolphin (1986)

SCP/DS/ CPTED	Code	Description (Rule)
DS & CPTED	IM	*Milieu* - "Milieu, the final characteristic of defensible space, is described by Newman as the positive influence of property believed to be safe (e.g., police stations) on the security of surrounding areas. The influential effect of milieu on the activation of proprietary attitudes is reported in the literature, (e.g., Gladstone, 1978; Skogan and Maxfield, 1981; Wilson, 1982)." Moran and Dolphin (1986) "Promoting a positive image and routinely maintaining the built environment ensures that the physical environment continues to function effectively and transmits positive signals to all users. The significance of the physical condition and 'image' of the built environment and the effect this may have on crime and the fear of crime has long been acknowledged (Lynch, 1960) and an extensive body of research now exists." Cozen et al. (2005)
SCP	IP	*Identifying property* - "Writing one's name in a book is a simple form of property marking — a space is provided in this book for that purpose. The most developed programs of identifying property relate to vehicles." Clarke (1997)

SCP/DS/ CPTED	Code	Description (Rule)
DS	LT	*Level of Traffic (Type of Street)* - "As with lighting, the weight of theoretical work predicts that high traffic volume provides informal surveillance and consequently is associated with low crime rates (e.g., Jacobs, 1961; Newman, 1972)." Moran and Dolphin (1986)
SCP & CPTED	NS	*Natural surveillance* - "Householders may trim bushes at the front of their homes and banks may light the interior of their premises at night in an attempt to capitalize upon the "natural" surveillance provided by people going about their everyday business. Enhancing natural surveillance is a prime objective of improved street lighting (Tien et al., 1979; Ramsay, 1991a), of defensible space (Mayhew, 1979; Coleman, 1985), and of "neighborhood watch" (Bennett, 1990; Rosenbaum, 1988)." Clarke (1997) "Angel (1968) predicted that certain critical levels of street activity and population density were linked to crime. A critical crime 'zone of intensity' was therefore one that could support low numbers of people but in sufficient densities to contain both victims and offenders. Loukaitou-Sideris (1999) has proposed that a second level population density exists; where the density is sufficiently high to mask a range of less serious offences such as pick pocketing and petty theft." Cozen et al. (2005)

SCP/DS/ CPTED	Code	Description (Rule)
DS & CPTED	QL	*Quality of Light* - "Lighting quality was rated in order to allow for area-specific factors that might affect the efficiency of lighting (e.g., mature deciduous trees, light-obstructing architectural features, absorbing surfaces)" Moran and Dolphin (1986) "After dark, surveillance opportunities are affected by lighting conditions and much research has been conducted on this subject (for a review see Cozens et al., 2003). In America in the 1960s many cities began major street lighting programmes to reduce crime and initial results found that such improvements produced substantial reductions in recorded crime (Berla, 1965; Wheeler, 1967; Wright et al., 1974; Tyrpak, 1975; Hartley, 1974). These projects resulted in the decision by the Law Enforcement Assistance Agency to fund a review of these 'positive' results (Tien et al., 1979)." Cozen et al. (2005)
DS	QS	*Quality of Surveillance* - "Ratings made took into consideration the extent to which a kiosk was overlooked, the type of overlooker, and the likelihood of intervention. Other factors taken into account were size, number and position of doors and windows, the spatiotemporal pattern of the life-style of overlookers, unobstructed views, and so forth." Moran and Dolphin (1986)

SCP/DS/ CPTED	Code	Description (Rule)
SCP	RS	*Rule setting* - "All organizations find it necessary to have rules about conduct in their fields of governance. For example, most businesses regulate employees' telephone use and all retail establishments require their employees to follow strict cash handling and stock control procedures." Clarke (1997) "The attention to and reduction of minor inappropriate behaviours. The objectives are to maintain decorum and promote pro-social behaviours by preventing the escalation of tension, conflicts or inappropriate behaviors." Vagi et al. (2019)
SCP	RT	*Reducing Temptation* - "In certain city streets it is unwise to wear gold chains or leave cars parked which are attractive to joyriders. (Throughout the 1980s, the Chevrolet Camaro constituted an American example of the latter, Clarke and Harris, 1992b). Some temptations are less obvious. For example, phone directories which are not gender-neutral might promote obscene phone-calls to women." Clarke (1997)
SCP	SC	*Stimulating Conscience* - "This situational technique can be distinguished from society's more general informal social control by its focus on specific forms of crime occurring in discrete, highly limited settings (Clarke and Homel, 1997). Rather than attempting to bring about lasting changes in generalized

SCP/DS/ CPTED	Code	Description (Rule)
		attitudes to law breaking, these measures serve simply to stimulate feelings of conscience at the point of contemplating the commission of a specific kind of offense." Clarke (1997)
CPTED	SM	*Mechanical Surveillance* - "CCTV may deter criminal offences (e.g. vehicle crime or burglary) due to a perceived increase in the risk of detection (that may outweigh the perceived potential benefits). However, in alcohol-related crime (such as public disorder) where 'rationality' is often absent, the deterrent effect of CCTV may be nullified." Cozen et al. (2005)
CPTED	TE	*Territoriality* - "Territoriality is a design concept directed at reinforcing notions of proprietary concern and a 'sense of ownership' in legitimate users of space thereby reducing opportunities for offending by discouraging illegitimate users." Cozen et al. (2005)
SCP & CPTED	TH	*Target Hardening* - "An obvious, often highly effective way of reducing criminal opportunities is to obstruct the vandal or the thief by physical barriers through the use of locks, safes, screens or reinforced materials." Clarke (1997)

SCP/DS/ CPTED	Code	Description (Rule)
		"Target hardening increases the efforts that offenders must expend in the commission of a crime and is the most long-established and traditional approach to crime prevention. However, there is much disagreement concerning whether or not target hardening should be considered as a component of CPTED. It is directed at denying or limiting access to a crime target through the use of physical barriers such as fences, gates, locks, electronic alarms and security patrols." Cozen et al. (2005)
SCP	TR	*Target removal* - a "pay phone example is provided by the introduction of the Phonecard, which by dispensing with the need for pay phones to store large sums of cash, has removed an important target for theft. A variety of cash reduction measures, including the use of safes with time locks, substantially reduced robberies of betting shops in Australia (Clarke and McGrath, 1990)." Clarke (1997)
DS	VI	*Visibility* - "The greater part of the literature that discusses this aspect of surveillance attributes a crime deterrent role to high visibility (e.g., Newman, 1972; Mawbya, 1977). Factors taken into consideration in making visibility ratings are features such as the presence of sharp turns, trees, or items of street furniture that obstruct visibility." Moran and Dolphin (1986)

SCP/DS/ CPTED	Code	Description (Rule)
DS	ZI	*Zone of Influence* - "the creation of clear boundaries between areas (Rhodes and Conly, 1981) through landscaping (Brower et al., 1983; Wilson, 1978) and street design (Appleyard and Lintell, 1972; Lee, 1968). These measures promote development of a mental map of one's neighborhood (Lee, 1968; Merry, 1981; Reppetto, 1974) and mutual awareness among residents (Brantingham and Brantingham, 1981)-all of which are hypothesized to encourage proprietary attitudes." Moran and Dolphin (1986)

Appendix B

Recommendation Checklist for Correctional Facilities

Recommendation	Citation	Yes	No	Partially
Provide soft, bright lighting in facilities to increase visibility as well as reduce feelings of discomfort and irritability.	Francis et al. (2022); Seppänen et al. (2018)	☐	☐	☐
Optimize the application of spatial definition to create informal access control and hierarchy of zones to specific correctional settings as evaluated on an individual basis.	Cozen et al. (2005)	☐	☐	☐
Ensure the removal of physical disorganization in the forms of trash, graffiti, and vandalism.	Bradshaw et al. (2015); Lamoreaux and Sulkowski (2020)	☐	☐	☐
Ensure the refurbishment of windows to those which provide daylight and ventilation while still maintaining security measures.	Seppänen et al. (2018	☐	☐	☐

Recommendation	Citation	Yes	No	Partially
Design increased clarity of order for spaces that may lack signage or may be under-utilized in everyday operation.	Francis et al., (2022)	☐	☐	☐
Create reflection and mood regulation spaces that, while still integrated into the larger social area, allow for individuals to have a sense of privacy and peace	Francis et al. (2022)	☐	☐	☐
Consider a CCTV camera system audit to reduce blind spots in areas where individuals could not be observed through other observational means.	Bradshaw et al. (2015); Francis et al. (2022); Lawrence et al. (2022)	☐	☐	☐
Create ownership of space created through a communal mural or art project.	Bradshaw et al. (2015)	☐	☐	☐
Ensure temperature controlled conditions with good ventilation.	Francis et al. (2022; Seppänen et al. (2018)	☐	☐	☐

Recommendation	Citation	Yes	No	Partially
Consider sound dampening material to reduce loud or irritating noises or to aid in correcting poor acoustics within a space.	Francis et al. (2022); Seppänen et al. (2018)	☐	☐	☐