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Mindfulness-Based Stress Reduction

In a Correctional Facility:

A systematic literature review and meta-analysis on the impact of violent behaviour.

A thesis

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Abstract

Criminal behaviours can often lead to a prison sentence, and a prison sentence suggests that justice has been served. It appears that correctional facilities worldwide have been inundated with prisoners serving time for a variety of reasons. Though a prison sentence serves as punishment for perpetrators, it can often cause psychological harm for both prisoners and their families. As a result of more relevant research being conducted, several intensive rehabilitative programmes are being run in correctional facilities worldwide to address criminal behaviours such as violence. These intensive programmes aim to teach prisoners to understand the relationships between intrusive thought patterns that may or may not be associated with past traumatic events, emotional dysregulation, and poor behaviour leading to violent offending. The present study examined the impact of Mindfulness-Based Stress Reduction (MBSR) on prisoners' psychological wellbeing in correctional facilities worldwide. It was completed by running a meta-analysis on four studies based in the United States of America (USA), China, and the Netherlands and across various ethnic and cultural groups, which analysed this relationship. The results indicated that MBSR could be an effective treatment modality to run alongside intensive therapies.

Furthermore, the overall effect size suggested a positive but not significant relationship between MBSR and improved psychological wellbeing. It is suggested that further research using experimental designs be explored in this field to allow for further analysis to be examined. The main objective of this review was to answer two questions: 'Is the use of MBSR in correctional facilities effective in helping reduce recidivism rates?' and 'Will the use of MBSR be effective with different cultural and ethnical populations in correctional facilities?' The conclusion of the meta-analysis in the current study suggests that yes, it is possible to reduce recidivism rates through using MBSR as an effective treatment in correctional facilities. Furthermore, it can be successfully implemented across people of different cultures and ethnicities.

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Chapter 1: Literature Review

Introduction

Both a prison sentence and subsequently a prison term can create many stressors for both offenders and their families. It appears that being imprisoned means that one is immediately disconnected from the outside world (Antonopoulos, 2012). My experiences of working in a prison environment as a therapist express that a sentence means the offender loses some level of autonomy and is subject to prison rules and laws. Therefore, their actions and how they behave while serving their sentence are somewhat governed by the prison authority. It is hard to understand why people commit general and violent offending. Deal (2003) supports that, if practitioners had a better understanding of behavioural theories, it might help answer some of these questions. Furthermore, stating that behaviours are learned through experiences, beliefs, and history. This thesis will explore worldwide crime, the history of prison as an intervention, and various therapy-based interventions. In addition, it will explore how Mindfulness-Based Stress Reduction (MBSR) can be effective as the primary intervention in a correctional setting rather than running it as a secondary intervention. It will aim to contribute new knowledge by exploring international literature and look at how it has been implemented across various correctional facilities worldwide. There seems to be a scarcity of New Zealand-based research in MBSR as an independent intervention. As a result, this thesis hopes to highlight some areas where New Zealand correctional systems can improve their therapy-based interventions.

Introducing myself, the researcher

Since completing my degree in Social Sciences, majoring in Psychology, I have further developed a passion for understanding 'why people do the things they do.' Furthermore, understanding how we interact with changing environments and the stressors that may arise. I am 32 years old and have been married to my New Zealand-born wife, Natasha (29), for ten years. We have three beautiful children: Maia (12), Jayden (9), and Azariah-Grace (7). Being a Zimbabwean male, there were many cultural 'norms' I had

brought into my relationship at first, as did my wife from hers. It caused stress initially, hence where I discovered a passion for mindfulness as a form of therapy. I developed mindfulness skills such as observing non-judgmentally, which then positively impacted my home environment. By using mindfulness at home, we found a balance and respect for the different cultural norms. I then decided to pursue a higher qualification in behavioural psychology which has created more opportunities to learn different functions of behaviours and skills to manage these behaviours. I wish to research the factors that influence a better quality of life to create a strategy that will encourage more men and women to participate in mindfulness activities and be open to talking about the stressors that may inhibit them from functioning as prosocial members of society.

The issues of worldwide crime

Crime is not limited to one country or cultural group. Crime is a worldwide issue. Understanding how different countries, and even societies address this issue means we can uncover and compare the various therapeutic strategies to determine the most effective treatment modality. In saying that, what might be effective in one area might not have the same affect in another.

Environmental and cultural norms can be significant contributors to general and violent offending. Linos et al. (2013) state that intimate partner violence in Nigeria was a regularly occurring crime that became normalised within the cultural context. Women were assaulted and raped by their husbands on several occasions with minimal consequences to the offenders. It is essential to use culturally appropriate interventions to treat men and women from different cultural and ethnic backgrounds (Tamatea & Brown, 2001). Developing culturally informed programmes that allow space for more cultural aspects of indigenous wellbeing and integration of the spirit (wairua) can be effective in reconnecting and rehabilitating Māori and Pasifika men and women compared to mainstream interventions (Tamatea & Brown, 2001). Suppose we use a copy-and-paste approach to rehabilitation and therapy with a disregard to an offender's cultural background. In such a case, we may bring about more aggression and confusion for the individual, thus causing

more emotional and cognitive damage. Seiuli (2018) argues that mainstream interventions may be challenging to facilitate to offenders who do not understand English. Due to this responsivity issue (language barrier), they may not meet their parole requirements due to not completing vital rehabilitation programmes. It may also cause them to resort to violence to manage their emotions. People tend to offend in order to get their needs met regardless of the possible consequences (Andrews & Bonta, 2017).

In addition to environmental and cultural norms being contributing factors to both general and violent offending, social influences, particularly on matters such as racism and homophobia, can lead to excessive use of violence. Matthew and Jasmin (2014) found that hate crimes in Wales and England had been steadily ascending. Furthermore, some of these hate crimes became difficult to resolve, notably when the media, police, and other authority supported the crime. Hayes (2018) also argues that misrepresenting information on social media platforms has contributed to criminal behaviours. She considered how the media portrayed law enforcement after the poor management of cases and its effects on authorities. She hypothesised that images being shared and promoted on social media without any context behind them could cause a significant number of people to retaliate against law enforcement.

History of prison as an intervention

The 'idea' of prison or punishing people when they do something outside of what society deems to be prosocial seems to date back to many years ago, where there is insufficient literature to draw a definitive timeline. We know that society has traditionally sent people to prison because it creates separation between 'us' and 'them'. For example – the 'average Joe' does not want to acknowledge that the difference between him and a convicted murderer or rapist could (in many cases) be a split-second lapse of judgment. Society feels safer classifying prisoners as being bad and distinctly different to them (McKelvey, 1977). However, we know that the history and purpose of correctional facilities across the globe have transformed over time to where we are today.

In ancient times, particularly in Greece and Rome, a prison sentence was met with physical punishment because, at times, a sentence term was deemed indefinite until a fine was paid (Barkan, 1936). At times, if people were found guilty of religious or financial offences, they were at risk of being sentenced to penal slavery, which meant that they could be subject to labouring in the quarries to complete other physical jobs (Johnston, 2009). Barkan (1936) shared that those sentenced to death served the shortest sentence because the execution happened soon after the trial. The only exception was pregnant women who were given a reprieve until after the delivery of their child. Other countries had a different approach to incarceration. Johnston (2009) reported that in England, the purpose of incarceration was different from other countries as it was used to extort the convicted. Furthermore, any war prisoners (soldiers fighting for the opposition who were caught) were subject to physical punishment or death. Prisoners who committed larceny crimes were often sold to Americans to work on the plantation farms or work on the ships.

The purpose of correctional facilities and their approach to rehabilitation (or lack of) has transformed over the years. In New Zealand in the 1980s, intermediate sanctions such as house arrests, release to work programmes, and supervised labour in the community were practices that proved to reduce recidivism rates and, as a result, they are still being used to date (Ulmer, 2001). Recidivism is defined as any new convictions that occur within the first six months of being released from prison (Yesberg & Polaschek, 2015). However, there are limitations to intermediate sanctions, mainly if they ignore reintegrative and rehabilitative objectives (O'Malley, 2009; Ulmer, 2001). Currently, there are 18 correctional facilities across New Zealand. Seventeen of these prisons are publicly managed by the Department of Corrections, and one is privately managed (Corrections, 2019). Fifteen prisons house only male offenders, and three house only female offenders. According to the New Zealand Department of Corrections' 2019 report, the number of offenders being sentenced to a prison term has been consistently rising, which has resulted in the Department needing to recruit more staff to cater to the increase of offenders. Due to the growth of offenders being housed in correctional facilities in New Zealand, the Department of

Corrections has, over time, developed a wide range of rehabilitation and reintegrative programmes to help reduce the rate of recidivism (Yesberg & Polaschek, 2015).

Understanding the different types of Assessments

To complement therapy-based interventions, we need to understand an offender's experiences, beliefs, history, needs, and subsequentially, their offence(s) to apply the most effective treatment modality. The following measures and assessments are used to assess and determine rehabilitative objectives. This includes the use of the Risk Need Responsivity (RNR), Violence Risk Scale (VRS), Risk of Conviction and Risk of Imprisonment (ROC*ROI), and Release Proposal Feasibility Assessment-Revised-Version 4 (RPFA), to name a few.

Evidence for an informed rehabilitative programme can be obtained through working within the parameters of a model. The Risk Needs Responsivity (RNR) model is used to assess an offender's level of risk, needs, and responsivity barriers (Andrews & Bonta, 2017). Responsivity barriers refer to barriers that may prevent offenders from addressing their offence patterns and gain relevant skills to support desistance from criminal activities (Polaschek, 2012). Furthermore, the RNR model helps practitioners support offenders to shift away from criminogenic behaviour into more prosocial community life. This model is based on the offender's risk and dynamic needs and focuses on behavioural and cognitive skills such as behaviour modification and distress tolerance to help them manage problem behaviours, namely interpersonal and intrapersonal relationships.

A specific example might be an offender behaving aggressively towards a therapist for not supporting his anti-social plans upon release. Risk is measured by determining the presence of static and dynamic risks for an offender (Andrews & Bonta, 2017). This review will only elaborate on dynamic factors below and only discuss static factors to help explain the measures that are used, such as the VRS.

Dynamic factors are directly associated with re-offending and are also referred to as criminogenic needs. A persons environment, age and social peers can contribute highly to predicting further criminal behaviours. The research argues that young male offenders pose a higher risk of re-offending than young females. Furthermore, in New Zealand, being Māori

or Pasifika with unstable family support is reported to increase the risk of re-offending more so than in a person of NZ-European descent (Tamatea & Brown, 2001).

The RNR is a broad model that helps us narrow down the risk parameters of offenders. We can then use specific measures such as the Violence Risk Scale (VRS) to assess the level of risk of violent recidivism. The VRS is a staff-rated risk instrument, and it is used to assess six static and 20 dynamic risk factors (Yesberg & Polaschek, 2015). The static risk factors include elements that do not change. For example, the age of an offender for their first violent conviction, the number of 'young offender' convictions to their name, and prior release failures/escapes, whereas the dynamic risk factors include various elements that change, such as violent lifestyle and violence cycles (Wong & Gordon, 2003; Wong & Gordon, 2006). In the Department of Corrections, the VRS is often scored before and after an intensive rehabilitative programme such as the Special Treatment Unit Rehabilitation Programme-Revised (STURP-R).

My personal experiences when working in a special treatment unit suggest that our current risk assessment tools might bias the direction of therapeutic interventions. For example, traditional cognitive-behavioural therapy addresses the treatment needs such as cognitive distortions and insight into violence identified by the VRS. What about spiritual or cultural needs, which also can affect offending? These are not neatly quantified or captured by our current standard assessments (Seiuli, 2018; Tamatea & Brown, 2001). Consequently, these domains (the cultural and particularly the spiritual) tend to be overlooked by programmes and therapists. Mindfulness-based approaches might be more effective as a stand-alone intervention or at least a beneficial adjunct to existing treatment programmes.

Furthermore, measuring behavioural change is a part of the VRS and is measured using the Stages of Change Model designed by Prochaska and DiClimente (1986). There are six stages of change: pre-contemplation, contemplation, preparation, action, lapse, and relapse. An individual's behavioural change is demonstrated by moving from one stage of

change to another (Wong & Gordon, 2003). The VRS is also used to measure and predict the change of an offender's risk of general and violent recidivism (Wong & Gordon, 2006).

It is important to measure and predict the change of an offender's risk of general and violent offending using the VRS. Furthermore, it is also important to identify and predict an offender's risk of reconviction and reimprisonment. The Risk of Conviction* Risk of Imprisonment (ROC*ROI) was developed in New Zealand for the Department of Corrections as an actuarial risk assessment tool that is computer generated and focuses on demographic variables and static criminal history (Nadesu, 2007). According to Nadesu (2007), the ROC*ROI was designed to assist with predicting an offender's risk of reconviction and reimprisonment within five years of an offender being in the community. Each offender is given a computer-generated ROC*ROI score and grouped into five imprisonment risk bands. For example, a score between 0-0.24 = low risk band, 0.25-0.49 = low/moderate risk band, 0.50-0.69 = moderate risk band, 0.70-0.79 = high risk band and 0.80-1.0 = very high risk band (Nadesu, 2007). For an offender to be considered to participate in a highly intensive rehabilitation programme such as the Special Treatment Unit Rehabilitation Programme-Revised in the Department of Corrections, they must have received a ROC*ROI score of 0.70 (high-risk band) or higher. The accuracy of the score and the specific criteria provided by the ROC*ROI means the process of selecting offenders for a specific therapy programme becomes easier for practitioners across correctional facilities. In the United Kingdom, they have used other prototypes such as the Classification and Regression Tree (CART) and the Logistic Regression to predict the risk of further violence (Thomas et al., 2005).

Furthermore, Thomas et al. (2005) state that though the logistic regression actuarial measure was far more effective in predicting the risk of violence than the CART, the CART was more effective in predicting individuals with psychosis. Wormith et al. (2020) reported that predicting the risk of violent recidivism was hard but necessary. They proposed that the Violence Risk Appraisal Guide (VRAG) was the preferred current actuarial measure in the United Kingdom because it worked well for both the forensic and prison population.

Furthermore, they support the concept of these measures being developed for specific demography. Baker (1999) supported the notion of developing measures for a specific group and stated that the RoC*RoI was explicitly designed for the New Zealand population and appeared to be an effective measure (Yesberg & Polaschek, 2015). This concept is being developed in other parts of the world too. In China, Zhou et al. (2017) used a Structured Assessment of Violence Risk in Youth (SAVRY) to assess the level of violent recidivism in male juvenile offenders. They noted that the tool could be meaningful in predicting violent recidivism for their population.

The RoC*RoI has helped the New Zealand Department of Corrections identify suitable rehabilitative and reintegrative programmes for offenders. The Release Proposal Feasibility Assessment-Revised (RPFA-R) is a structured protocol developed to assist the New Zealand Parole Board in making decisions on the validity of an offender's release plan (Yesberg & Polaschek, 2015). It is often used by psychologists working for the Department of Corrections, probation officers, parole board members, and sentence planners to create a formal and structured assessment of an offender's reintegrative needs (Yesberg & Polaschek, 2015). The protocol is a staff-rated 11-item measure that includes factors such as exposure to destabilisers and non-compliance. The measure is typically done at the end of the STURP-R programme to help the therapy team make well-considered decisions that support the offender's reintegrative needs post-treatment. It is important to know and understand pre-post measures needed to complement an intervention. These will help practitioners make well-considered and evidence-based decisions regarding making recommendations for participants in post-treatment reports/ or studies (Andrews & Bonta, 2017).

Therapy-based interventions

In comparison to some past (and likely present) punitive measures of prison as the intervention for criminal behaviour, it appears that there are more therapy-based interventions with significant efficacy in support of the reduction of recidivism rates. The development of therapy as an intervention means that we are not simply incarcerating

people for the crimes they commit. We can create lasting lifestyle changes for these offenders, which creates a more prosocial community. Over time, several styles of therapy and interventions have been developed and introduced into prison settings. Cognitive Behavioural Therapy (CBT), Dialectical Behaviour Therapy (DBT), Therapeutic Community (TC), and Mindfulness are but a few of the many types of therapies and interventions that have been developed and implemented within a correctional context.

Cognitive Behavioural Therapy (CBT)

The Cognitive Behavioural Therapy (CBT)-based intervention is adopted as the primary framework for psychological treatment by the New Zealand Department of Corrections. Psychiatrist Aaron Beck founded CBT in the 1960s after discovering some of his patients were having an internal dialogue that was somewhat an exaggerated view of themselves. As a result, these patients would get confused and behave aggressively towards others. In essence, Beck formulated an approach that involved a process of collaborative discovery whereby the patients became observers of their own experiences while being guided through this by a therapist using socratic questioning (Thoma et al., 2015). CBT is documented to be an effective approach to treatment and continues to be a preferred therapeutic choice for rehabilitating offender populations (Andrews & Bonta, 2017; Corrections, 2019). In a broad sense, CBT engages cognitive and behavioural techniques to support the restructuring of thoughts and beliefs that lead to problem behaviours (offending/criminal behaviour). Within a therapeutic environment, CBT-based intervention is used to challenge and restructure anti-social cognitions, beliefs, and attitudes that contribute to offending patterns. Research suggests that CBT is more effective when the clients are motivated to participate and less effective when their attendance is mandatory (Bonta & Andrews, 2017). Within a correctional context, CBT-based intervention focuses on engaging participants within the context of social learning. People may adopt anti-social attitudes and beliefs, which are then reinforced by their peers and social groups who share the same beliefs. Significantly, anti-social beliefs and attitudes can influence general criminal behaviour (Andrews & Bonta, 2017). CBT-based interventions in NZ prisons have been

shown to reduce reconviction rates by 30 per cent compared to non-treated controls (Corrections, 2019). Polaschek and Kilgour (2013) reported that New Zealand initially developed two innovative programmes for serious offenders in the 1980s that blended CBT and Community Therapeutic (CT) approaches. Since then, recent intensive therapies for violent recidivist offenders have been centred on CBT frameworks.

There are many potential benefits for using CBT-related therapies with offenders, including reducing recidivism rates (Corrections, 2019). In my experience, having facilitated programmes such as the Special Treatment Unit Rehabilitation Programme-Revised (STURP-R) in a men's prison, it is evident that many offenders learn vital skills throughout the programme to better themselves as individuals, fathers, and husbands. For example, they learn about and can identify and name unhelpful behaviours, beliefs, and cognitive distortions that led to their offending (Polaschek & Kilgour, 2013).

Though there are many potential benefits to using CBT in a prison context, there are, no doubt, some potential challenges. Polaschek and Kilgour (2013) stated that it is difficult to maintain the behavioural changes gained while in prison due to offender movements within correctional facilities. If offenders get moved to another unit that does not endorse therapeutic community values, any positive changes they may have made while in the previous unit will be challenging to maintain.

Dialectical Behaviour Therapy (DBT)

While CBT is the preferred leading intervention in correctional facilities, it is complemented by Dialectical Behavioural Therapy (DBT). Dr Marsha Linehan developed DBT in the 1980s for people with emotional dysregulation, including being very sensitive to constructive feedback and having a history of several suicidal attempts (Bein, 2013). Furthermore, DBT was designed with behavioural principles and practices to simultaneously help clients balance acceptance and their efforts towards behavioural change. Bein (2013) states that there are five core elements that DBT aims to achieve:

> (1) a biological theory of disorder that emphasises transactions between biological disposition and learning; (2) a developmental framework of stages of

> treatment; (3) a hierarchical prioritising of treatment targets within each stage; (4) delineation of the functions that treatment must serve; and (5) sets of acceptance strategies, change strategies, and dialectical strategies. (Robins et al., 2004, pp. 31-32)

These five core elements combined are what make DBT so versatile. Lynch et al. (2006) reported that the efficacy of DBT as a treatment modality was significant, particularly when working with individuals that present with traits of or are diagnosed with Borderline Personality Disorders (BPD). It is noted in several studies that correctional facilities are encountering more offenders that present with some form of mental health-related issues, mainly diagnosed or undiagnosed personality disorders that may lead to unhelpful maladaptive behaviours while serving time for their crimes (Fazel et al., 2016; Fazel & Seewald, 2012; Jeglic & Calkins, 2018; McDougall & Jones, 2007). McDougall and Jones (2007) found that DBT was an effective intervention with youth who found it hard to cope with their emotions in an American youth correctional facility. Most of these youth either had low self-esteem or poor self-image and struggled to maintain a healthy interpersonal style. Jeglic and Calkins (2018) noted that out of the more than two million offenders serving time in American correctional facilities, some of these offenders were diagnosed with some form of mental illness, and some were predicted to develop a mental illness while serving time. So why use DBT in correctional facilities, and how is it effective?

> DBT provides an effective framework to resolve conflicts around security and treatment and foster collaborative relationships among those who work within correctional environments (Jeglic & Calkins, 2018, p. 149).

Research suggests that punitive segregation may make offenders worse and increase the severity of their violence in contrast to those offenders that develop DBT skills (Jeglic & Calkins, 2018). Furthermore, DBT has demonstrated a significant reduction in aggression and anger, which means that offenders are readily able to regulate their emotions, and staff are safe and deal with fewer violent outbursts (Douglas et al., 2016).

Jeglic and Calkins (2018) state that DBT also incorporates skills from the eastern principles of mindfulness to help clients regulate their emotions.

Some potential benefits for using DBT skills include a reduction in aggressive behaviours in offender populations, increases in distress tolerance skills to help manage high-risk emotions, and increased autonomy for the client to identify and correct these difficult emotions (Fazel et al., 2016; Fazel & Seewald, 2012; Jeglic & Calkins, 2018).

Potential challenges that arise in attaining DBT skills appear to be caused by the individual not focussing, being easily distracted, and being in an intense state of emotional arousal (Jeglic & Calkins, 2018).

Therapeutic Communities

Programmes such as the DBT may need to be performed in an environment that will complement any gains achieved while in treatment. A Therapeutic Community (TC) is an environment that might help achieve this (Shuker & Sullivan, 2010). The idea of a TC in correctional facilities is for the programmes/interventions mentioned earlier to become one. For example, the prison becomes the programme/intervention in contrast to the programme/intervention being in prison (Whitehead, 2014). Shuker and Sullivan (2010) reported that the origin of TC is attributed to the Northfield Psychiatric Military Hospital, where soldiers suffering from World War II trauma were treated. These soldiers had previously been mistreated, perhaps due to how unorthodox their presentation was at the time. It was noted that creating a community/environment for soldiers experiencing behavioural difficulties due to trauma, talking freely and expressing themselves reduced symptoms (Shuker & Sullivan, 2010). Whitehead (2014) argued that there are two basic TC's; democratic and concept-based.

A Democratic Therapeutic Community (DTC) was developed 50 years ago in the United Kingdom to provide specialist services to treat people who have personality disorders (Pearce et al., 2017). The primary purpose of the DTC is to empower both staff and clients using psychosocial modalities that require a collaborative and deinstitutionalised approach. In recent years, prisons around the world, including the United States of America, England,

Wales, and New Zealand, have adopted DTC principles to reduce recidivism rates (Pearce et al., 2017; Shuker & Sullivan, 2010; Whitehead, 2014). Pearce et al. (2017) stated that the principles of a DTC include empowerment, participating in communal activities, personal responsibilities, and shared decision making. In New Zealand correctional facilities, high-intensity programmes such as the STURP-R that treats high-risk violent recidivists offenders are run in a TC that endorses the principles of DTC (Polaschek & Kilgour, 2013; Whitehead, 2014). Interestingly, there seems to be more interest in DTC approaches than Concept-Based Therapeutic Communities (CBTC).

In contrast to the TC, the Concept-Based Therapeutic Community (CBTC) was developed in the United States of America. It was used to treat substance abusers and people with addiction problems (Whitehead, 2014). The CBTC appears to have more implications and punitive measures. As a result appears it appears to be less favoured, perhaps due to the harmful treatment practices noted during 1950-80s, where some community members experienced extreme humiliation (Whitehead, 2014).

Some potential benefits for engaging in treatment while in a TC include, but are not limited to, learning new positive strategies to manage problematic behaviour, thinking, and emotions (Shuker & Sullivan, 2010). Furthermore, there is evidence to suggest that TC's are effective in reducing recidivism rates (Polaschek & Kilgour, 2013; Whitehead, 2014). Potential challenges may appear if an offender/community member does not buy into the TC principles. Furthermore, if the custodial team working in a TC environment is not trained in this specific area, it may be a barrier to change. For the TC to be effective, it requires financially investing in therapists/psychologists, equipment, and collaboration and training of custodial and therapy teams (Whitehead, 2014).

Mindfulness

Therapeutic Communities offer potential benefits for running various treatment modalities, including mindfulness, mainly because it is a structured therapeutic environment. There are several definitions used to characterise mindfulness. However, for the purpose of this thesis, we will refer to mindfulness as one's ability to focus on one single thing at any

given time in a particular way, being non-judgemental and doing so with a purpose (Bouw et al., 2019). If mindfulness were just a concept without practice, it would be impractical. However, having a practical element means that it can become a tool we can use to manage ourselves better (Kabat-Zinn, 2009). Mindfulness can be an effective intervention for improving psychological functioning and wellbeing for various psychological, behavioural, and neurological concerns (Kabat-Zinn, 2012). Humans need to have perspective and balance to live a life that is not ruled/governed by their thoughts (Kabat-Zinn, 2012). Furthermore, Kabat-Zinn (2012) argues that modern-day education provides individuals with opportunities to learn analytical reasoning and critical thinking but does not often teach systematic attention in awareness. The practice of mindfulness is reported to have originated from Eastern Buddhist traditions, and its recent popularity in the Western traditions is likely due to the growth of widespread application of standardised Mindfulness-Based Interventions (Husgafvel (2019); Kabat-Zinn (2009).

Mindfulness-Based Stress Reduction (MBSR) is an intervention that incorporates traditional mindfulness strategies with insights into behavioural and neurobiological functioning (Bouw et al., 2019). The efficacy of MBSR is comprehensive, with around two decades of empirical evidence for both clinical and non-clinical populations (Shapiro & Carlson, 2009). The STURP-R programme in the New Zealand Department of Corrections has an extensive range in the type and duration of mindfulness-based approaches therapists use. Different mindfulness treatment modalities have been used in prisons and non-prison settings and adapted to suit each environment (Baer, 2003; Chiesa & Serretti, 2009). Research has shown that general populations engaged in mindfulness-based interventions have increased self-esteem and confidence and gained high levels of autonomy (Baer, 2003; Brown & Ryan, 2003; Reibel et al., 2001). Kabat-Zinn (2003) developed the MBSR programme to help mitigate stressors that include but are not limited to stress, anxiety, and wellbeing for both clinical and non-clinical populations. The programme was initially designed to have one full day of training and eight classes that ran two and a half (contact) hour sessions with a total of twenty-six hours.

The use of MBSR to reduce both clinical and non-clinical symptoms has been well documented. For example, Madson et al. (2018) followed 247 self-referred adult clients for two years after completing an eight-week MBSR treatment. The clients initially self-reported having clinical symptoms such as depression and anxiety (dependent variables) before the programme. They had to complete a pre-and post-measure of these dependent variables before and after the programme. They found that the participants reported significant improvement of all symptoms after the programme. Six months after the programme, gains were maintained. It appears that most of these participants had more life pressures as they were outside the confines of a controlled environment. It meant that each person had to be consistent in their practice of MBSR. It is also heavily endorsed by Kabat-Zinn (2009).

Life for parents and caregivers of individuals with developmental disabilities can be stressful and, at times, can induce negative psychological consequences (Bazzano et al., 2015). Research conducted by Bazzano et al. (2015) demonstrated how effective MBSR was in reducing stressors for these parents and caregivers. Their research was a pre/post evaluation of participants who had completed the eight-week MBSR programme in the community in America. Seventy-six participants were recruited for the programme ranging from twenty-eight years to seventy-six years old. Sixty-six out of the seventy-six completed the programme. Out of this group, forty-five per cent of the participants reported being Hispanic, thirty-two per cent were Caucasian, twelve per cent were African American, and eleven per cent represented other ethnical groups. Quantitative measures were used as pre-and post-measures for dependent variables such as stress (Perceived Stress Scale) and a two-month follow-up after the programme was completed. After the eight-week programme, a qualitative interview was conducted using post-intervention interviews. Interpreters were provided for those that did not understand English. A registered mindfulness instructor conducted the course. Overall, the results demonstrated a significant increase in wellbeing and less stress across the board. The results also suggested that MBSR is an effective intervention that is culturally sensitive and acceptable.

The Significance of the Study to Behavioural Psychology

as well as the MBSR being a culturally sensitive programme. It is also cost-effective and can help provide detailed information on how it is utilised in a correctional setting. Furthermore, mindfulness-based interventions run alongside intensive therapeutic programmes may help further reduce violent offending and re-offending. Mindfulness-based interventions may also help increase self-esteem, confidence, and autonomy in high-risk violent offenders (Baer, 2003; Brown & Ryan, 2003; Reibel et al., 2001). As a result, this may help these men and women reintegrate back into their communities with skills to help them manage themselves in risky situations. This current study may open the possibility for more research on adapting classical and respondent conditioning to help people manage trauma, cognitive distortions, and emotional dysregulation that lead to maladaptive behaviours. There is a potential to increase an individual's volitional control over behaviours that are maladaptively conditioned. Meaning that they develop adaptive skills to manage their risks more effectively and potentially reduce clinical disorders such as stress and anxiety, and depression.

Rehabilitation for offenders is increasingly becoming an integral part of the future of correctional facilities worldwide. It is noted throughout the literature that reducing recidivism rates is being prioritised. Furthermore, empowering offenders with strategies to manage high-risk situations, thoughts, and emotions will be a life skill they can pass on to their families and friends. The hard work of scientists and researchers, past and present, continues to positively influence rehabilitation in correctional facilities worldwide. Numerous mindfulness-based interventions have been effective with different types of populations (Chiesa & Serretti, 2009). Furthermore, mindfulness can be adapted to suit a particular environment (Baer, 2003).

Mindfulness-based interventions have been very effective in healing trauma and enhance the quality of life (Bouw et al., 2019). Therefore, these gaps in the literature suggest that we need to know more about the relationship between mindfulness and psychological wellbeing: Is the use of MBSR in correctional facilities effective in helping reduce recidivism

rates and improving psychological wellbeing? Moreover, will the use of MBSR be effective with different cultural and ethnic populations in correctional facilities?

Chapter 2 Methodology

Method

A meta-analysis was conducted to synthesise research relating to MBSR outcomes in correctional facilities and examine how effective the modality was across different correctional populations and settings. Lipsey and Wilson (2001) define meta-analysis as a research method that applies statistical analysis to compare and total the results of various individual studies quantitatively. Furthermore, a meta-analysis appears to present outcomes based on effect size compared to statistical significance used in narrative literature reviews (Cheung, 2015; Lipsey & Wilson, 2001). Cheung (2015) argues that a meta-analysis provides outcomes with more statistical power as it pools effect sizes across multiple studies compared to that of one study.

The objective of this meta-analysis was to calculate standardised effect sizes to determine if there is a relationship between participation in correctional facility MBSR programmes, behavioural functioning, and psychological wellbeing, particularly a reduction in aggression and violent recidivism. The meta-analysis in this review employed a random-effects model instead of a fixed-effects model. Borenstein et al. (2011) state that a fixed-effects model is typically used when all the studies in question are pooled from a single population and identical methods and subjects are used. The effect size becomes fixed because the studies share a common effect size. In contrast, a random-effects model is typically used when the studies are pooled from various populations. As a result, the accurate effect size may vary from population to population (Borenstein et al., 2011; Hunter & Schmidt, 2000).

Search Strategy

Searches of keywords and titles were conducted in 2020 across the following three databases: PsycINFO, PubMed, and Google Scholar. Reference lists were searched in addition to titles. The search used the following terms: Keywords: "mindfulness-based stress reduction" AND Keyword: "prison" OR Keywords: "mindfulness-based stress

reduction" AND Keywords: "correctional facilities" OR Keywords "mindfulness-based stress reduction" AND Keywords: "priso*" OR Keywords: "mindfulness-based stress reduction" AND Keyword: "correction*" OR Keywords: "mindfulness-based stress reduction" AND Keyword: "incarceration" OR Keywords: "mindfulness-based-stress reduction" OR Keywords: "(mindful*)" OR Keywords: "intervention" AND Keyword: "correctional facility" AND Keyword: "prison, priso*, corrections, correctional, correctio*, jail, justice system" AND Keywords: "offenders, prisoner, prisone*, criminals, criminal*" AND Keywords: "criminal justice system". All searches were limited to peer-reviewed studies published between 2007 and 2021 to access the most up-to-date literature on the topic.

Selection Criterion

Inclusion criteria was formed to ensure relevant studies and literature were found to support this study. The following were the inclusion criteria: (1) The intervention included an MBSR component, (2) the study included either a pre-or post-outcome measure for psychological wellbeing or stress, (3) the intervention must have been delivered to offenders between 15 and 70 years of age in a correctional facility, (4) the study was published in English and (5) the study was peer-reviewed. The following formed the exclusion criteria: (1) any study completed before 2007, (2) any study solely based on qualitative data, (3) any study that was not peer-reviewed, (4) any study not published in English, and (5) studies that did not have a pre-and post-outcome measure for psychological wellbeing or stress.

Study Selection

PsycINFO was the first database used, with searches completed on 21st August 2020. This database provided seven results. Four studies met the criteria to be downloaded and move into the secondary review phase from these results. Only two studies met all inclusion criteria during the secondary phase reviews and, as a result, became a part of the meta-analysis.

PubMed was the second database used, and searches were completed on 23rd August 2020. This database provided 148 results with two articles moving into the second

phase after meeting all inclusion criteria. Of the two articles, one was selected to be a part of the meta-analysis as the remaining article was a duplicate of one chosen from the previous database.

GoogleScholar was the third database used, and searches were completed on 2nd December 2020. This database provided 17100 hits. The database ordered the results based on relevancy; therefore, the first 50 titles were read. Of the 50 articles, three were chosen to move into the second phase after meeting all inclusion criteria. One was chosen to be included in the meta-analysis, the other two being duplicates of articles previously selected.

The electronic search was completed, and studies were assessed for relevance through a title and abstract screening process. The studies retained were examined in full text to determine eligibility and inclusion (Fig 1). Reference lists of included studies were searched to make sure that relevant studies were not disregarded.

Documenting the search and selection process

The searches were conducted and documented in the PRISMA flow chart by Moher et al. (2010). Including the number of records identified through database searching, the number of records after duplicates are removed, the number of records screened, the number of records excluded (if any), the number of full-text articles assessed for eligibility, the number of full-text articles excluded with reasons and the total number of studies included in the quantitative synthesis (meta-analysis).

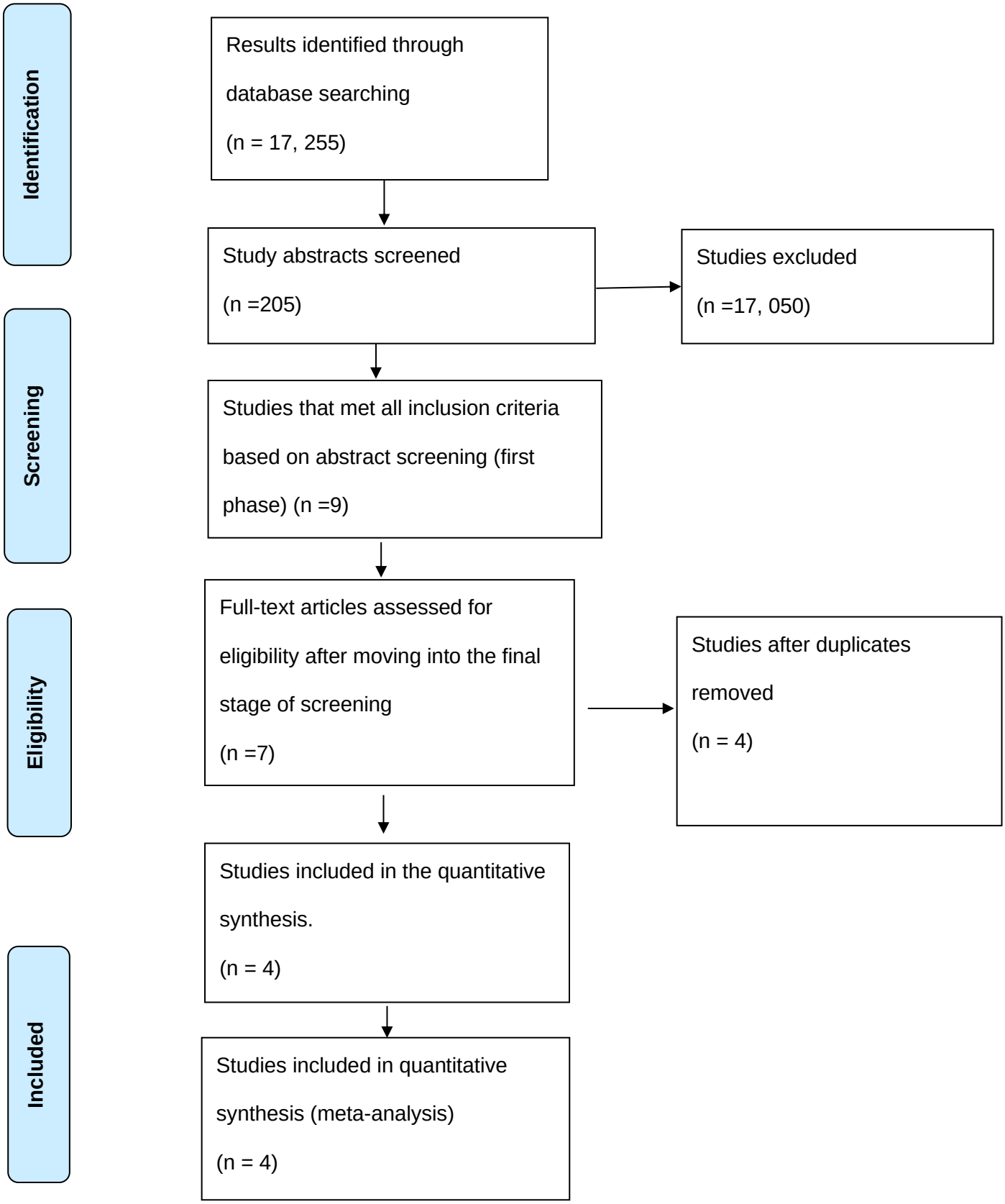
The Review Stage

The first review saw all the studies selected to be a part of the meta-analysis. After reviewing keywords in the abstract and titles, relevant papers were moved into the second and final review stage. All the articles were entirely screened in this stage by investigating the full text to determine if the full articles met the inclusion or exclusion criteria. If the article met the inclusion criteria after the final stage, it was placed in a separate folder ready for the meta-analysis. Finally, once all the screening was completed and ready for the meta-

analysis, the results of these studies were then converted into a standardised mean effect size using (Cohen's d), and a test of heterogeneity was completed before being included.

Figure 1

PRISMA flow chart for the systematic literature review



Summary

To summarise, after reviewing articles from PsycINFO, PubMed, and Google Scholar databases, 205 abstracts were screened for eligibility to be included in the meta-analysis using an inclusion and exclusion criterion. Nine studies met all inclusion criteria based on their abstracts and moved into the second and final screening stage. After the final screening stage, which involved an extensive review of the full-text articles, seven met all inclusion criteria. Of the seven, three studies were duplicates, which left the remaining four studies included in the meta-analysis. The results of the four studies were then converted into a standardised mean effect size using (Pearson's r).

Statistical analysis

The studies in this meta-analysis reported how much variation there was between pre and post-tests after prisoners completed the MBSR treatment. They all reported means and standard deviations of the pre and post-tests they run as part of their psychometric battery. This data was put into Comprehensive Meta-Analysis (CMA) to analyse how effective and statistically significant the MBSR was by analysing the correlation coefficients *r* and statistical significance *p*. For this meta-analysis, two pre and post-test measures measuring psychological wellbeing in each study were used as part of the analysis. These helped answer the study questions.

Publication Bias

It is essential when conducting a meta-analysis to know whether there is any publication bias in any of the studies included in the meta-analysis because the results may only favour one particular outcome (Borenstein et al., 2011; Lin & Chu, 2018). For example, some authors may decide to only publish data with significant and positive effects compared to data that has insignificant effects. Due to the current study search yielding only four studies that showed only published data, a funnel plot was run to indicate whether there was any publication bias (Figure 4).

Test of Homogeneity

Borenstein et al. (2011) argue that most meta-analyses use this test to compare the observed variance between studies and what is expected to be in the sampling error and subsequently, helping researchers decide whether a fixed or random effects size model should be used. This practice is discouraged, Borenstein et al. (2011) state that when deciding to use a random-effects model, one should have a clear understanding of the effect sizes of their studies. For example, do they share a common effect size? Hence, these decisions should not solely be contingent on statistical tests alone.

Table 1

Studies included in the meta-analysis

Study (First author, Publication year)	Country	Standardised Pre-Post	N=Sample	Two Pre/Post Measures	Key Findings
Bouw, N. (2019)	Netherlands	AQ = 0.67 SE = 0.80	N=22	Aggression Questionnaire (AQ) Self-Esteem (SE)	Participants reported gaining more awareness, greater capacity to observe themselves, thought challenging, and felt relaxed after completing MBSR.
McIntosh, H. (2021)	USA	PSS = 0.64 TFMI = 0.64	N=32	Perceived Stress Scale (PSS) The Freiburg Mindfulness Inventory (TFMI)	Paired sample *t*-tests indicated improvement in all treatment targets following treatment.

Samuelson, M. (2007)	USA	RSES = -0.42 CMHS = 0.28	N=202	Rosenberg Self-Esteem Scale (RSES) Cook and Medley Hostility Scale (CMHS)	Participants showed improvements in their pre-post measures. MBSR appeared to have significantly reduced negative thoughts and behaviours associated with violence.
Xu, W. (2016)	China	TA = 0.99 TMD = 0.88	N=19	Tension Anxiety (TA) Total Mood Disturbance (TMD)	The treatment group demonstrated a significant change in anger, hostility, anxiety, and much more following completion of the programme.

Chapter 3 Results Section

Results

This chapter reports findings from this meta-analysis, heterogeneity, publication bias funnel plot (calculated in CMA), the effect sizes, and treatment fidelity.

In the first study, Bouw et al. (2019) conducted their MBSR across five Dutch prisons. They had 22 male prisoners with a mean age of 40.1 years (SD=11.1; range=23-55). 59% of these men had a Dutch ethnic-cultural background, 14% had an Antillean ethnic-cultural background, and 9% had a Moroccan ethnic-cultural background. 24% of these men were serving time for murder, 24% for manslaughter, 19% for sexual offences, 19% for drug-related offences and 10% for violent dishonesty offences. They had four MBSR instructors, two males and two females, who had previous experiences working with prisoners. Their average age was 48 years (SD=10.0; range =33-54). Overall results from the pre-post measures used in this meta-analysis Aggression Questionnaire (AQ) and Self-Esteem are:

Aggression Questionnaire (AQ)

Pre: M= 6.6 SD= 1.7 Post: M= 5.4 SD= 1.9 t =2.30 p =.036 Cohen's d =.69

Self-Esteem

Pre: M= 7.4 SD= 2.7 Post: M= 8.3 SD= 1.2 t =2.82 p =.010 Cohen's d =.53

The second study, McIntosh et al. (2021), did not have a detailed account of their participants. They reported not collecting specific demographic data beyond gender and programme phases. They had 32 women in the MBSR study, and all participants had to be at least 18 years of age to participate in the study. Overall results from the pre-post measures used in this meta-analysis, Perceived Stress Scale (PSS) and The Freiburg Mindfulness Inventory (TFMI), are shown in Figure 2 alongside other pre-post-test measures used in the study.

Figure 2

Results of Pre-Post measures

	Pretest		Posttest					
Variable	*M*	*SD*	*M*	*SD*	*t*	*n*	*p*	Cohen's *d*
Hope	45.69	7.28	51.34	7.08	−4.489	31	<.001	−.793
Perceived stress	15.00	6.38	11.22	5.48	3.775	31	.001	.667
Self-compassion	3.04	0.73	3.65	0.74	−4.248	29	.002	−.776
Mindfulness	39.55	7.60	44.27	7.22	−4.105	32	<.001	−.715

Note. Pre- and posttest means and *SD* are provided for each construct. Results of paired sample *t* tests along are provided along with the effect size estimate.

In the third study, Samuelson et al. (2007) did not report a detailed biography of their participants. They had both men and women prisoners participate in this study. However, only the women's results in this study are shown in this meta-analysis due to their results showing strong significance and a better relationship between MBSR and psychological wellbeing. Conditions for each facility were different due to correctional regulations and lack of resources. For example, some facilities conducted the MBSR in the corner of a larger gym, a small room, and participants with limited opportunities to complete homework such as yoga. Overall results from the pre-post measures used in this meta-analysis, Cook and Medley Hostility Scale (CMHS) and the Rosenberg Self-Esteem Scale (RSES), are shown in Figure 3.

In the fourth study, Xu et al. (2016) conducted both the MBSR and Mindfulness-Based Cognitive Therapy. Nineteen participants took part in the study, and all nineteen participants were of Chinese descent. A registered mindfulness instructor conducted this study. Due to correctional regulations, a correctional officer had to be present during any mindfulness activities meaning that participants could not engage in homework or individual tasks unless a guards were present (refer to treatment fidelity for more information). Overall results from the pre-post measures used in this meta-analysis, Tension Anxiety (TA) and Total Mood Disturbance (TMD), are shown in figure 4.

Figure 3

Results for the Pre-Post Measures for CMHS and RSES

Cook and Medley Hostility Scale

		Pre-MBSR		Post-MBSR			
	n	*M*	*SD*	*M*	*SD*	% Change	*p*
All sites	948	25.4	8.1	23.5	8.7	7.5	.0001
Women	201	25.4	8.2	23.0	9.1	9.2	.0001

Rosenberg Self-Esteem Scale

		Pre-MBSR		Post-MBSR			
	n	*M*	*SD*	*M*	*SD*	% Change	*p*
All sites	955	29.3	6.4	30.7	6.7	4.7	.0001
Women	202	28.4	5.6	30.8	5.7	8.3	.0001

Figure 4

Results for the Pre-Post Measures for TA and TMD

	Mindfulness training group	
	Pretest ($n = 19$)	Posttest ($n = 19$)
	M SD	M SD
Tension-anxiety	9.11 (6.37)	4.16 (3.10)
TMD	47.25 (27.73)	26.84 (17.52)

The current study used a random-effects model due to the variation between all four studies, including age, gender, ethnicity, cultural background, and outcome measures (from pre and post-test measures). The random-effects model makes sure that these factors do not lead to variances in effect size (Borenstein et al., 2011).

All four studies provided means, standard deviations, and sample sizes as part of their findings. This study has converted this data in CMA to report correlation coefficients

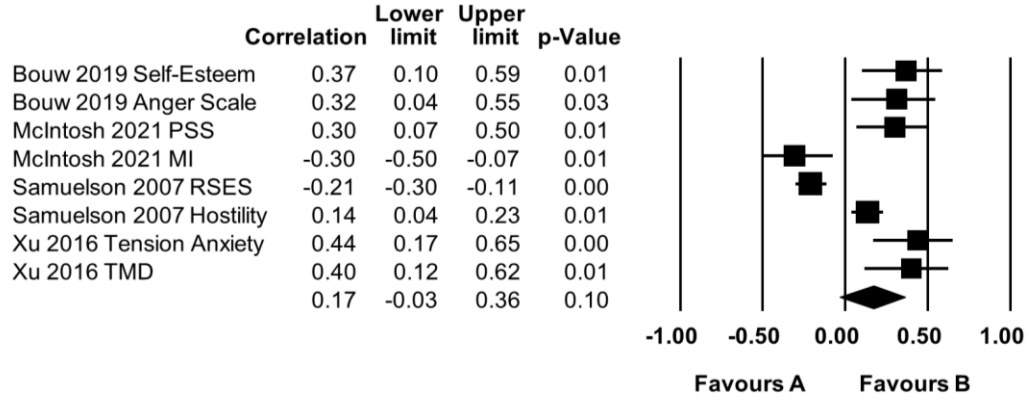
and effect size for the relationship between MBSR and improved psychological wellbeing. The results from these studies are summarised below in a forest plot (Figure 2). The forest plots are weighted based on sample size; therefore, the size of each square will differ to reflect this. Forest plots are used in meta-analysis to offer an insightful and contextual sense of data to help with interpretations of this data (Borenstein et al., 2011).

This forest plot has been interpreted based on where the squares are placed on the graph. For example, zero means no effect. The closer the squares are to the right side of the plot, the larger the positive relationship is between MBSR and psychological wellbeing, and vice versa for the left side.

A correlation coefficient value that shows a +/- .1 ($p<0.09$) is reported to represent a smaller effect size, a medium effect size shows a +/- .3 value, and a more significant effect size will have +/-.5 and above (Field, 2013). The current study indicated an overall effect size of 0.17, meaning that a smaller effect size was found. It was expected based on the smaller numbers of studies included in the meta-analysis. The overall p-value indicated in Figure 5 showed a positive, but not significant, relationship between MBSR and psychological wellbeing.

Figure 5

Forest Plot showing correlation coefficients.



Results showed a lot of variance between studies; as shown in Figure 5, a test of heterogeneity was completed to investigate how comparable these studies were to each other in this meta-analysis. Borenstein et al. (2011) state that when a random effect model is used in a meta-analysis, there will be some dispersion due to the true effect sizes varying from the mean effect size and random sampling error. This highlights that the populations used in these studies vary from each other. As seen in Figure 6, a test of heterogeneity calculates an I-squared statistics highlighting whether this dispersion that is occurring is due to heterogeneity rather than it occurring by chance or, in this case, random sampling.

Figure 6

Test for Heterogeneity

Heterogeneity			Tau-squared			
df (Q)	P-value	I-squared	Tau Squared	Standard Error	Variance	Tau
7	0.000	89.628	0.074	0.061	0.004	0.272

If the I-squared statistics are low, it is reported to have no heterogeneity. Therefore, no need to explore the studies further. However, when the I-squared value is high, it means that heterogeneity is present. Studies should be explored further either using techniques such as sub-group analysis or meta-regression (these will not be explored as part of this study but will be discussed as part of the recommendations later in the discussion) (Borenstein et al., 2011; Hak et al., 2016). Hak et al. (2016) suggest that when the I-squared is high, like the one in this study (as shown in Figure 3), stop conducting any significance tests and investigate the dispersion further. Figure 3 indicates an 89.6% dispersion of true effect size in the studies in the meta-analysis, suggesting that these studies are from

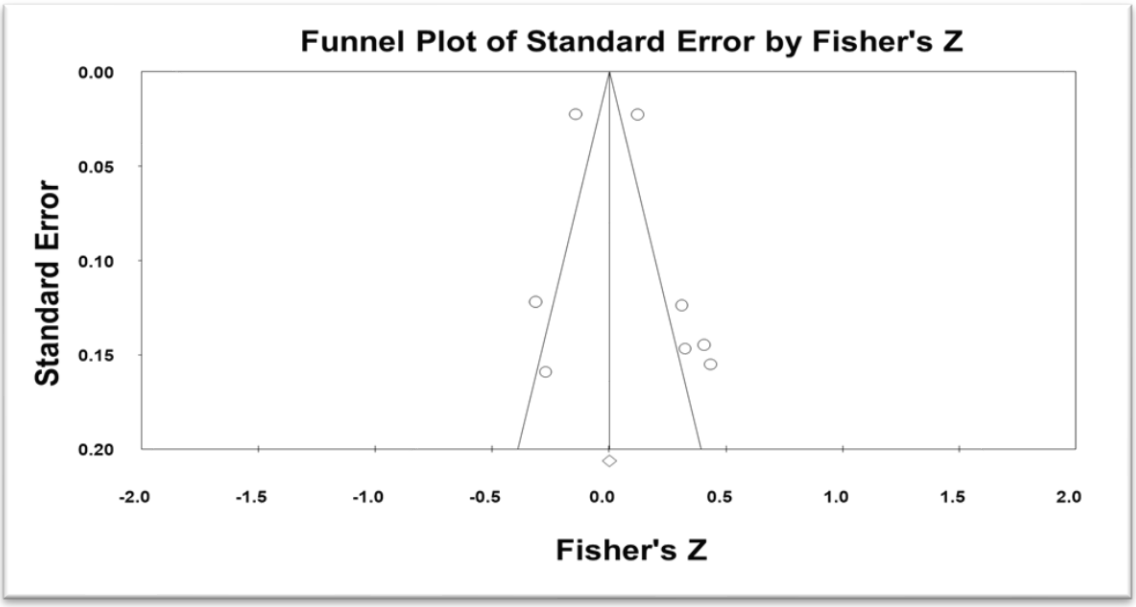
different populations. It is also essential to make sure that a meta-analysis conducts a publication bias test to ensure that the effect sizes are accurate.

This study investigated publication bias using CMA. Borenstein et al. (2011) argue that a meta-analysis that does not conduct a publication bias may compromise the validity of results and, as such, may contribute to an overestimation or reduction of the overall effect sizes in the studies. CMA conducts a funnel plot showing the standard error of Fisher's Z to highlight any potential publication bias. Borenstein et al. (2011) state that if an asymmetrical figure of studies resembles a funnel shape is present around the effect size, this indicates no publication bias. However, the bias would be present if the bottom of the funnel plot showed a more significant number of studies on one side of the mean than the other, suggesting that smaller studies are more likely to get published if they have a more significant effect.

The funnel plot for this current study (Figure 7) is not as symmetrical as one would expect. It still shows outlying studies that still resemble a funnel plot suggesting that there is no publication bias.

Figure 7

Funnel Plot of Fisher's Z: Publication Bias Results



Treatment Fidelity

As mentioned earlier in this study, the MBSR program was developed by Kabat-Zinn (2003). It has been a successful modality to treating and improving psychological wellbeing in different fields. The MBSR programme typically runs for eight weeks and is designed to have one full day of training and eight classes that ran two and a half (contact) hour sessions with a total of twenty-six hours overall. The study design of MBSR used in this current study was benchmarked against the original MBSR programme as an index of the fidelity of the programme.

All four studies used a pre-post-test study design. A pre-test psychological wellbeing measure is conducted before treatment commences and the same again at the end of treatment. The pre and post-test are then compared to see if there were any improvements in treatment. Samuelson et al. (2007) had 202 female participants and ran 1-1.5 hour classes for six to eight weeks. Xu et al. (2016) had 25 male participants (but only 19 completed the programme), and they ran the full 2.5-hour sessions for six weeks. They also incorporated Mindfulness-Based Cognitive Therapy as part of their intervention.

Bouw et al. (2019) had 22 male participants and ran 2-hour sessions for six weeks, and McIntosh et al. (2021) had 31 female participants and ran 1.5-hour sessions for six weeks.

None of the four studies reported any treatment fidelity. McIntosh et al. (2021) is the only study out of the four studies that ran the one full-day session and completed the homework component of the MBSR. The remaining three studies did not meet these requirements due to correctional regulations, such as participants not being allowed tapes and players in their cells, participants being transferred to other correctional facilities without any notice, and not running a full-day session due to regulation time restrictions. It appears that all four studies adjusted and manipulated the MBSR programme to suit the environments. As a result, this could help explain why we got a positive but not significant relationship between MBSR and psychological wellbeing, as shown in Figure 2. Furthermore, when looking at individual pre and post-measures, there were some improvements in psychological wellbeing.

It appears that the MBSR programme is an effective treatment modality to help improve psychological wellbeing, even after the programme has been altered to suit a particular group, as discovered in the four studies above. The significance of this relationship between MBSR and psychological wellbeing is questionable due to the I-squared value being large. However, further analysis will need to be conducted to examine the dispersion further. The small effect size does not appear to be an accurate representation of a true effect, as seen in Figure 2.

Culture

Culture was one of the main focuses of this current study as we tried to determine whether MBSR was an effective treatment modality with different cultures and ethnicities. The results supported that the MBSR can be used with diverse cultural and ethnic backgrounds (Bouw et al., 2019; Xu et al., 2016).

Chapter Four: Discussion

This chapter will provide a recap of the research questions and discuss any points of interest. It will include a summary of results, methodology, strengths, limitations of the study, suggestions for future research, and a conclusion.

The present study sought to answer two questions: Is the use of MBSR in correctional facilities effective in helping reduce recidivism rates? Moreover, will the use of MBSR be effective with different cultural and ethnic populations in correctional facilities? A meta-analysis was conducted to examine the relationship between MBSR and psychological wellbeing. As mentioned earlier, improved psychological wellbeing does help reduce recidivism rates (Polaschek & Kilgour, 2013). The questions came about due to the effectiveness of MBSR in other fields outside the confines of a custodial environment (corrections facilities). The focus of the current study was to investigate whether the same principles of MBSR can be replicated with a prison population as research in this area has been limited.

This study showed that MBSR could be used with different ethnic and cultural groups. At least two of the four studies used in this meta-analysis reported different populations in their studies with varying ethnic and cultural backgrounds. Interestingly, all four studies in this meta-analysis altered and adjusted the programme to adhere to correctional regulations but still managed to show improved psychological wellbeing. Suppose these studies were to run according to the Kabat-Zinn (2003) study design in correctional facilities; in that case, the results may have been more accurate than the ones found in this study.

Points of Interest.

Interestingly, it appears that there is not a lot about MBSR in correctional facilities. As such, the papers included in this meta-analysis are a promising start. A meta-analysis typically conducts quality assessments of the studies included in the meta-analysis. For example, Cachia et al. (2016) conducted a three-way treatment fidelity assessment on the studies in their meta-analysis. However, this study did not do one due to little research found

in the area. As mentioned earlier, due to all four studies altering their interventions to suit their populations, one can hypothesis that the quality of these interventions will be somewhat questionable. Smaller-scale treatment fidelity was carried out to examine how well the MBSR intervention compared to the original. None of the studies included in this meta-analysis followed the proposed structure due to correctional bylaws and regulations. Interestingly, several intensive programmes are being conducted successfully in this space (corrections facilities) (Polaschek, 2011; Polaschek & Kilgour, 2013; Whitehead, 2014).

Summary of Results

This meta-analysis included four studies from three different countries' correctional facilities. One analysis was conducted using correlation coefficients using CMA (V3). The results showed an overall effect size of .018 and showed a positive, but not significant, relationship between MBSR and psychological wellbeing. The I-squared value of 89.6%, as shown in Figure 3, was relatively high, suggesting that there may have been a lot of dispersion amongst effect sizes. Therefore, an analysis of dispersion using meta-regression should have been conducted. However, this was not conducted in this thesis but was suggested as a recommendation for future analysis.

The overall effect sizes included a zero within the error, suggesting that the effects were likely not a true effect, which means that interpreting the significance of MBSR was questionable. As part of treatment fidelity, it became apparent that correctional regulations played a considerable role in programme delivery. As a result, this helps to explain why the overall results were not significant, due to all four studies needing to alter the programme and adjust it to meet correctional regulations. It appears that this limitation may have hindered the results somewhat. The results for individual programmes showed a positive and significant relationship between MBSR and psychological wellbeing, as shown in Figure 2. It is promising for future research, and this will be explored in more detail later in this discussion.

Methodology.

All four studies included in this meta-analysis used the pre-post study design, using a psychometrics battery to examine treatment improvements. There is no evidence to show whether these measures were administered in English or the language of origin in the countries MBSR was conducted. As a result, due to the subjectivity of some of these measures, there is a slight chance that they may have created inconsistent agreements for the relationship between MBSR and psychological wellbeing (Jeglic & Calkins, 2018). It is important to note that all the studies in this meta-analysis did conduct different pre-post measures. Though some were similar, they all reported the same outcome of improved psychological wellbeing, hence maintaining the evidence-based approach required in psychology (Andrews & Bonta, 2017; Jeglic & Calkins, 2018).

Practical Implications

There were some obvious practical implications in this study, such as correctional regulations. As Whitehead (2014) mentions, it is crucial to have custody on board when running therapeutic interventions in a corrections facility. Suppose the MBSR programmes in this study were to be successful. In such a case, it may have been helpful to run them in a democratic, therapeutic community within the corrections facility that is designed for programme delivery only (Whitehead, 2014). It would help eliminate several implications such as time, space, and resources as these therapeutic communities should be equipped for this type of work. Every correctional facility is unique and has its challenges and rules that govern operation; therefore, some flexibility in correctional regulations is essential moving forward.

Another practical implication to the studies in this meta-analysis was the lack of accessibility to resources such as privacy (a corrections officer had to be present during all mindfulness activities). Some of the participants in these studies shared a cell with another participant who may not have been in the same programme, making it hard for them to complete homework requiring yoga practices.

Strengths

One of the biggest strengths of the current study is that (to my knowledge) no meta-analysis has been run with regard to the relationship between MBSR and psychological wellbeing for participants in correctional facilities. The findings in this study provide some insight into what research has been done in this area thus far. Furthermore, other researchers can investigate and conduct more research to develop further and make the treatment outcomes more effective.

The publication bias analysis conducted in CMA using a funnel plot, as shown in Figure 4, shows no publication bias in the studies used in the meta-analysis, therefore reflecting the non-significant and significant findings well.

The meta-analysis provided some evidence suggesting that MBSR can be an effective treatment modality for treating and improving psychological wellbeing even after being conducted differently from the original structure. Furthermore, supporting the robust literature around the efficacy of MBSR (Bazzano et al., 2015; Kabat-Zinn, 2003; Madson et al., 2018; Reibel et al., 2001; Thierstein, 2019).

Limitations

Only four studies were included in this meta-analysis due to the lack of research relating to the topic. Furthermore, the complexities of conducting this type of research in a corrections facility for several researchers worldwide may have contributed to the limited research in the area (Bouw et al., 2019; McIntosh et al., 2021; Samuelson et al., 2007; Xu et al., 2016).

The sample size was relatively small for some of the studies, with only one study having a large sample size. Perhaps future research in this area might yield more studies with large enough sample sizes to include in the meta-analysis.

There were several pre-post psychometric batteries used in all the studies. It was not clear whether they were administered in one exclusive language or language(s) of origin of the studies. It would help explain whether the participants understood the measures before completing them and the level of subjectivity around several of the measures. This current

study searched for studies published in English and did not consider any studies written in other languages. There might have been several studies published in different languages that could have been missed as a result. This means that we could not get access to potential data that might have added value to the meta-analysis (Guyatt et al., 2011).

A high I-squared value conducted in CMA for studies included in this meta-analysis confirms that all these studies are from different populations. Furthermore, the current study could not rely on the significance of *p* tests. What should have occurred instead was the reasons for the variance should have been examined by applying techniques such as subgroup analysis or meta-regression to explain it (Borenstein et al., 2011; Field, 2013).

The number of participants varied between the studies because, with MBSR, all participants need to voluntarily agree to be a part of the intervention for their contributions to be more effective. It is a limitation because, from my experience of working in a corrections facility, the motivation for participants to contribute in any voluntary programmes appears to be contingent on several factors. These factors include, but are not limited to, safety reasons, change, wasting time, parole, and power and control over other participants in the programme. A thorough induction process may help strengthen the number of volunteers.

Suggestions for Future Research

Future research in this area needs to use treatment fidelity as guidance and report the results of this at the end. This study noted that none of the four studies included in the meta-analysis conducted treatment fidelity and quality assessments. Future research would benefit from following or replicating well-structured research such as Cachia et al. (2016). Future researchers examining the relationship between MBSR and psychological wellbeing for participants in correctional facilities must have a good relationship with the corrections facility of their choice. Furthermore, to ensure a successful study of MBSR in a corrections facility, it is crucial to conduct the study in an established therapeutic community. This would help reduce the practical implications mentioned earlier in the study (Whitehead, 2014).

It would be beneficial for future research to explore different experimental or study designs as Cachia et al. (2016) demonstrate in their meta-analysis. This will help highlight

the strengths and validity of the measures used in the studies when completing treatment fidelity. Due to the large I-squared value in this study, perhaps future research could conduct a subgroup analysis or meta-regression to explain the dispersion in more detail.

Endorsing qualitative and quantitative approaches to studying the benefits of MBSR in corrections facilities might be a great addition to future research. It would be keeping within the holistic person-centred approach that MBSR embodies. Furthermore, it would provide an exciting balance to systematic literature reviews. It would also allow researchers to bring their own experiences of mindfulness into the discussion. Imagine how much more we could learn by just listening to the experiences of men and women after they engaged with these kinds of programmes.

Conclusion

In conclusion, the present study examined the impact of Mindfulness-Based Stress Reduction (MBSR) on prisoners' psychological wellbeing in correctional facilities worldwide. It was completed by running a meta-analysis on four studies based in the United States of America (USA), China, and the Netherlands and across various ethnic and cultural groups, which analysed this relationship. The results indicated that MBSR was an effective modality to run alongside intensive therapies. Furthermore, the overall effect size suggested a positive but not significant relationship between MBSR and improved psychological wellbeing.

Further research is needed to explain the dispersion found in the results in more detail. Mindfulness-Based Stress Reduction demonstrated versatility and flexibility when altered while still improving psychological wellbeing. The overall effect size was small, suggesting that it did not appear to be an accurate representation of a true effect due to the overall meta-analysis having a zero in error. This means that the effects were likely not a true effect, as seen in Figure 5.

Although the overall study results were not significant, this study indicated some positive and significant relationship between MBSR and psychological wellbeing for each study in the meta-analysis. It opens room for further investigation into this relationship.

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