

Examining Post Sentence Parole Effectiveness in a Matched
Sample

by

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A thesis submitted to the Faculty of Graduate and Postdoctoral Affairs in partial
fulfillment of the requirements for the degree of

Doctor of Philosophy

in

Psychology

Carleton University

Ottawa, Ontario

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Abstract

Parole offers a fiscally responsible mechanism to improve public safety by facilitating the re-entry of Justice-Involved Persons (JIPs) into the community following a period of incarceration. This study sought to establish the effectiveness of parole in reducing post sentence charges in a sample of former parolees ($n = 86$) as compared with those released at end of sentence (EOS; $n = 86$) in a matched sample in Iowa. Quality of parole decisions and community supervision were considered and deemed reasonably met. JIPs in each group were matched on risk, sentence type and crime type using Coarsened Exact Matching. Cox proportional hazards survival analyses revealed a non-significant marginal effect of parole on post sentence charge, with former parolees 24% less likely to incur a charge on a given day than JIPs released at EOS ($HR = .76, RSE=.24, p = .24$). Follow-up analyses revealed an interaction between parole group and sentence type, wherein parolees who had served a sentence for felony offence had better post sentence survival than those who had served a sentence for a misdemeanor. The opposite trend was observed for the EOS group. Further, interactions were observed between group and problem-solving needs and prosocial identities; offering insight into how parole functions. Limitations of the study design and future directions for parole research are discussed, including methods to better account for the need for quality parole decision making and community supervision in parole effectiveness research.

Acknowledgements

I am grateful to all those that have made it possible for me to continue my passion for learning, and to successfully complete this project. First and foremost, I thank my long-time supervisor Dr. Ralph Serin for years of support, guidance and encouragement. I am also very grateful to the members of my thesis committee, Dr. Michael Ostermann, Dr. Diana Majury, Dr. Shelley Brown and Dr. Jeremy Mills. Your feedback and insights have not only helped to improve this project, but will also help my critical thinking in future research endeavours. This project would not have been possible without the support of the Iowa Department of Corrections – thank you for your time and willingness to answer questions.

Many other teachers, friends, colleagues and administrators have contributed either direct or indirect support to this or other research projects, and have made my PhD experience engaging and exciting. Thank you.

Lastly, I could not have completed this project or degree without the amazing support network that is my family. Without your love, encouragement and child-minding services, completing my PhD would be but a dream.

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Examining Post Sentence Parole Effectiveness in a Matched Sample

Parole is a core feature of many correctional systems. It serves as a mechanism to release Justice-Involved Persons¹ (JIPs) back into the community after serving a period of incarceration for a criminal offence (Burke et al., 2007). Overall, in the U.S., approximately 54% of JIPs were released to parole in 2013 (Herberman & Bonczar, 2015), be it through discretionary parole release wherein a parole board decides the timing, suitability and conditions of release, or through mandatory parole release, which is legislated to occur at after a given period of time served (as determined by the courts). Historically, legislation authorizing parole offered release as a reward for good behaviour, in accordance with the intent for prisons to serve a rehabilitative function (Petersilia, 2003; Taxman, 2002). While this motive may remain in certain locations, a shift towards punitive attitudes has modified the purpose of parole in many jurisdictions (Petersilia, 2003; Solomon et al., 2005; Taxman, 2002). Despite this shift, parole remains relevant and of theoretical and practical value to criminal justice systems. Practically, parole offers a means of supervising JIPs in the community at a fraction of the cost of incarceration (Blum Shapiro, 2010; Buddress, 1997; United States Courts, 2017). Additionally, presumed benefits includes the population reduction in prisons pressed to capacity, and a public safety benefit by facilitating JIP reentry into society (Solomon et al., 2005). Support tends to be required as the period immediately following release is often noted to be the highest risk period for JIPs, with JIPs failing at the highest rates during this time (Grattet et al., 2009). Furthermore, correctional systems regularly struggle with high incarceration rates while balancing public

¹The use of the term Justice-Involved Person (JIP) in this paper is an effort to use respectful, person-first language with regards to one who has experienced incarceration (e.g., see Tran et al., (2018), for a review of terminology for those involved in the criminal justice system).

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safety, which is a top priority. While parole is thought to alleviate incarceration and contribute to public safety, the extent and circumstances under which it does so require examination; particularly as parole functions differently across jurisdictions. These differences can occur in response to shifts in ideology (for instance the shift from rehabilitation to surveillance as a core priority), which has implications for its potential to meet its more strategic objectives of population management and public safety.

Criminal recidivism studies conducted in recent years illustrate the challenges faced by many JIPs upon their release from prison and reinforce the need to examine the components of the criminal justice process that may contribute to JIP success or failure post sentence. Statistics from the Bureau of Justice Statistics (BJS) provide a gloomy overview of the extent of the issues. A 1994 BJS report examined recidivism rates as indicated by rearrest, reconviction and reincarceration of all prisoners released in fifteen states in the United States that year (Langan & Levin, 2002). It found that over two thirds of released JIPs were rearrested for new crimes, and a quarter were returned to prison for new offences within three years of release. A 2018 BJS update on recidivism examined rearrest rates of JIPs released in over 30 states. This report noted that 68% of released JIPs had been rearrested for a new crime within three years following release, and that this number increased to 83% by nine-years post release (Alper & Durose, 2018). These findings have been cited as indisputably demonstrating the challenges faced by released JIPs and their risk of re-engaging in criminal activity once returned to the community (Schlager & Robbins, 2008; Solomon et al., 2005). Considerable effort has been dedicated to understanding why there are such high rates of JIP recidivism and to differentiate those who succeed from those who fail. Both static (unchanging) and dynamic (potentially changeable) factors have been considered with varying levels of predictive utility, yielding a fair amount of

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insight into predictors and correlates of recidivism (Andrews & Bonta, 2006; Desmarais et al., 2016). Interventions delivered to JIPs and their effect on subsequent recidivism rates are also commonplace in correctional literature (Hanson et al., 2009; Lipsey, 2009; Lipsey & Cullen, 2007; Smith et al., 2009).

Scholars have considered many of the reentry challenges faced by JIPs returning to their community after periods of incarceration and explored these in relation with JIP success or failure upon release (Petersilia, 2003; Visser & Travis, 2005). Common reentry challenges include lost social capital incurred by the severing of family ties as a function of incarceration; lost financial capital in the form of lost jobs, either as a direct result of their incarceration or from reduced employment opportunities given the stigma of being an ‘ex-convict’; and challenges to physical and mental health, accommodations, food security and more. These challenges are arguably increasing with the growth in prison populations and limited rehabilitation services; it is estimated that in California, about 20% of JIPs will not receive a program at any point during their sentence (Petersilia, 2003). Although programming is by no means a guarantee of future success, programming delivered in accordance with principles of effective interventions (risk-need-responsivity model) have been shown to reduce recidivism by up to 29% (Smith et al., 2009). Conversely, incarceration without targeting criminogenic needs offers diminished hope to moderate or high risk JIPs of a successful return to their communities.

Additional contributions to explaining the high recidivism rates came from Solomon et al. (2005). These authors further analyzed the 1994 BJS data presenting the breakdown of JIP recidivism by release mechanism. They found that over 60% of JIPs released at end of sentence or on mandatory parole were rearrested within two years following release, as compared with 54% of JIPs released on discretionary parole. This study reframed the discussion of JIP

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recidivism to place parole at the centre of the recidivism question. Solomon et al. concluded that, although discretionary parole releasees perform marginally better than mandatory releasees or those released at end of sentence (and thus did not serve a period of supervision in the community), these results were slight and not sustained over a period of time. This important overview of parole provided a national look at parole effectiveness in the United States. However, academics noted in response to this study that parole policies and practices vary substantially across jurisdictions, and that as such a national overview is not the most appropriate means of assessing parole effectiveness (Schlager & Robbins, 2008; Solomon, 2006).

Subsequent state-level research conducted in New Jersey (Ostermann, 2015; Ostermann, et al., 2013), Nebraska (Vandenberg, 2013), and Kentucky (Vito et al., 2015) now collectively permit at least a partial assessment of parole effectiveness with a more appropriate, state-level unit of analysis. Combined, these studies largely reiterate Solomon et al.'s 2005 findings: parole has a marginal short-term effect, controlling for other relevant factors such as risk level, age, and other demographics; with dissipating effects after two to three years.

These recent studies begin to address the question of parole effectiveness, however extant research reflects certain limitations. These include failing to control for risk using a statistically validated risk tool (Schlager & Robbins, 2008; Solomon et al., 2005; Vito et al., 2015), limiting analyses to the period of active supervision (Ostermann et al., 2013), blending the period of active supervision and post-discharge (Solomon et al., 2005; Vito et al., 2016; Wan et al., 2016), poor conceptualization of the dual release decision and supervision functions of parole (e.g., National Institute of Corrections, 2011; Petersilia, 2003; Urban Institute, 2008; Visher & Travis, 2005), and a lack of consideration for the role of specific dynamic risk and protective factors on outcome (representing a failure to explore theoretically changeable variables in the question of

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parole effectiveness). Variation in research findings, in particular regarding the strength and duration of parole supervision effect, limit the ability to draw overarching, meaningful conclusions regarding parole effectiveness and its contribution to JIP success and failure upon sentence completion. More work is required to expand upon and improve the current body of parole research, in hopes of achieving a more complete understanding of the parole process, when it works, for how long, and for whom.

The current study seeks to address this need by assessing parole effectiveness in Iowa with theoretical and methodological improvements to the current field. This is done by refining the research question to more accurately explore parole's presumed benefit to public safety (by examining the sustained effect parole using post sentence data)², empirically examining the quality of parole decision making and community supervision practices, using survival analyses to illustrate any differences in post sentence recidivism patterns for each group in a matched sample, and exploring the role of specific criminogenic needs and protective factors in outcome. These modifications ensure that the current research will yield an improved understanding of how parole works in practice.

Is Parole Achieving its Objectives?

To understand the importance of the current research and explore the dimensions of parole effectiveness appropriately, one must understand the dual function that parole serves within the criminal justice system. The first presumed benefit is its use in managing overincarceration rates that are prevalent and problematic, particularly within the United States where the rate of incarceration of 698 people per 100,000 is the highest incarceration rate in the world (Wagner & Sawyer, 2018). The second presumed benefit is to public safety through JIP

² Analyses of the effect immediately post release (e.g., the period of active supervision) is also assessed as a sensitivity analysis.

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reentry: in theory parole serves to improve public safety by facilitating JIPs in addressing the challenges they experience upon their return to the community (Petersilia, 2003; Solomon et al., 2005; Travis, 2001). These benefits are largely taken for granted within jurisdictions that include parole as a release mechanism. Although these have strong theoretical foundations, it remains questionable, to assume that the system is functioning as intended, particularly as the purpose and parameters of parole vary dramatically across jurisdictions. Research can provide insight into the actual effect of parole and indicate if improvements may be required to achieve the maximum benefit.

Parole and Population Management

It is well documented that incarceration rates within the United States are problematic, having reached critical levels of incarceration in the early 2000's (Schrantz et al., 2018). Many states felt the negative effects of over-reliance on imprisonment in response to crime (notably high cost for low reward; LaVigne et al., 2014), leading to the implementation of several initiatives to address the issues. While incarceration rates peaked in 2009 and have since been in decline (Schrantz et al., 2018), the U.S. imprisonment rate remains one of the highest in the world, and efforts are required to continue and improve decarceration strategies and initiatives to avoid experiencing climbing incarceration rates once again.

High incarceration rates are problematic for several reasons. Aside from poor physical conditions (Miller, 2017), opportunities for JIP change are hindered in overcrowded systems as participation in programming is limited, and there are limited opportunities for meaningful interactions with staff and support workers (John Howard Society, 1996). Parole, alongside bail and probation, is a tool that if used effectively can help to manage prison populations. Bail and probation work primarily on the front end to divert individuals away from prisons either while

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they await trial or sentencing, or as an alternative to prison in the case of probation. Parole works at the back end of the sentence, offering a means of releasing JIPs whose risk is deemed manageable in a community. In theory this process can help to manage incarceration rates as paroled JIPs serve the remainder of their sentences in the community. However, in practice, the period of community transition is challenging for JIPs, and many have their release revoked for violating the conditions of their release. Indeed, scholars estimated that parole revocations accounted for 60% of the increase in prison populations within the United States between 1992 and 2001 (Burke et al., 2007).

Regardless, parole's importance in managing incarceration rates has been demonstrated in several states. Schrantz and colleagues (2018) completed a report on five states that have achieved significant reductions in their prison populations and explored the key reasons for their decline. Of these five reasons, three pertained to changes in relation to release from prison and more efficient uses of parole. These include reducing prison admissions resulting from failures on conditional release, increasing prison releases by requiring less time prior to release eligibility and improving the efficiency of the release process, by focusing on risk and needs assessments.

Special Conditions and Revocations. The recommendation to reduce prison admissions from failures on conditional release is a fairly ubiquitous concern across parole literature (Burke et al., 2007; Rhine et al., 2015). Special conditions primarily seek to dictate what is acceptable behaviour for a JIP while on release, and when used strategically can be an important tool for managing a JIP's risk. Properly assigned, release special conditions can alert community supervision officers (CSO) to early signs of problematic behaviour, and permit the CSO to use monitoring and discretion to revoke parole if certain risky behaviours are exhibited prior to committing an offence (Burke et al., 2007). However, in many instances, release conditions are

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over-applied and can make community living difficult for a JIP (Burke et al., 2007). Wardrop and Serin (2016) noted that the average number of release conditions varies by offence type, but remains high for all JIPs. For instance, JIPs with property offences had on average the fewest number of conditions (just over 6), while JIPs with sex offences were required to adhere to an average of 12 conditions. These conditions can serve a variety of purposes: parole assistance, punishment, risk control and notification (Travis & Stacey, 2010; Wardrop & Serin, 2016). When conditions prescribe or prohibit behaviours beyond what is required for risk management, it becomes more challenging to adhere to all conditions and may result in the revocation of parole for reasons other than undue risk. For example, 'find employment' or 'stay sober' conditions can easily cause parole to be revoked, even if the JIP is not necessarily at higher risk. It is important to note that such revocations may result in returns to custody even though these transgressions are not new crimes.

To respond to these challenges, Burke et al. (2007) identified several techniques for ensuring the 'strategic' use of special conditions, that is a use which clearly defines a desired outcome: safer communities and facilitating the JIP's return. This evidently requires collaboration between paroling authorities and community supervision agencies (where these functions are separated), as supervision conditions must be limited to those that are necessary to manage risk, and the supervising agency must consider violations thoughtfully. The authors suggested decreasing reliance on incarceration in response to violations, and instead opting for alternative, graduated sanctions, and using risk assessment tools with structured discretion to manage violations of special conditions consistently and effectively. A key facet of parole success in reducing incarceration rates (and facilitating reentry) is therefore releasing suitable candidates for release and applying a limited number of necessary conditions, designed to

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manage the JIPs' risk, in conjunction with quality parole supervision. Ideas on how to ensure this is done within a paroling agency are discussed in a subsequent section on parole's contribution to public safety.

Concluding Thoughts on Parole and Population Management. Ultimately the findings from Schrantz and colleagues (2018) support the notion that parole can have a meaningful influence on reducing recidivism rates, with the important caveat that it does so if certain conditions are met regarding its use. Particularly, strategic policies regarding the use of special conditions and revocations are important to ensure that parole does not inadvertently exacerbate overincarceration by contributing to prison admission rates for violations of special conditions or parole revocations. Rhine et al. (2015) expand on the possibilities for improving parole systems within the United States. Some suggestions overlapped with what is already being done in those states seeing the greatest reductions in incarceration rates, while others offered new possibilities. The authors cited the importance of using risk assessment instruments and decision-making tools, only requiring supervision for moderate and high risk JIPs, and limiting the conditions of supervision. The latter suggestion would reinforce the finding within Schrantz et al.'s report, that an effective use of parole can help to manage incarceration rates.

Parole, Public Safety, and Facilitating JIP Reentry

The second benefit of parole reviewed in this paper is arguably its principal function: improving public safety by facilitating the transition of JIP from prison to community. Much of the existing parole effectiveness research is dedicated to examining if this presumed benefit is substantiated by empirical evidence and is the primary question of interest in the current research. This question is complicated by the heterogeneity in parole practices across jurisdictions. This section will review typical parole structures, introduce common themes

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pertinent to JIP reentry and discuss the importance of the dual aspect of parole release decisions and parole supervision in contributing to overall parole function and its subsequent ability to affect public safety outcomes, as per its objective.

Variations in Parole Structures and Practices

As noted within the criticisms of Solomon et al.'s (2005) work, the structure of parole systems and its practices vary across jurisdictions (Schlager & Robbins, 2008; Visser & Travis, 2005). Typically, parole systems can be classified as operating within primarily determinate (mandatory) or indeterminate (discretionary) sentencing structures; and the role of the parole board and its decision makers varies accordingly. Though most systems have components of both system structures, Ruhland et al., (2016) define determinate sentencing models as those in which, "a [JIP]'s date of release can be predicted with a fair amount accuracy at the time a term of imprisonment is imposed..." (p.7). This is in contrast to indeterminate sentencing systems, which the authors describe as, "those that do not state with any certainty a date of release from prison at sentencing, but permit discretionary decisions to release by parole boards..." (p. 7). The latter systems therefore typically allow parole decision makers more authority in decisions regarding the timing of a JIP's release from prison as applicable within their respective legislative frameworks. While parole decision makers in the former may still make decisions regarding conditions of release, they typically have less input on decisions regarding the timing of release, which are instead set at sentencing or mandated within legislation.

Indeterminate parole systems are of primary interest within the current paper. This is because within these systems, decisions are required regarding the suitability, timing and conditions of release of JIPs from institutions into the community. Ireland and Prause (2005) demonstrated that JIPs released to parole in indeterminate systems are more likely to

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successfully complete their periods of parole than those released in mandatory systems. Parole systems operating on an indeterminate structure place a stronger emphasis on the rehabilitative aspect of parole and JIP reentry. This is because the focus is on identifying suitable candidates for release, a process that may include assessments of JIP change and possible danger to the community if released (e.g. California). This introduces the first element that is necessary for parole to exert its presumed benefit to improving public safety: if parole is effective, parole decision makers must be rendering quality (i.e., accurate) parole decisions on the suitability, timing and conditions of release. Quality parole decisions are those that have a firm basis in evidence-based decision making: grounded in statistical risk estimates, quality decisions reflect an understanding of the likelihood of future engagement in criminal behaviour in light of each individual JIP's unique circumstances, among other requirements³ (Gamwell, 2016).

The need for quality release decision making in indeterminate parole structures contrasts vastly with the requirements of determinate parole systems. The latter systems arguably emphasize the short-term reduction of incarceration over public safety (at least in terms of parole objectives), as JIPs are released at a predetermined time, regardless of assessed readiness. While there may be aspects of this in indeterminate systems via a mandatory or legislated release, these releases are different from parole releases, which are granted only to those deemed appropriate. While the special conditions decision-making and supervisory aspect mean that these are functionally similar (if not equivalent), the important distinction here is that parole is only granted to those that parole board members deem as a manageable risk in the community under given conditions.

³ Additional requirements include adherence to law, policy and ethical frameworks, tailored specifically to JIP needs, sensitive to special considerations (e.g. marginalized population), and communicated clearly to stakeholders.

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Public Safety and JIP Reentry. While quality release decisions are necessary for successful parole outcomes, they are not sufficient. This is due in large part to the dynamic nature of JIP risk, and fluctuating reentry needs. JIP reentry refers to the process of reintegration following the period of incarceration when a JIP is released from confinement and rejoins society. However, as noted by Petersilia (2003) and Visser & Travis (2005), significant challenges await JIPs upon their release from prison in terms of living a stable, financially secure life that is conducive to remaining crime-free. Challenges in finding employment or accommodations, ongoing substance use, and accessing relevant programs, services and healthcare all pose difficulties for JIPs who have spent considerable amounts of time imprisoned. Often, JIPs underestimate the difficulties they will face in many of these areas and overestimate likely success (Dhimi et al., 2006; Visser et al., 2004). For instance, prior to release most JIPs believed they would be self-sufficient in meeting their financial needs, however post release most indicated that they relied on family for financial support. Additionally, most thought it would be easy to find a job and financial security; though following release these tasks were noted as being quite difficult. Furthermore, the 'ex-convict' label in and of itself exacerbates many of these challenges. Access to support systems such as family and community (or lack thereof) also play a role in how successfully JIPs can reintegrate along with their own attitudes and expectations about release. Travis & Petersilia (2001) also note the high rates of physical and mental illness among the population, as well as the stigma against JIPs in terms of barriers to finding and maintaining employment, and civic participation. These fluctuating reentry challenges alongside the dynamic nature of JIP risk points to the need for quality parole supervision to complement quality parole decision making in an effective parole system.

Features of Quality Community Supervision

Quality community supervision involves the use of evidence-based practice to inform the JIP case management (MacKenzie, 2005). Briefly, the role of the CSO is to balance treatment and surveillance of JIPs on community supervision. Respecting the Risk-Need-Responsivity principles are as critical to quality here as in the initial release decision-making process (Drake, 2011). Within the supervision function, this is done by setting the length of sessions and intervals between meetings in proportion to the JIP's risk level; addressing criminogenic needs during sessions; and adopting a style of interaction in line with the principles of Core Correctional Practice (CCP; Dowden & Andrews, 2004). CCP principles include use of behavioural modeling, reinforcement and disapproval, engaging in problem solving with the JIP, and developing an effective interpersonal relationship, that is warm, genuine, encouraging, and based on mutual respect. Meta-analytic research has demonstrated that CSOs who conduct sessions in accordance with RNR and CCP achieve greater reductions in recidivism (16% and 13% for RNR and CCP, respectively; Chadwick et al., 2015; Drake, 2011).

Although CSOs are on the frontlines of providing supervision, community corrections agencies have a significant role to ensure a suitable environment exists for this to occur. To promote quality community supervision, agencies should endorse the overarching philosophy that prioritizes JIP rehabilitation and evidence-based practice, and which empowers CSOs as key players in assisting this rehabilitation (e.g., Serin et al., 2021). Further, agencies should adopt a vision/mission statement to guide operational decision-making; a strong selection process, training and coaching opportunities to improve implementation and use of RNR and CCP, and undertake performance measurement as a means of continual feedback. This provides a suitable environment within which CSOs can perform their duties in accordance with evidence-based

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practice. These criteria are similar to those that have been validated as important for ensuring quality in parole organizations (Wardrop, 2015; Serin et al., 2021). Furthermore, as noted above, the community supervision agency must have discretion in monitoring special conditions, with intermediate sanctions available to permit CSOs flexibility in their responses, depending on the needs and situation of each JIP. This final step permits the collaboration between the parole board and community supervision agency.

Paroling Authorities and Community Supervision Agencies: The Need for Collaboration. Ruhland et al. (2016) surveyed 41 states on their parole structures, and approximately 49% of respondents indicated that the responsibility for the parole decision (including application of special conditions) was separate from the responsibility to supervise within the community. As such, for parole success, not only must parole boards make quality release decisions regarding the suitability, timing and conditions of release; but CSOs must monitor the dynamic fluctuations in a JIP's risk as they navigate situations that influence their risk. For example, a JIP may present during a parole hearing as a good candidate for release if he has taken programming, made progress in his areas of need, has the support of his family and has fair employment prospects. However, if confronted with antisocial peers, or if job loss results in financial strain (and is a part of the offence cycle), an individual who was a good candidate for release at the time of the parole decision may require additional interventions or support, but is now beyond the jurisdiction of the paroling authority. Evidently, the community supervision of these JIPs is crucial to offering transitional support, and monitoring risk. While special conditions can help CSOs to monitor potentially problematic behaviours that may indicate an increase in risk, the strategic management of conditions remains as important here as for population management. A JIP cannot benefit from the potential sustained effect of parole

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support in reintegration if he or she is revoked without due increase in risk. Therefore, while the parole structure (determinate or indeterminate context) has potential to influence the effect of parole in achieving a public safety objective (as indicated above), so too does the collaboration (or lack thereof) between the paroling authority and supervising agency. Each component must strive for quality, respect evidence-based practice, and adopt a strategic approach (particularly regarding the enforcement of special conditions) to ensure the best chance for parole success in contributing to public safety.

Parole Effectiveness: Previous Research

Parole effectiveness research remains limited, though some studies exist that provide important information on its role in the criminal justice system. The earliest available parole literature stems from the late 1970s and early 1980s. While important for offering an early overview of parole functioning, parole effectiveness and methodological considerations and advancements, these studies are largely interpreted cautiously within the realm of current parole effectiveness literature. The substantial changes in parole systems, including the trend toward determinate over indeterminate sentencing structures; as well as opting for a surveillance over treatment function limit application of the early parole research. Regardless, these studies demonstrate how researchers were exploring these questions. Flanagan (1982) compared recidivism results of male parolees and End of Sentence (EOS) JIPs released in 1972 using readmission for a new court commitment as the outcome variable. The sample was followed for five years; with the finding that parolees were significantly less likely to recidivate than those released at EOS, even after controlling for risk. Overall, he found that 17% of parolees recidivated and that the mean time to failure was 29.8 months; compared with 26% failure rate for EOS JIPs, with a mean failure time of 29.1 months. Flanagan was the first to use survival

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analyses in examining these questions, and noted that JIPs released on parole failed at a slower rate than those discharged at EOS.

Jackson (1983) conducted the only known randomized experiment, given that this is typically prohibited in modern research due to ethical issues. This study randomly assigned 314 young JIPs to either a parole supervision condition or discharge. After 26 months of follow-up, recidivism data was collected. There were no differences between the two groups on number of arrests or convictions, although the parolees recidivated with more serious crimes.

As described above, Solomon et al. (2005) analyzed BJS recidivism data to explore if JIPs released to a period of supervision performed better upon release, thereby triggering renewed interest into directly examining the effect of parole on outcome. They found that after two years of release, 54% of JIPs released to discretionary parole were rearrested, as compared with 61% of JIPs released to mandatory parole and 62% released unconditionally. JIPs among these three groups had similar demographic characteristics: approximately 32 years of age, primarily male, and most having had a previous arrest on file. Similar profiles were also found for the number of prior incarcerations, ranging from 2.3 for discretionary releasees to 2.7 for unconditional releasees. JIPs released at end of sentence unsurprisingly tended to serve more time in prison (32 months on average, as compared with 18.5 months for mandatory releasees and 21.3 months for discretionary releasees).

Using logistic regression to isolate the effect of supervision by controlling for demographic, criminal history and community factors, they found the predicted probability of rearrest to be 57% for discretionarily released JIPs and 61% for both mandatory and unconditional releasees. This four-percentage point difference between groups suggests that community supervision has only a small effect on reducing JIP recidivism. Further analyses

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revealed that even among discretionary parolees, only JIPs with certain characteristics were likely to benefit from the period of supervision. For instance, women benefited more from parole than men, as evidenced by the 16% difference in predicted rearrest rate for women on discretionary release (51%) versus women with unconditional release (67%). Conversely, men on discretionary parole were predicted to be two percent less likely to be rearrested (58%) than those released unconditionally (60%). Other areas with notable reductions in predicted rearrest rates attributable to community supervision include for Black JIPs (7%), JIPs with few prior arrests (9% difference), property and public order offences (8% and 10%, respectively), and those serving for revocations (8%).⁴

Solomon et al. (2005) noted that certain combinations of characteristics yielded substantially higher effect sizes in some cases, and substantially lower or iatrogenic effects in others. The group benefiting most were Black justice-involved men who had few prior arrests and who were serving time for a parole or probation revocation. Although JIPs in this group were almost 20% less likely to be rearrested when released on discretionary parole than on unconditional release, high-benefitting groups were not representative of the characteristics of JIPs on parole, and therefore comprised a small percentage of the overall sample. The low-benefitting group of men were White, had a high number of prior arrests, and were serving time for violent or drug offences. In these cases, being released on discretionary parole resulted in a predicted probability of rearrest about 10% higher than for those with similar profiles released unconditionally.

⁴ Percentages represent percentage point differences in predicted rearrest rates for discretionarily released JIPs and unconditionally released JIPs, with those released on discretionary parole predicted to have the lower rearrest rate in all instances.

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Solomon et al. (2005) surmised that parole appears to benefit low-risk, low-level JIPs. However, the effect was short-lived. Solomon et al. found that, controlling for other factors, the rates of rearrest were virtually the same for all groups by 18 months post release. These important results are hindered by some methodological limitations. Firstly, these conclusions are drawn without directly controlling for JIP risk using a valid risk tool. Instead, it relies on using prior arrests as a proxy variable for risk. Furthermore, while these profiles are an important first step in understanding parole, they only offer a cursory introduction to the question, 'for whom does supervision matter' (p. 2), as the nature of their data does not permit them to explore the effect of criminogenic needs. Such an analysis has the potential to offer greater clarification of who benefits from parole, particularly within the context of current discourses in criminological research.

Furthermore, critics argue that national-level analyses are not appropriate for assessing parole effectiveness, given differences in parole practices and policies across jurisdictions (Schlager & Robbins, 2008; Visher & Travis, 2005). This prompted state-level analyses to further explore the concept of parole effectiveness while addressing some limitations of national-level research. However, modern research using state-level analyses remain limited, and as such the understanding of parole effectiveness is restricted to studies from New Jersey, Kentucky and Nebraska, as well as Australia. Overall, it appears that parole has a short-term effect on lowering recidivism rates of JIPs, but that these effects disappear over time.

For instance, Vito et al. (2015) used propensity score matching and weighted logistic regression to evaluate parole effectiveness in Kentucky. They found that parolees were less likely to be reincarcerated for a new offence in the years following release (OR = 0.39, $p < .01$), controlling for sex, age, race, education, county of offence, offence type, prior incarceration,

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employment, and family status. Being older, having a drug offence on file, and having a more education were also significantly predictive of having fewer recidivism events.

Schlager and Robbins (2008) sought to compare demographic profiles and outcomes of discretionarily released parolees with maxed-out JIPs (those released to the community at the end of sentence with no supervision period). They determined that discretionarily released parolees were marginally younger, had fewer arrests on record, as well as fewer prior incarcerations and periods of parole. Regarding post release outcomes, Schlager and Robbins found that parolees were significantly less likely to have recidivated over the four-year follow-up, although both groups experienced high rates of recidivism: 70% of max-out JIPs and 60% of parolees were rearrested, with reconviction rates of 44% and 34% for each group respectively. Parolees were also able to remain free from crime for longer than max-out JIPs, with a mean survival time of 465 days (versus 349 days for max-outs). Notably however, parolees had significantly higher rates of rearrest between years one to three of the post release period.

While both of the above studies generally yield encouraging results regarding the outcomes of JIPs on discretionary parole over max-out JIPs, the study designs limit the interpretation of results as indicators of the effectiveness of parole. Controlling for risk is necessary to infer the effectiveness of parole in reducing subsequent recidivism in indeterminate systems. Otherwise, the results may simply reflect the ability of the local parole board to release JIPs that are good candidates for release (or possibly only release those that pose low risk to reoffend). While Vito et al. (2015) used prior incarcerations as a proxy for statistical risk, Schlager and Robbins were unable to do so in their research. As such, in the latter study, the comparisons between discretionarily released and maxed out JIPs are of limited use in understanding the effect of parole on recidivism outcomes.

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Ostermann examined parole effectiveness in New Jersey from various lenses and controlled for additional variables, including criminal risk using the Level of Service Inventory-Revised (LSI-R). As such, this represents the first modern assessment of parole effectiveness while controlling for risk using a validated risk assessment tool. This study compared parolees (discretionary and mandatory) with max-outs, controlling for a variety of demographic, criminal history and risk covariates (Ostermann, 2015). Within his sample, parolees had significantly lower risk scores than max-outs (a two-point difference on the LSI-R), served less time for their instant offense, and had fewer arrests and convictions on file. Discretionarily released parolees were less likely to experience rearrest and reconviction than inmates released without conditions (EOS group), when controlling for other variables. There were no significant differences in expected recidivism rates between discretionary and mandatory parolees once controls were considered. Ultimately, as with Schlager and Robbins (2008), the rates of recidivism were high for both max-out JIPs and parolees, though parolees recidivated significantly less than max-outs: 59.2% of discretionarily released parolees were rearrested, as were 67.8% of max-outs over the course of the three-year follow up. As with Solomon et al.'s research, the predicted recidivism rate when controlling for additional variables (including risk) reduced the difference between parolees and max out in terms of expected recidivism: 55% of discretionarily released JIPs were predicted to experience rearrest as compared with 59% of maxed-out JIPs. Furthermore, within this comparison, older JIPs were less likely to recidivate, as were females and JIPs with sex offences. Probability of rearrest increased with risk level, minority status and prior arrests. This study therefore addressed a central limitation in Vito et al. (2015) and Schlager and Robbins (2008) by controlling for risk in the model, therefore permitting a better assessment of parole effectiveness.

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Ostermann et al. (2013) also conducted research to differentiate recidivism outcomes for parolees on active supervision as opposed to merely using a set follow-up period. The authors note that this distinction better reflects how parole works in practice and allows a better understanding of the effects of supervision on outcome. This study marks an important attempt to distinguish the immediate effects of active supervision from any sustained effects of parole, as previous research methods had not taken parole status into account. The authors argue that in this sense, the parolee label is artificially applied in most research to those who they have completed their sentences and are therefore no longer parolees.

This marks an important shift and reconceptualization in parole effectiveness literature, by firmly recognizing that the change in parolee status from active supervision to post sentence has implications for both what is being assessed and the conclusions that can be drawn from results. Blending the two parole statuses into one follow-up construct confuses the interpretability of results. For instance, if follow-up results are compared for parolees (active and post sentence) and maxed-out JIPs at one-year, this would be comparing if JIPs who are currently receiving parole services and those that are unsupported in the community following this period have different outcomes than JIPs released at end of sentence. By collapsing active and post sentence parolees into one category, it is impossible to distinguish if parole is only effective during the active supervision phase, or if the process of parole is working as intended to help JIPs overcome reentry challenges and transition effectively into the community.

While both are important, they are indeed different research questions. The first pertains to the immediate effect of parole, while the second examines any sustained effect. The first question compares JIPs actively receiving support (and more intensive monitoring), typically against JIPs that have been released at end of sentence and are living unassisted and unmonitored

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in the community. Research conducted with these two groups asks, ‘does receiving active supervision make one less likely to recidivate than one who has no support?’. The second question compares both groups of JIPs within a more similar context: both groups are now returned to the community and living unassisted; or at least with access to the same number of services, albeit outside the criminal justice system. In this way, the second research question is asking ‘if parole has been effective in assisting the transition of the JIP, will these JIPs fare better than those released at end of sentence?’. The latter reflects an important task for parole in public safety and warrants investigation. JIPs cannot receive supervision indefinitely, and as such the goal should be to prepare them for a successful transition into unassisted community living. Therefore, comparing former parolees and max-out JIPs at end of sentence permits an assessment of the sustained effect of parole.

In exploring one aspect of this question, Ostermann et al. (2013) conducted a study to compare JIPs on active supervision with those released at end of sentence; as well as to explore how the difference in defining ‘parolees’ affected results. In their sample, JIPs released to parole (any status) were slightly younger than max-outs (1-year difference, with parolees on average aged 34.9 years), and lower risk on the LSI-R. After one year of follow-up, 41.6% of max-outs and 25.5% of parolees (regardless of supervision status) were rearrested. Only 17% of parolees were rearrested during their period of supervision. After three years of follow-up, 63.3% of max-outs experienced rearrest for new offences, as compared with 53.7% of parolees (regardless of supervision status). Only 23.6% of parolees were rearrested during their supervision term by the three-year follow-up. When comparing parolees who were rearrested during their terms with those arrested subsequently, they found that parolees arrested after their terms of supervision had shorter supervision terms.

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In a related study, Ostermann (2013) identified six groups of parolees with different lengths of active supervision, in six-month increments ranging from six months to three years. These timeframes also served as the follow-up increments, with arrest for new offence or parole violation resulting in return to custody serving as indicators of recidivism. For example, the one-year follow-up compares JIPs with at least one year of active parole supervision with those maxed-out and living in the community at one-year post release. Ostermann found that active supervision was a significant predictor of success across all time points, from six months (OR = .716, $p \leq .001$) to three years (OR = .692, $p \leq .001$). Furthermore, active supervision demonstrated the greatest effectiveness as compared with max-outs at the 2.5- and 3-year follow-up time points. By three years, actively supervised parolees were 31% less likely to recidivate than max-outs, controlling for demographic and risk-related variables.

In comparison, using the traditional definition combining active and post sentence JIPs, Ostermann (2013) found that parolees were less likely than max-outs to recidivate at 6 months (OR = .739, $p \leq .001$), one year (OR = .836, $p \leq .001$), and 1.5 years post release (OR = .919, $p \leq .05$), although these differences diminished over time, and became non-significant as a predictor after 1.5 years post release. These results suggest greater effects are observed when comparing JIPs on active parole supervision with those unsupervised after the same amount of time in the community. This result is perhaps not surprising, and suggests that at very least, parole has an immediate effect on reducing recidivism. Ultimately however, predicted recidivism rates were once again high for all groups. Using Average Marginal Effects, Ostermann estimated that 57% of actively supervised parolees would recidivate after three years, as compared with 61% of

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traditionally defined parolees (blending active supervision and post sentence parolees), and 62-65% of max-outs.⁵

Complementing Ostermann's refinement to isolate the effects of parole supervision on active parolees, Vandenberg (2013) examined the sustained effect of parole supervision by comparing the post-discharge outcomes of parolees and JIPs released directly from prison. In this way, Vandenberg's research is better suited to examining the sustained effect of parole as it concentrates on the differences in recidivism between former parolees and end of sentence JIPs post sentence. As the author notes, doing so more directly compares how each group fares once released into the community once the sentence is complete, and thereby examines the lasting effect of parole post-discharge. Through the use of propensity score matching (PSM), Vandenberg controls for various demographic characteristics (age, sex, race), legal factors (incarceration length, prior sentences, current offence, parole interruptions and year of discharge) and social control variables (marital status, number of visitors and self-betterment clubs). These are important controls, and marks the first attempt to go beyond JIP demographic, community and criminal history variables. However, the author acknowledges that the social control variables available for inclusion in the study are insufficient to appropriately assess the importance of various factors associated with recidivism, including mental illness, substance use and antisocial associates. Furthermore, the dataset limitations did not permit a control for statistical risk.

Despite these limitations, Vandenberg found that JIPs discharged from prison differed significantly from those released on parole, in that they were younger, more likely to be non-white, and had shorter sentences. Furthermore, results indicated that male JIPs released to a

⁵ AME for max-outs depends on comparison to either traditionally defined parolees (AME = .6203, 95% CI [.6077, .6328] or to actively supervised JIPs (AME = .6520, 95% CI [.6399, .6641])).

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period of parole were less likely to be reincarcerated within three years of their discharge date than those who completed their sentences and were discharged directly from an institution.

Vandenberg estimates the treatment effect of parole, controlling for other variables, to range from 1.85% to 4.82% depending on the method of PSM used (average effect size of 3.7%). No treatment effect was observed for female JIPs, as those discharged from parole and from prison were reincarcerated at similar rates after three years. Finally, Vandenberg found that JIPs with six months or more of parole were 47% less likely to be reincarcerated after three years than those without parole, and 17% less likely to be reincarcerated during the follow up than those with fewer than 6 months of parole. This suggests that, for male JIPs, the greatest treatment effect from parole occurs with six or more months of supervised release prior to discharge.

Wan et al. (2016) also used PSM to evaluate parole supervision effectiveness in New South Wales, Australia. Matching the samples of parolees and EOS JIPs for demographic variables (age, gender, indigenous status), socioeconomic indices, and criminal offence and history information (time in custody, various prior sentence information, including types of prior offences), Wan et al. evaluated the specific effect of parole release on outcome. They found that 46.1% (95% CI [43.9, 48.3]) of JIPs receiving parole supervision reoffended in the three years following release, as compared with 51.3% of unsupervised JIPs (95% CI [49.1, 50.9]; $p = .001$). Unsupervised JIPs also committed more offences within three years ($M = 4.3$, 95% CI [4.1, 4.6]) than supervised JIPs ($M = 3.6$, 95% CI [3.4, 3.8]; $p < .001$). However, this study bears many of the limitations that have already been identified herein: notably, they do not differentiate between JIPs on active supervision from ‘former’ parolees, and once again a statistical risk estimate is not used within the model.

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Finally, Ooi & Wang (2022) employed an instrumental variable approach in New South Wales, including magistrate severity in their regression models as a means of accounting for variables that are not typically conveniently observed in parole research (such as employment, social support, etc.); as well as including traditional controls including demographic information, offending history, risk (as per the LSI-R) and index offence. They found that parolees were significantly less likely to incur reconviction or personal, property or drug offence recidivism outcomes at 12 and 24 months as compared with unconditionally released JIPs, accounting for magistrate severity and other controls; with greater effects observed at the earlier time period.

Parole Effectiveness: Limitations in Existing Research

Overall, current results obtained from the field suggest that parole, broadly defined, may be somewhat useful in improving community outcomes for JIPs. At very least, JIPs that have received parole supervision appear to recidivate slightly less often than those who are released unsupervised, at least for a short time (Flanagan, 1982; Ostermann, 2015; Ostermann, 2013; Schlager & Robbins, 2008; Solomon et al. 2005; Vito et al. 2016; Wan et al., 2016). Only rarely have results suggested otherwise (Jackson, 1983). However, there are several conceptual and methodological limitations within the extant literature review in need of further consideration.

The first limitation is that parole research inconsistently includes a period of active supervision within the outcome data. The population included in the definition of parolees must be suited toward the research question. If only the immediate, short-term effect of parole is of interest, it may be appropriate to compare parolees on active supervision with those released at end of sentence (as per Ostermann et al. 2013). Conversely, to accurately assess any sustained effect of parole, it is necessary to compare more like groups. As Vandenberg (2013) notes, parolees are in fact still serving their sentences, and as such, a more appropriate comparison is

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between those released into the community following a period of parole as compared with those released directly from the institution. As such, in consistently failing to remove those on active supervision, research to date has been unable to fully comment on one of parole's primary objectives; its contribution to public safety by facilitating JIP reentry. Studies that include a period of active supervision clarify the immediate effect of parole, but are unable to disentangle this from any lasting effects post sentence. Importantly, it seems to be rarely justifiable to group actively supervised and formerly supervised parolees together when addressing questions of parole effectiveness, and much of the existing research fails to adequately describe if this distinction has been considered or attenuated within their studies.

A second shortcoming of existing parole research pertains to the insufficient consideration given to the theory of criminal conduct, and how need or protective factors may affect the function of parole. It is well established that risk is comprised of both static and dynamic elements (Andrews et al., 2006; Campbell et al., 2009; Serin et al., 2016). However, the bulk of the existing parole research portrays the JIPs' risk on parole as a static construct, indeed if it is accounted for at all. Statistical risk estimates are essential to the analysis of parole effectiveness, as they are required controls to counteract the discretionary nature of the parole release. Failure to include statistical risk estimates causes the research to suffer from the inherent selection bias that only certain JIPs (deemed to have manageable (i.e., low) levels of risk) are released onto a period of parole. Without controlling at least for static risk, it is impossible to determine if parole is effective in reducing recidivism, or if parole boards are selecting candidates for release that will not recidivate during their period of supervision or post-release. Furthermore, recent research has highlighted that static risk estimates lose predictive ability as time passes for JIPs within the community (Serin, 2020). Eventually, with increased time crime-

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free in the community, a JIP's risk to reoffend has been shown to decrease sufficiently to be similar to that of someone in the general population (Hanson, 2018). Therefore, an additional limitation of parole effectiveness research is the lack of attention to changes in risk over time, and to time-dependent or dynamic risk factors. This is a significant limitation, as it is not currently known how dynamic, criminogenic needs relate with parole effectiveness. Nor has there been any meaningful discussion of protective factors. Protective factors have been linked with desistance (Maruna, 2010) and therefore are highly relevant for research seeking to determine for whom parole has a lasting effect. Further exploration of these aspects would better inform how parole may function.

These limitations lead to the third major shortcoming of existing parole research – the lack of attention to the quality of and distinction between the release decision and parole supervision. If risk is merely static in nature, parole supervision and facilitation of the JIP's transition back into the community is of limited value. While static risk is important and relevant for risk prediction, it has less bearing on the case management of JIPs in the community. Awareness of changes in the utility of static risk assessments over time, dynamic risk factors and of protective factors are however critical, as this information can be used by community supervision officers to provide high-impact, targeted interventions and services, and provide true re-entry assistance. Indeed, quality in supervision practices, such as tailoring sessions to respond to changes in the stable and acute risk fluctuations of clients, accounting for offence type, and following structured decision-making frameworks in response to supervision events can be beneficial for JIP re-entry (Serin et al., 2020 ; Serin et al., in press - a). Furthermore, as previously established, CSO interactions with clients delivered in accordance with CCP and RNR principles have a demonstrable effect in reducing recidivism (Chadwick et al., 2015;

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Drake, 2011). As such, parole effectiveness models that do not account for dynamic risk variables or protective factors that collectively serve as treatment targets within quality community supervision structures are theoretically impaired. This reinforces that there is a significant need to evaluate parole effectiveness using models that account for such variables within jurisdictions that have a justifiable claim to rendering quality release decisions alongside quality community supervision in order to truly assess parole effectiveness.

These shortcomings call into question the confidence in findings that parole's effect is fleeting. Going forward, parole effectiveness research must be grounded in a stronger theoretical basis and address the sequential aspect and duality of the release decision and parole supervision. The current research reflects an effort to improve upon the methodological and theoretical limitations from previous research on parole effectiveness. This research represents a theoretical advancement in the field by demonstrating consideration of the decision and supervision as separate constructs and includes variables within the parole effectiveness modelling (both risk and protective factors) that represent potential treatment targets for CSOs in an effort to understand their role in parole effectiveness.

Prior to delineating the current proposed research plan, it is important to situate the additional covariates that should be considered in parole effectiveness research within the context of the broader field of correctional study. These will be reviewed in the following section, along with a discussion of the theoretical underpinnings that have guided these research developments.

Theories of Crime and Recidivism

There have been considerable developments since the 1970's in advancing knowledge of factors associated with crime and criminal recidivism. The Risk-Need-Responsivity (RNR)

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model has emerged as a forerunner in the field, with the primary purpose of informing the features of effective rehabilitative treatment interventions (Bonta & Andrews, 2010). The RNR model now comprises 17 principles in total, but holds its four initial principles at its core: to be most effective, correctional interventions should be delivered to higher risk JIPs, target criminogenic needs (those empirically demonstrated to achieve a reduction in future crime), be delivered in a manner conducive to JIP learning and internalization (responsivity) and emphasize human service (rehabilitation over deterrence; Bonta & Andrews, 2010). Though RNR is one of the most prevalent models in corrections and interventions that attempts to explain why some interventions are more effective than others (Lipsey & Cullen 2007), it in itself is not a theory of criminal behaviour. Rather, RNR stems from a broader Psychology of Criminal Conduct (PCC), defined by Andrews and Bonta (2006) as, "...an approach to understanding the criminal behaviour of individuals" (p. 19), which, "...involves the ethical application of psychological knowledge and methods to the practical tasks of predicting and influencing the likelihood of criminal behaviour" (p. 19). The PCC pulls from a variety of theoretical backgrounds, including biological, psychodynamic, sociocultural, and most prominently general personality and social psychology theories.

The general personality and social psychology theory of criminal conduct accounts for a variety of influencing variables on criminal behaviour. According to Andrews and Bonta (2006), this includes the direct influence of costs and rewards of the criminal act; which is itself influenced by one's attitudes, values and beliefs (in favour of delinquency), having criminal or delinquent peers (that normalize criminal acts) and the immediate situation. This process of balancing costs and rewards occurs within a greater environment, influenced by the individual's

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biological variables (family of origin, gender, age), community variables (belief in conventional ambition), neighbourhood and personal variables (temperament, socialization, abilities).

In this way, the RNR model pulls most strongly from the Personal, Interpersonal, and Community-Reinforcement (PIC-R) theory (within the general personality and social psychology strain), to explain the underlying causes of crime and associated targets for rehabilitation. The thirteen PIC-R principles attempt to provide a flexible, overarching account for understanding criminal activity as a function of potential costs and rewards at the personal, interpersonal and community levels (Andrews & Bonta, 2006). Indeed, Andrews and Bonta argue that the PIC-R is best able to account for the predictors of recidivism, and that it matches the Central Eight criminogenic risk/need factors (those that have empirically demonstrated the strongest association with recidivism). PIC-R theory and the Central Eight both posit criminal history, social support for criminal behaviour, antisocial personality, antisocial attitudes, employment and education problems, family and marital problems, lack of prosocial leisure pursuits and substance abuse as risk factors for crime. Andrews and Bonta further argue that this theory supports the need to assess broad domains of influence on criminal conduct (as reflected in the Central Eight); and the importance of assessing dynamic as well as static covariates.

Collectively, the underpinnings of the general personality and social psychology and PIC-R theories of criminal recidivism support the RNR model, which is not targeted towards risk assessment or prediction, but rather how to use information from risk and needs assessments to match the JIP with appropriate, effective service. The risk principle has two aspects: criminal behaviour can be predicted, and that services provided to the JIP must match their level of risk. High risk JIPs require access to more and intensive services to achieve a result. The need principle asserts that one must distinguish between criminogenic needs (those related to future

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crime, e.g. the Central Eight), and noncriminogenic needs (those that are not empirically related with recidivism). RNR dictates that these criminogenic needs should be targeted above others in correctional interventions. Furthermore, to respect the responsivity principle, the intervention should be delivered in a manner that is best suited to JIP learning (both general learning needs and specific issues such as cultural sensitivity).

RNR is well-founded within correctional literature, with much of its support stemming from systemic reviews and meta-analyses. Meta-analytic studies are particularly important for establishing the effectiveness of interventions or principles across various settings. They culminate all relevant research evidence on an intervention and calculate an overall effect size (Cullen & Gendreau, 2001). In a review of systematic reviews, Lipsey and Cullen concede that the RNR model has substantial support within correctional literature, and note that, “few other primary researchers or meta-analysts have ...proposed any alternatives” (p. 310). Indeed, Andrews et al. (1990) provided some of the first meta-analytic evidence in support of JIP rehabilitation, confirming that intervention was effective when delivered in accordance with RNR. They found that recidivism significantly decreased following interventions that were delivered in accordance with the RNR model resulted ($r = .30$), and that ‘inappropriate’ service delivery yielded a slight increase ($r = -.06$). Other meta-analyses have similarly supported the applicability of the RNR model to female JIPs (Dowden & Andrews, 1999), juvenile and adult JIPs (Andrews et al., 1990), JIPs with sex offences (Hanson et al., 2009), and violent JIPs (Dowden & Andrews, 2000). Smith et al. (2009) conducted a systematic review of meta-analyses in corrections and found support for all three principles, along with the importance of therapeutic integrity.

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Some primary studies are also useful to shed more in-depth information on the effectiveness of the components of the model. For example, the risk principle dictates that higher risk JIPs should receive a greater dosage regarding programs. Bourgon and Armstrong (2005) provided greater insight into the specifics of appropriate dosage of prison programs by risk level, in their sample of over 400 JIPs with a minimum follow-up period of one year. Three program dosage levels were examined: a 5-week, 100-hour program, a 10-week, 200 hour program and a 15-week, 300-hour program. JIPs that completed their recommended dosage-level had significantly lower recidivism rates than untreated JIPs who had the same program length recommendation. Furthermore, JIPs recommended to complete the 15-week program but who only completed the 5-week program had higher recidivism rates than those who completed the recommended dosage. Hanson et al., (2016) used Bourgon & Armstrong's study to demonstrate how these program dosages would apply within their five-level standardized risk language, and noted that individuals at Level-III, demonstrating a 30-50% probability of recidivism would require 100-200 hours of programming. This compares to their recommendation of no formal programming for individuals rated in Level-I, and 200-300 hours of programming for individuals rated at Level-IV, with a 50-85% probability of reoffending within two years.

Lowenkamp et al., (2006), conducted the largest study to date on the effectiveness of the risk principle. They looked at program effectiveness of 97 correctional programs based on various features, including adherence to the risk principle and delivery setting. They found that residential programs overall were negatively associated with a successful outcome ($r = -.05$; even those that included cognitive-based programming $r = -.01$), however results improved dramatically when adhering to the risk principle by offering more intensive services to high risk clients over a longer period of time ($r = .18$).

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Makarios et al., (2014) examined the risk principle in conjunction with treatment dosage in a residential community setting. Results in this study confirmed that higher risk JIPs require more intense (higher dose) treatment than moderate or low risk JIPs to achieve optimal reductions in recidivism. Furthermore, they uncovered a non-linear relation; for low and moderate risk JIPs, providing too much programming was counterproductive and outcomes were not as successful as at lower doses. Specifically, the optimal amount of treatment for low-risk JIPs was 100-149 hours ($B = -1.08, p < .1$), and that the effect was reduced at 150-199 hours of programming ($B = -0.16, ns$). For moderate risk JIPs, optimal treatment was 150-199 hours ($B = -0.32, p < .05$). For high risk JIPs, both categories of 250-299 and 300+ hours of programming yielding results significantly better than the reference category (150-199 hours; $B = -0.69, p < .05$ for each). Furthermore, 38% of JIPs in the moderate/high risk category who received over 300 hours of programming recidivated, as compared with 74% of moderate-high risk JIPs and 37% of low-moderate risk JIPs receiving 150-199 hours of programming.

Criminogenic needs are another important area for consideration. The 'Central Eight' comprise the eight main areas of risk that are most strongly associated with subsequent recidivism, and of these, seven qualify as dynamic, criminogenic needs (Andrews & Bonta, 2006). These include the 'Big Four' risk factors (those most strongly associated with recidivism as per previous meta-analytic studies): history of antisocial behaviour, antisocial personality pattern, antisocial attitudes and antisocial associates. The remainder include needs in the areas of family/marital, education/employment, substance abuse and leisure/recreation. Only history of antisocial behaviour is a static risk factor and not a criminogenic need, as it cannot be mitigated. The other seven serve as treatment targets for correctional interventions, as they can in theory serve to reduce subsequent recidivism. Indeed, this is the essence of the need principle as found

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in the RNR model and established through meta-analytic research: programs that target these needs produce the greatest reductions in recidivism (Andrews et al., 1990; Smith et al., 2009). Furthermore, upon examining intra-individual changes and recidivism, Serin et al. (2013) conclude that programs targeting individual change in the dynamic risk areas of antisocial attitudes, beliefs, personality, social supports and substance use produced the most consistent support.

Overall, the above results, along with those yielded from meta-analytic studies, demonstrate support for this approach and for the RNR principles in general. Although the original RNR model is silent on assessing areas of JIP strength (Andrews & Bonta, 2006), later iterations make note that to assess a need as only being neutral or negative misses out on substantial information (Bonta & Andrews, 2016). Subsequent research helpfully expands on the important concepts to include factors which may protect a JIP from future involvement, though the specifics of what these factors are and how they operate remains a point of debate (Brown et al., 2020; Ullrich & Coid, 2011; Farrington et al., 2016).

Generally, strengths can be interpreted as beneficial individual attributes or environmental factors, regardless of a direct link with recidivism (Brown et al., 2020). It is generally accepted that strengths are not only the absence of risk factors or the opposite of a risk factor (Brown et al., 2020; Jones et al., 2015). Protective factors refer to those that interact with risk to reduce recidivism while promotive factors have a direct effect on the outcome, specifically to decrease the probability of recidivism (Brown et al., 2020; Loeber et al., 2007; Serin et al., 2016). Furthermore, promotive factors may be useful independently to predict recidivism, or may provide incremental value in predicting recidivism beyond known risk factors (Brown et al., 2020). While promotive factors reduce the risk of recidivism similarly across all

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risk levels (Jones et al., 2015), protective factors more greatly reduce the risk of recidivism for high risk JIPs than low-risk JIPs (Jones et al. 2015; Losel & Farrington, 2012).

There are several mechanisms through which protective factors are theorized to interact with risk. Fitzpatrick (1997) proposed two models: buffering and mediating. In the buffering model, risk factors only affect outcome when the individual has few to no protective factors. However, when present, protective factors buffer the risk to lower the probability of recidivism. In the mediating model, protective factors are weakened by risk factors, which in turn have an indirect effect on recidivism.

Several primary studies have demonstrated the importance of strengths, protective and promotive factors in risk prediction. Brown et al. (2020) examined the predictive validity of two tools evaluating needs and strengths, the Youth Assessment and Screening Instrument (YASI) and the Service Planning Instrument (SPIn) on five samples. Overall, strengths predicted recidivism beyond accounting for dynamic risk (needs) and in most instances this effect was observed across dynamic risk levels, suggesting evidence that strengths have an incremental promotive effect.

Conversely, Ullrich and Coid (2011) found support for the mediation model of protective factors at four levels of JIP risk. They noted that the protective factors that were statistically related with outcome in their study (social support, emotional support, importance of religion) were weakened by risk factors. However, other protective factors remained significant, even when risk was included in the regression model (spare time spent with family or friends). They concluded that protective factors had an important effect on outcome. Jones et al. (2015) arrived at a similar conclusion. They created a new category, strengths, to represent, “a positive or prosocial facet of an individual’s life that, on the basis of face validity, is intuitively apt to buffer

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risk of criminal outcome” (p. 323). They determined that including strengths in the model significantly predicted outcome, including for women and Indigenous subsamples. Examples of strengths included in their instrument, the Service Planning Instrument (SPIn), included positive peer relationships, prosocial intimate partner, employment motivation, law-abiding attitudes, and accepts responsibility.

De Vries Robbé et al., (2011) provided further evidence in support of the relevance of protective factors, when testing the Structured Assessment of Protective Factors (SAPROF). They found that using the SAPROF in conjunction with the HCR-20 was a better predictor of outcome than the HCR-20 alone. The SAPROF includes three categories of protective factors – internal (e.g. intelligence, empathy), motivational factors (e.g. leisure activities, life goals), and external factors (e.g. social network, professional care). Finally, Rennie and Dolan (2010) also supported the inclusion of protective factors in risk assessment, noting a positive association between protective factors detected by their tool (the Structured Assessment of Violence Risk in Youth, SAVRY) with improved outcomes at follow-up. Collectively, this research suggests that, although there are still theoretical and conceptual clarifications required within the field, that protective factors, promotive factors, and individual strengths make an important contribution to explaining and understanding client or JIP outcomes.

Protective factors have also demonstrated relevance in practice with community supervision. The Dynamic Risk Assessment of Offender Reentry (DRAOR; Serin, 2007), a three-subscale tool evaluating stable and acute risk factors alongside protective factors, serves to guide case management decisions for JIPs on community supervision in several correctional systems globally, including in Iowa. Research using the DRAOR has found that the protective factors decrease in the months prior to recidivism (Hanby, 2013). Notably, the DRAOR has

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demonstrated acceptable psychometrics in previous validation studies, as well as some predictive validity in terms of its ability to predict reconvictions (Chadwick, 2014; Hanby, 2013; Ferguson, 2015; Muirhead, 2016; Yesberg & Polaschek, 2015).

Current Research

Recent research suggests that parole is somewhat effective, in the sense that JIPs released onto parole have better outcomes than those discharged directly from the institution (see above section for research summary). However, these findings are subject to the limitations previously discussed. As such, there is a need to conduct further parole effectiveness research with theoretical and methodological improvements. The current research draws from correctional psychological theory to determine the sustained effect of parole by comparing like groups (EOS JIPs at discharge with parolees at discharge) and examining the extent to which any effect may be moderated by a JIP's needs and protective factors. This research is supported by the consideration and examination of parole decision and supervision practices, to determine if assumptions of quality are reasonable in each regard.

Research Questions and Hypotheses

This study will explore the relationship between parole status and post sentence recidivism, applying matching techniques to balance the parole and EOS group on relevant covariates to facilitate the interpretation of the parole effect on both survival rates and likelihood of outcome. However, it will first be important to establish a degree of quality of parole decision-making⁶ and supervision. The study is divided into two themes to explore these questions.

Theme 1: Quality Parole Decision Making and Supervision

Research Question 1

Does a quantitative evaluation of the profiles of parolees and EOS JIPs in Iowa support the assumption of quality decision-making?

Hypothesis 1a. Low risk JIPs will be paroled at higher rates than high risk JIPs.

Hypothesis 1b. High risk JIPs released at EOS will have different profiles as compared with high risk JIPs released on parole (e.g., varying demographic profiles, higher rates of identified needs, fewer protective factors).

Research Question 2

Does a review of community supervision practices in Iowa support the assumption of quality community supervision?

Hypothesis 2a. Iowa's results on the Community Corrections Report Card will demonstrate satisfactory community supervision practices.

⁶ The hypotheses proposed in relation to this research question exploring quality in parole decision-making reflect a verification to the extent possible with this administrative data that parole decisions are consistent with the standards of parole in Iowa, that is, "A parole or work release shall only be ordered for the best interest of society...if the person is able and willing to fulfill the obligations of a law-abiding citizen..." (Iowa Code, s.906.4). See *Discussion: Summary and Implications* for a discussion of the limitations with this conceptualization of 'quality'.

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Hypothesis 2b. Low risk JIPs on parole will have fewer incidents recorded during active supervision than high risk JIPs on parole.

Theme 2: Effect of Parole on the Rate and Likelihood of Charges

Research Question 3a

Do JIPs released onto a period of parole have better post sentence outcomes than those released directly at EOS?

Hypothesis 3a-i. The rate of post sentence charges in the follow-up period will be lower among former parolees than among those released at EOS.

Hypothesis 3a-ii. The odds of post sentence charges will lower for former parolees than those released directly at EOS at set time periods.

Research Question 3b

Do certain risk or protective factors modify parole's effect on post sentence charges?

Hypothesis 3b. Due to the absence of prior research in this area, this question is exploratory.

Methods

Procedure

The Iowa Department of Corrections (IDOC) provided an anonymized dataset for the purpose of this study, including demographic, risk, protective factor, and outcome data for a release cohort of JIPs. All release instances ($k = 11,109$) from June 1, 2016 to June 30, 2018 were provided.⁷ Data were provided under an existing Memorandum of Understanding between the IDOC and the Criminal Justice Decision Making Laboratory at Carleton University.

Outcome data for the final sample was provided by the Iowa Judicial Branch. Ethics approval for this project was provided by Carleton University.

Participants

Sample Building

The dataset included all releases during the timeframe, and for a wide variety of admission reasons. Of the 11,009 release instances within the dataset,⁸ $k = 1,121$ represented unique JIPs released from a New Court Commitment (NCC).⁹ Figure 1 illustrates the sample building process uses these cases as the base, and details the inclusions and exclusions resulting in the final sample for the EOS and parole groups. As illustrated in the figure, $n = 162$ JIPs had a ‘direct’ discharge from prison, that is, a discharge with no prior period of parole on this sentence. Various data quality checks resulted in an additional $n = 18$ removed (e.g. for field code violations during their sentence despite no record of supervised release; having a work release status), resulting in a final sample of $n = 144$ for the EOS group. JIPs were phased into the parole

⁷ No updates were available to increase sample size, given a change in data administration within the IDOC.

⁸ An error occurred within the original dataset provided, wherein a single identifier was assigned to two people for $n=2,126$. These cases were removed from the dataset.

⁹ First NCC on file per JIP. Other potential admission reasons included parole revocation, probation revocation, work release revocation.

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group if they had a parole release with an eventual EOS date available and excluded if the EOS date was missing or due to other data quality issues.¹⁰ The EOS date was critical for the parole group; reflecting the start of follow-up for the sustained effect theme. Of the $n = 1,121$ releases from an NCC, $n = 636$ had a period of parole, however, $n = 363$ of these parole releasees were immediately phased out due to ineligible release outcomes (e.g., those that did not have the required EOS date for reasons such as death, revocation to work release, termination, released to special sentence, parole granted, or missing an outcome). Phased into the sample were $n = 192$ JIPs that had a parole release ending directly in a discharge (no noted revocations; of these $n = 177$ had a released type of ‘Parole Granted’ and $n = 15$ had a release type of ‘Paroled with Immediate Discharge’). Of these, sixteen were excluded for data quality issues (e.g., inconsistent sentence information¹¹, and periods of work release). Additional efforts were made to include those with parole releases resulting in revocations, where there was a final discharge date on file. This resulted in an additional $n = 12$ included in the study. As such, the final parole sample comprised of $n = 188$ JIPs. Community supervision outcomes were added to this sample, as were other control variables.

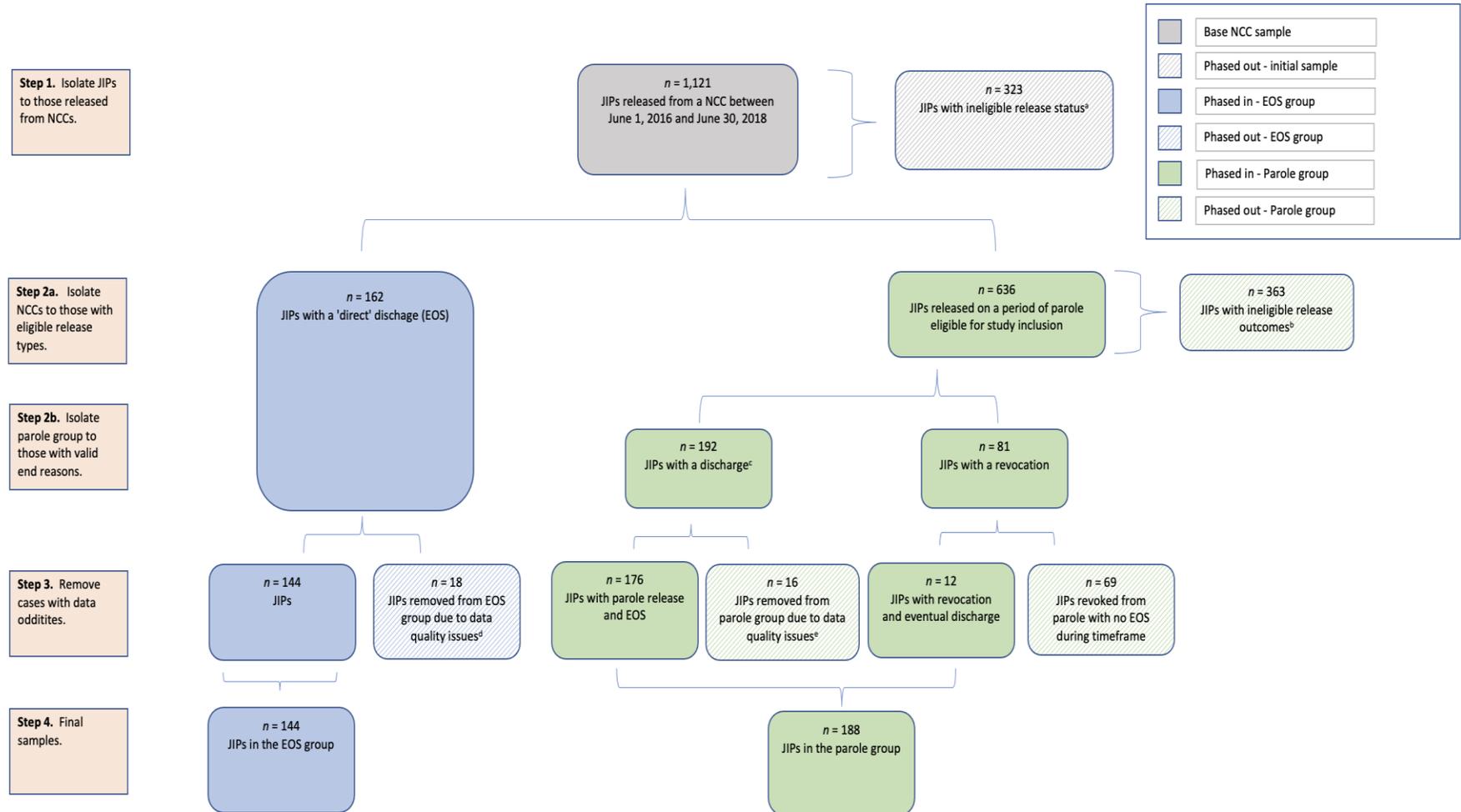
¹⁰As individuals convicted of sex offences in Iowa are not eligible for parole (they are released to special sentence), they were de facto excluded from the sample.

¹¹ Excluded were $n = 2$ parolees with additional releases overlapping the original sentence despite no record of a parole failure, and $n = 1$ parolee with immediate discharge with a field violation.

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Figure 1

Sample Building Process for the EOS and Parole Group



^a Paroled to detainer (INS, Iowa, Out of State, US Marshall), death, probation, release to special sentence, revoked, terminations. ^b Missing outcome, death, revoked to work release, terminated, special sentence, parole granted. ^c Discharge – early discharge, Discharged – absconder/escape, Revoked from parole – discharged, Discharged – expiration of sentence. ^d Including for field code violations during their sentence despite no record of supervised release; having a work release status. ^e Inconsistent sentence information, periods of work release.

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Demographics

The overall eligible sample was comprised of $n = 332$ JIPs, of which 43.4% ($n = 144$) were released at EOS and 56.6% ($n = 188$) were released onto a period of parole. Approximately 12% ($n = 39$) were women. Over two thirds of the sample was identified as non-Hispanic White ($n = 228$), over a fifth identified as Black ($n = 71$), and the remaining 10% included those identified as Hispanic White ($n = 23$), American Indian, Alaska Native or Asian/Pacific Islander ($n = 10$). Over 70% of the same had a High School Diploma or GED equivalent ($n = 237$). A small portion ($n = 12$) had completed a university degree. Most JIPs were originally convicted for violent (37.6%) or property (29.8%) offences; less common were drug (16.3%) or public order offences (15.7%). The most common sentence types (offence classes) were aggravated misdemeanor and D-Felony, each accounting for just over 40% of offences for which the JIPs were originally convicted. The mean age at release was 35.1 years ($SD = 10.2$). The mean time at risk from EOS date at the end of follow up (December 31, 2019) was 839.62 days. The most common risk category for the sample was moderate-high, with almost 38% at this risk level. Approximately 36% were rated as low or low-moderate risk, and just over a quarter were rated as high risk. Of those released onto a period of parole, 3.6% ($n = 12$) had a revocation, and 34.0% ($n = 64$) had a technical violation of some kind during the period of parole. Note that descriptive statistics by group, including outcome base rates, are provided in *Results: Descriptive Statistics and Group Differences*.

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Materials

Community Corrections Report Card (CRCC)

Serin et al. (2021) developed a Community Corrections Report Card (CRCC; see Appendix A), which provides feedback to community corrections agencies on their abilities across six domains relevant to the support of quality community supervision. These domains include organizational readiness, risk assessment, programming, supervision and case management, performance measurement and community engagement. The indicators of these domains permit the assessment of evidence-based practice within each domain. There are 202 essential indicators or criteria evaluated by the tool, which are scored as 0 (*not met*), 1 (*somewhat met*) or 2 (*fully satisfactory*). Domain and total scores are provided. Eighty percent of essential indicators must be met to earn a rating of *Fully Satisfactory*, 65-84% of essential items met yields a rating of *Satisfactory*, and less than 65% of essential items met yields a rating of *Needs Improvement*.

Iowa Parole Risk Assessment (Iowa Violence and Victimization Instrument, IVVI)

The Iowa Parole Risk Assessment (Iowa Violence and Victimization Instrument; IVVI) is a nine item, two-scale tool, designed to predict violent and property reconvictions (e.g. property crime, burglary, identity theft, etc.) within 30 months of release into the community on a period of parole or probation (Prell, 2013). The violence scale only predicts violence, but the victimization scale predicts both violence and victimization (e.g. property) offences. The scales are highly correlated ($r = .89, p < .001$), as they contain the same items covering current offence; volume, severity and recency of criminal history; security threat group membership and age; but with variations in the weights assigned to select responses (Prell et al., 2016). Notably, the tool

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uses time limitations on criminal history variables, only assessing those within the past five or ten years as these have been shown to have better predictive accuracy than lifetime criminal history variables in research with this tool (Prell, 2013b). The author notes that this approach also accounts for criminal desistance by better considering when JIPs pose no more risk for crime than the average citizen (Prell, 2013b). The tool has shown some predictive ability for other outcomes (e.g. any new convictions), though with less accuracy than for its intended purposes. Items on each scale are totaled to produce an overall violence risk and victimization risk, with risk categories associated with each. Violence risk categories range from Low (-1 to 2) to Very High (10+), and victimization risk categories range from Low (-1 to 1) to High (8+).

The construction sample was comprised of 2,662, primarily white (77%), male (86%) JIPs, with index offences of property, drug, violent, public order and other crimes (Prell, 2013b). The tool is not intended for use on JIPs with sex offences. Within the construction sample, 14.9% of JIPs incurred a new violent conviction and 20.1% were returned to prison for any new conviction. The tool was validated by splitting the original sample in two, using half for validation. The tool was also subsequently revised and validated on a sample of 3,967 parolees and probationers (50.5% female and 49.5% male) upon release to community supervision who were tracked for recidivism, by way of any new convictions, for 30 months.

Overall, IVVI research to date shows that JIPs placed in the riskier categories for the violence and victimization scale are more likely to recidivate than those in the lower risk categories (Prell, 2013b). Additionally, the mean scores on both the violence and victimization scales were significantly higher for those recidivating in each category (drug, property, violence, victimization offences and any offence), than those who did not recidivate. Though the victimization score has performed barely better than chance at predicting drug offences (AUC =

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0.54, $p = .007$), it has demonstrated fair to good accuracy in predicting any offences, property offences (AUC = 0.71, $p < .001$), victimization offences (AUC = 0.70, $p < .001$), and violent offences (AUC = 0.70, $p < .001$). The violence score has good predictive ability for predicting violent reconvictions (AUC = 0.71, $p < .001$).

Need Areas and Protective Factors

Measures for need areas and protective factors were required as covariates within select models, determining for whom parole yields greater or lesser effects. Two tools were used to gather this information: the Structured Dynamic Assessment Case-Management-21 items (SDAC-21; Serin et al., 2012) and the Dynamic Risk Assessment for Offender Re-entry (DRAOR; Serin, 2007). Theoretically based on the works of Andrews and Bonta (2010), Hanson and Harris (2000), Hanson et al. (2007) and Sampson and Laub (2005), the SDAC-21 and DRAOR include aspects of both stable and acute risk, alongside protective factors, to yield an overall assessment of risk within the institution (SDAC-21) and during community supervision (DRAOR). Both are case management tools implemented in recent years within the IDOC, and offer insight into areas of risk, needs and protective factors. Each tool contains three scales, with many overlapping items. The SDAC-21 has a Stable (risk) scale, Responsivity scale, and Protective factors scale. The SDAC-21 Stable scale assesses the presence of seven stable dynamic risk factors, which may fluctuate over time (gang association, negative attitudes towards authority, impulse control, problem-solving, sense of entitlement, attachment to others, and substance use). The Protective factors scale assesses the presence of protective factors, including responsiveness to advice, prosocial identity, high expectations, cost/benefits, social supports, social control and employability. The DRAOR Stable and Protective domains contain similar items though with minor changes: the DRAOR Stable scale assesses peer associations as

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opposed to gang associations; and both substance abuse and employment are part of the DRAOR Acute risk domain.

For both tools, scores on each Stable scale item range from 0-2, where a score of 0 indicates that there is no problem for the JIP on the item and a score of 2 indicates that it is a definite problem for the JIP. The Protective scale items are also scored from 0-2, but where zero indicates that the item is not an asset for the JIP, one indicates that it is a slight/possible asset and where two indicates that it is a definite asset.

The SDAC-21 and DRAOR have proven valid and reliable tools, with evidence that the SDAC-21 successfully predicts relevant institutional outcomes, and the DRAOR predicts community outcomes. Readers are referred to Smeth (2020) for a review of the SDAC-21 properties and predictive accuracy, and Perley-Robertson (2018) for a thorough review of the psychometric properties of the DRAOR, the latter of which being the more well-researched tool.

Briefly, based firmly in correctional theory, the DRAOR demonstrates content validity (Perley-Robertson), with its factor structure (Stable, Acute and Protective) broadly supported through several studies of exploratory factor analysis (Chadwick, 2014; Hanby, 2013) and confirmatory factor analysis (Hanby, 2013), with only minor adjustments. The DRAOR has also performed well in assessments of its convergent and divergent validity. Each subscale has demonstrated correlations in the expected direction with the Risk of re-Conviction X Risk of re-Imprisonment (RoC*RoI) tool widely used in New Zealand (Bakker et al., 1998; Tamatea & Wilson, 2009; Hanby 2013; Averill, 2016), as well as with the Static-99R (Phenix et al., 2016; Smeth, 2013), the Automated Sexual Recidivism Scale (ASRS; Skelton et al., 2006; Averill, 2016); the Violence Risk Scale (VRS; Wong & Gordon, 1999-2003; Yesberg & Polaschek, 2015) and the Release Proposal Feasibility Assessment-Revised (RPFA-R; a dynamic measure

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of preparedness for release; Wilson, 2011). Research on the predictive validity of the DRAOR is encouraging, with promising results for the prediction of new convictions and parole outcomes for a variety of JIPs, including general JIPs (Hanby, 2013), JIPs with sex offences (Averill, 2016), high risk JIPs (Yesberg & Polaschek, 2015); and adolescents (Ferguson, 2015; Muirhead, 2016). The SDAC-21 has similarly demonstrated acceptable psychometric properties and ability to predict institutional misconducts and institutional non-compliance (Smeth, 2019).

Furthermore, individual DRAOR items have also demonstrated predictive ability for technical violations and charges, though this has not been consistent across JIP groups (Carty, 2019).

Given that the primary purpose of this data was to better understand how need areas or protective factors may operate in conjunction with parole status to affect outcome, individual items from the SDAC-21 and DRAOR Stable and Protective scales were included as covariates in some analyses. Furthermore, items were dichotomized to simply indicate an area of need vs not (Stable items) or a protective factor or not (Protective factors). The protective factors examined within this study were those that had items present on both the SDAC-21 and DRAOR Protective scales. This included responsiveness to advice, prosocial identity, high expectations, costs/benefits, social supports, and social controls. Table 1 below demonstrates how the items from the SDAC-21 Stable and DRAOR Stable (and Acute) subscales theoretically align with the RNR model.

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Table 1

Selected SDAC-21 and DRAOR Items by Criminogenic Need Area

RNR Criminogenic Need Areas	SDAC-21/DRAOR items
Antisocial Associates	S – Gang associations, Attachment with others D – Peer associations, Attachment with others
Antisocial Attitudes	S – Negative attitudes towards authority, Sense of entitlement D – Negative attitudes towards authority, Sense of entitlement
Antisocial Personality	S – Impulsivity, Problem-solving D – Impulsivity, Problem-solving
Substance abuse	S – Substance abuse D – Substance abuse

Note. S represents item pulled from the SDAC-21; D represents item pulled from DRAOR.

The SDAC-21 was the preferred tool to ensure sufficient representation from the EOS group, however, to reduce missing data, information was pulled from the DRAOR where no SDAC-21 assessment was available on the current sentence. If no SDAC-21 or DRAOR information was available for the current sentence, information was sought from a prior sentence. Ultimately, as per Table 2, the majority of need and protective factor information was derived from the SDAC-21 from the current sentence for both groups, including 58.3% ($n = 84$) of the EOS sample and 52.7% ($n = 99$) of the Parole sample.

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Table 2

Source of DRAOR Information for EOS and Parole Groups

Source of Information for Need/Protective Factors	EOS		Parole	
	%	<i>n</i>	%	<i>n</i>
SDAC-21: On sentence	58.3	84	52.7	99
DRAOR: On sentence	8.3	12	20.7	39
SDAC-21: Prior sentence	1.4	2	3.7	7
DRAOR: Prior sentence	4.9	7	4.8	9
Missing	27.1	39	18.1	34

Demographic, Offence and Sentence Variables

Additional demographic variables such as age and gender, offence variables such as offence descriptions (characterized in this study as crime types) and offence class (sentence type) variables were provided by IDOC within the dataset. In Iowa, felony offences are those which carry a sentence of two years or more, to be served in a state prison (Mince-Didier, 2022a).

There are four felony classes – A through D. Class A felonies are the most serious, and carry life imprisonment, with no parole unless the sentence is commuted (Mince-Didier, 2022a). Class D felonies are the least serious, and incur the shortest sentences (up to five years). Misdemeanors are less serious than felony crimes, and carry a sentence of up to two years in a county jail.

Aggravated misdemeanors are the more serious and generally incur longer sentences than serious misdemeanors (Mince-Didier, 2022b).

This study examined a broad category of index offence crime type as a variable within the study. Violent offences were primarily related to assault, drug offences were primarily related with possession or trafficking, and property offences were largely attributable to theft, burglary or fraud. Public Order offences were largely related to traffic violations (driving while

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barred) or Operating While Intoxicated (OWI). ‘Other’ offences were rare ($n = 2$), and comprised ‘Other criminal’ activities.

Outcome Data

Outcome information in the form of charges was provided for those within the final sample from June 1, 2016, to December 31, 2019, as recorded by the Iowa Judicial Branch. This study used charge data as the primary indicator of post sentence recidivism. The first charge following sentence discharge was of interest for the primary research question for both the EOS and parole groups. Post sentence time at risk for each group began as of the sentence discharge date. A sensitivity analysis also examined the first charge during active supervision for the parole group.

In some instances, parole incidents are used as outcome data. Incidents reflect technical violations incurred during a period of community supervision.

Analytic Techniques

Matched Samples as a Data Preprocessing Strategy

The primary purpose of the present study is to identify the sustained effect of parole on post sentence outcomes, controlling for the potential confounding effects of additional, theoretically-relevant covariates. The primary hypothesis is that parole will reduce the rate of post sentence charges. Matching procedures balance treated and control samples on covariates presumed to be related to either treatment assignment or outcome (Stuart, 2010). Doing so yields samples which are more comparable, and thus which simulate randomized experiment (in the case of Propensity Score Matching; PSM), or blocked randomization (in the case of Coarsened Exact Matching; CEM; King & Nielsen, 2019). Many options for matching methods exist within these types of matching (described in further detail below), such as full matching, one-to-one

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matching (with or without replacement), and subclassification (Stuart, 2010). Ultimately, matching samples can reduce the model dependence that is inherent in many standard regression models. According to Ho et al. (2007), this is achieved as matching removes the association between treatment and any control variables, making the final results less dependent on the researcher's modelling choices. If the samples are exactly matched, a difference in means may be sufficient to estimate the effect size of the treatment, however, in most cases matching is a preprocessing strategy that will still require controlling for confounders (Ho et al.).

Covariate Selection and Power. As per Ho et al. (2007), selecting the variables on which the treated and control samples should be matched is critical. This is an effort to meet the assumption of ignorability; that is, all variables that may affect either the treatment assignment or outcome should ideally be matched. However, this should exclude variables that are affected by the treatment. Practically, Ho et al. acknowledge that, in some circumstances, it will not be feasible to include all variables, and that there may be a trade-off between matching on all covariates with trimming too many observations from the sample, thus reducing power (Imai et al., 2008). In this case, the researcher may prioritize to ensure matches on the most important variables.

Selecting and Evaluating the Matching Process. Once the necessary covariates are identified, several matching techniques are available (Stuart, 2010). The present study employs CEM, a form of Monotonic Imbalance Bounding (Iacus et al., 2011). Here, the researcher coarsens the categories of covariates to the degree they feel is reasonable, and match participants from the treated and control groups exactly. Proponents of CEM argue that it is preferable to Equal Percent Bias Reducing techniques such as PSM in its ability to reduce imbalance, model dependence, estimation error and variance (Iacus et al., 2011). As with PSM, options exist for the

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specific method, such as one-to-one exact matching, $k:1$ nearest neighbour matching with weights, and matching with or without replacement (Stuart, 2010). Each has implications for the resulting estimand and analytic techniques available. Within CEM, one-to-one with nearest neighbour Mahalanobis matching finds the closest match between controls and treated units. One-to-one matching without replacement offers additional flexibility with respect to the types of analytic techniques available (see *Estimating Effects After Matching*, below).

It is also necessary to evaluate the reduction in sample imbalance. To do so, the balance prior to any sample modifications need to be assessed (Austin, 2009). The Standard Mean Difference (SMD) provides a standardized difference in means between each group, so each value can be interpreted on the same scale. SMDs close to zero are desirable, and suggest balance across groups. Recommended thresholds vary, although levels below .05 to .1 are desirable, particularly for important covariates (Austin, 2009; Greifer, 2021). Notably, greater SMDs, particularly on non-critical matching variables, are more acceptable when covariates are to be included in the model estimating the treatment effects. Furthermore, variance ratios for continuous variables indicate if the amount of variance in each group is similar (as per a value of 1); and empirical cumulative density function statistics (eCDF) can provide an indication of imbalance across the covariate distribution (Austin, 2009; Greifer, 2021).

Estimating Effects After Matching. Each matching method has implications for the estimand, or quantity of interest (Greifer, 2021; Iacus et al., 2011). The estimand, as defined by the International Committee for Harmonization of Technical Requirements for Pharmaceuticals for Human Use (ICH) is, “the target of estimation to address the scientific question of interest posted by the trial objective”. Several attributes must be described in relation to the estimand, including the population, treatment, end-point and outcome measure (Lawrance et al., 2020). The

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matching method can affect the population aspect of the estimand, taking the resulting treatment effect from one expected to occur on average across all individuals within the sample (the Average Treatment Effect; ATE) to one which is limited to the average effect for treated individuals (ATT). In some cases, the estimand is only applicable as the average effect for treated individuals within the present sample (the local or sample ATT), sometimes referred to as the average treatment effect for the matched (ATM; Greifer, 2021; Iacus et al., 2011). If the matching method prunes observations from the treated group, the ATM is estimated. In such a scenario, the treatment effect is specific to individuals who have characteristics similar to those in the matched sample, which may not correspond to a broader population (Greifer, 2021). Despite this limitation, advocates have argued that the reduction in model dependence attained through the use of matching procedures is preferable to controlling for covariates through parametric techniques (Ho et al., 2007; Iacus et al., 2011).

Marginal versus Conditional Effects. Furthermore, applying matching procedures can affect the types of estimates available. In some parametric techniques (such as binary logistic regression analyses), the treatment effect produced when covariates are entered into the equation is a conditional estimate of the effect (Schnitzer, 2021). That is, adding covariates to the model will change the estimated effect, even though the true effect should not change, making resulting effect sizes conditional on covariates. It is therefore typically preferable to report the marginal effects, which correspond to the difference expected in the outcome for those under treatment (i.e., parolees in this context) as compared with those under control conditions, unless specific research questions are exploring conditional effects for a population subset (Greifer, 2021; Schnitzer, 2021). In a randomized experiment, when a logistic regression can be applied without covariates (given the assumption that the treatment and control group are balanced on any

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confounding variables), the resulting odds ratio represents a marginal effect. However, when covariates are included in the model, a conditional estimate is produced.¹² It is plausible that the conditional effect may be of interest to the researcher; in particular when the effect of the treatment is thought to vary based on the level of a covariate (i.e., an interaction or moderating effect of a covariate; Schnitzer, 2021). Notably, such can still be explored on a matched sample, and therefore matching does not preclude such examinations.

Post-Matching Analytic Techniques. Greifer (2021) elaborates on the types of analyses that are suitable following several types of matching. After pair matching without replacement (such as used in the present study) offers the most flexibility in terms of being compatible with employing continuous and binary regression, and survival analyses.¹³ Options remain somewhat limited post-matching for survival analyses, in that only a marginal estimate can be estimated, as Grierer (2021) does not recommend including covariates in the model. This is because there is no method for computing standard errors in such models. Conversely, binary logistic regressions offer more flexibility as one can estimate marginal effects (odds ratios) in matched samples without replacement, either with or without covariates. The marginal effect is automatically calculated when no covariates are included, but can be computed through g-estimation when covariates are present. Furthermore, this technique applies a bootstrapping technique to obtain the standard errors. Finally, Grierer (2021) recommends logistic regression for moderation analyses after matching.

¹² Even with covariates included, marginal effects can be estimated through processes such as g-computation. There are some limitations in that this approach is not recommended for all types of analyses (such as for survival analyses; Grierer, 2021).

¹³ Greifer (2021) notes for instance that survival analyses on samples using after pair matching with replacement are not well-studied and recommends the use of alternative matching techniques for conducting these analyses.

Cox Proportional Hazards Survival Analysis

Survival analysis techniques permit the assessment of differences between groups in their respective 'survival' to various time points without experiencing the 'event' of interest. It does so by comparing the proportion of each group surviving to the set time and using chi-square tests to evaluate statistical significance for both the overall model and individual covariates (Tabachnick & Fidell, 2007). In this way, the structure and tests of significant difference are similar to those for logistic regression. Cox regression is the most used form of survival analysis (Tabachnick & Fidell, 2007, Singh & Mukopadhyay, 2011). Cox regression is interpreted similarly to logistic regression, although it provides a hazard rate for each covariate as opposed to an odds ratio (Allison, 2014). The hazard ratio indicates difference in rates of event between two groups at any given time period (George et al., 2020). A hazard ratio of one indicates no difference in the rate of event with a change in covariate level, whereas a hazard ratio greater than 1 indicates that the rate of event is more likely with a unit increase in the covariate, and a hazard ratio less than 1 indicates that the rate of event is less likely (Hosmer, 2008). As such, hazard ratios require a proportional hazard assumption to be met, else reporting a single hazard ratio is not an accurate reflection of the survival function. The hazard ratio should be reported with median times (George et al., 2020).

Although the Cox regression is robust, it requires the shape of the failure rate to be parallel across groups, and as such the proportionality of the hazards must be statistically tested and visually inspected. A failure to meet the assumption should prompt further investigation, including the consideration of time dependent covariates or coefficients (Allison, 2014; Hosmer, 2008; Therneau, 2021). Additional assumptions for survival analyses include sufficient sample size (minimum of sixty for five variables; Eliason, 1993), absence of outliers, no systematic

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differentiation between lost cases and those whose outcome is known, and absence of multicollinearity (Tabachnick & Fidell, 2007). Notably, Cox regression analyses and logistic regressions have been shown to produce very similar results under most circumstances (Hashemian et al., 2017; Staley et al., 2017). However, survival analyses may be preferable over logistic regression analyses when follow-up time varies among participants to both control for time and boost sample size. Within the present study, survival analyses are used to explore the effect of the parole treatment on the rate of post sentence and post release charges for JIPs released onto a period of parole as compared with those released at EOS. The Kaplan-Meier method is applied to visually observe the differences in the predicted probabilities of survival by group.

Assessing Model Fit of Survival Functions: Residual Analyses, Sensitivity Analyses and Harrell's C-index. In addition to verifying the proportional hazards assumptions, residuals provide important insight into the model fit of a survival function. Several residuals are recommended for survival analysis, including Martingale residuals, which mimic the difference between the observed value of event for a participant with its expected value, over time at risk (Breheny, 2019). Deviance residuals are another option, which estimate the difference in the log-likelihood of event per participant under the model with the maximum possible log-likelihood (Breheny, 2019). Bradburn et al. (2003) recommend checking the Martingale residuals against included covariates and any potential covariates excluded from the model to look for trends, and deviance residuals against each participant to check for outliers, as well as against survival time to verify the shape of the survival distribution.

In addition to verifying these aspects, Harrell's *c* index can give a general indication of the goodness-of-fit (Therneau & Atkinson, 2021, Uno et al., 2011). The concordance statistic is

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derived from the probability that the predicted survival of a participant is longer for those with the lower risk (e.g., treated group). The C-index represents the number of concordant pairs over all usable pairs in the dataset. As per Therneau & Atkinson, 2021, *c* index values of 0.5 are on par with a model predicting at chance. Generally, *c* index values of 0.56 represent a small effect size, where as *c* index values of .64 and .71 would represent moderate and large effect sizes, respectively (Helmus & Babchishin, 2017).

Sensitivity analyses, running alternative models to understand how variations in covariates or model specifications affect results, are also important. Comparing models can provide insight into goodness of fit (i.e., by examining reductions in estimations of Akaike Information Criteria (AIC), suitable for non-nested models; Portet, 2020), and fluctuations in parameter estimates with changes to the model specification. These can provide insight into the conditions under which the original estimates are consistent, or to which they may be sensitive. In this present study, this includes an analysis of the consistency of the effect in an alternate time period; that is, the immediate post-release effect of parole on outcome.

Logistic Regression and Moderation Analyses

Logistic regression is appropriate when predicting a discrete outcome. This method offers increased flexibility over other similar techniques to predict outcome, in that it does not require predictor variables to be normally distributed, linearly related or have equal in-group variance (Tabachnick & Fidell, 2007). It is standard practice to convey the relationship between the predictors and outcome variable in odds ratios. Odds ratios represent the change in likelihood of the outcome in association with the predictor (George et al., 2020). Values greater than 1 indicate an increase in likelihood of observing the outcome (and values less than one represent a decrease in likelihood), in conjunction with a one-unit change in the predictor. As with other statistical

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techniques, logistic regression makes certain assumptions about the nature of the variables and data included in the equation (Tabachnick & Fidell, 2007). Assumptions include ensuring sufficient ratio of cases to variables; and ensuring that each cell (pair of discrete variables, e.g. high risk, no recidivism; etc.), has sufficient number of predicted cases. When expected frequencies of a cell are small, power may be reduced and irregularities in the form of high parameter estimates may occur. Additionally, linearity in the logit of the dependent variable with continuous predictors, absence of multicollinearity, absence of outliers and independence of errors are all assumptions that must be met. Within the present context, logistic regression can also be used to estimate models with a moderating variable following the matching procedure (Griefer, 2021).

Pre- and Post-hoc Analyses of Group Differences

Tests of group differences. Chi-square tests of independence are suitable for assessing group difference on categorical variables, while independent samples *t*-tests are suitable for continuous variables, provided certain assumptions are met. Chi-square statistics are suitable for analyzing counts for nominal or ordinal variables, where the variable categories are mutually exclusive, for independent samples, and where the sample size is sufficient, such that most expected cell frequencies are 5 or more, with no cells having an expected frequency of 0 (McHugh, 2013). Independent samples *t*-tests are suitable for continuous variables, which are normally distributed, with equal population variances. Where the chi-square tests and *t*-tests are tests of significance, it is recommended to also provide a strength statistic. Chi-square tests are accompanied by as Cramer's *V*, a measure of association that can be interpreted as a correlation (McHugh, 2013).

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Software

Several statistical software programs were used for data analyses. The bulk of analyses for the primary research questions were conducted in R, including matching ('MachtIt' package; Ho et al., 2011), survival analyses ('survival' package; Therneau, 2021), logistic regression (multiple packages¹⁴), and 'ggplot2' package (Wickham, 2016). Most analyses for Theme 1 and Theme 2 post-hoc tests were conducted in Stata v. 17 (StataCorp., 2021). A power analysis was conducted using G*Power (Faul et al., 2009), and the dataset manipulations were done using SAS (v 9.4, SAS Institute Inc, 2013).

Summary

The present study proceeds with CEM one-to-one nearest neighbour Mahalanobis matching without replacement to improve balance between the treated (parole) and control (EOS) samples on key covariates and reduce model dependence. Cox proportional hazards survival analysis and logistic regression models are subsequently applied to determine the primary treatment effect and the relationship with other variables. Additional pre- and post-hoc tests such as chi-square tests of independence and *t*-tests are conducted to provide context for the effect.

¹⁴ 'aod' package (Lesnoff & Lancelot, 2012); 'boot' package (Canty & Ripley, 2021); 'sandwich' package (Zeileis & Graham, 2020); 'lmtest' package (Zeileis & Hothorn, 2002)

Results

Data Cleaning and Preliminary Analysis

Data were examined for within range values, univariate and multivariate outliers, and multicollinearity, by group, with no issues noted. Missing data was an issue in that 27.1% of the EOS group and 18.1% of the parole group were missing information on the need and protective factor items derived from the DRAOR and SDAC. This was addressed by excluding these covariates from the base models, and including them as moderators in a second matched sample with complete case information where required for analysis.

Descriptive Statistics and Group Differences

Descriptive statistics on key demographic, risk and sentence variables were examined in the unmatched sample and a series of chi-square tests of independence were used to evaluate the association between the group and relevant covariates. There were some notable group differences, as per Table 3. The parole group tended to be better educated and included more women than the EOS group. Furthermore, the parole group had more low and low-moderate risk JIPs, with fewer JIPs convicted of violent offences as the index offence and more convicted of property and drug offences. Additionally, the parole group tended to be older at EOS ($M = 35.6$, $SD = 10.1$) than EOS JIPs ($M = 33.9$, $SD = 10.6$), although this was not a significant difference ($t(330) = -1.5$, $p = .13$). Overall, these differences support the approach for matching techniques to ensure balanced samples when answering the primary research questions.

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Table 3

Differences in Sociodemographic, Risk and Offence Characteristics, by Group

Item	EOS N = 144		Parole N = 188		$\chi^2(df)$	p	V
	%	n	%	n			
Risk							
Low	6.9	10	22.3	42	30.3 (3)	.000	.30
Low-Moderate	15.3	22	25.5	48			
Moderate-High	41.0	59	35.6	67			
High	36.8	53	16.5	31			
Sentence Type							
Serious Misdemeanor	2.1	3	1.1	2	18.8 (5)	.0002	.24
Aggravated Misdemeanor	54.9	79	32.5	61			
Felony – Enhance Original	1.4	2	2.7	5			
D Felony	30.6	44	48.4	91			
C Felony	8.3	12	12.8	24			
B Felony	2.8	4	2.7	5			
Crime Type							
Violent	52.1	75	26.6	50	32.4 (4)	.000	.31
Drug	7.6	11	22.9	43			
Property	22.9	33	35.1	66			
Public Order	16.0	23	15.4	29			
Other	1.4	2	0.0	0			
Sex							
Male	93.8	135	84.0	158	7.4 (1)	.006	.15
Female	6.3	9	16.0	30			
Education							
Less than High School	27.8	40	16.0	30	10.9 (3)	.012	.18
High School or equivalent	65.3	94	76.1	143			
Post Secondary	2.8	4	6.4	12			
Missing	4.2	6	1.6	3			
Ethnicity							
Non-Hispanic White	64.6	93	71.8	135	3.2 (3)	.365	.10
Hispanic White	6.3	9	7.5	14			
Black	25.7	37	18.1	34			
Other	3.5	5	2.7	5			

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Additionally, Table 4 demonstrates differences in the need and protective factor profiles, for those in the parole and EOS groups with complete case information available. Notably, there were no significant differences among need areas between the parole and EOS group, although parolees tended to have protective factors endorsed in more areas, including prosocial identity, high expectations, cost benefit and social control.

Table 4
Group Differences on Need and Protective Factors

Item	EOS N = 144		Parole N = 188		$\chi^2(1)$	p	V
	%	n	%	n			
Dynamic Need ^a							
Associates	39.1	41	38.3	59	.01	.90	0
Attachment	75.2	79	65.6	101	2.7	.10	-.10
Attitudes	74.3	78	64.3	99	2.9	.09	-.11
Entitlement	65.7	69	61.7	95	.44	.51	-.04
Impulsivity	92.4	97	90.9	140	.17	.68	0
Problem-Solving	92.4	97	91.6	141	.06	.81	-.01
Substance Abuse	82.9	87	6.4	133	.60	.44	.05
Protective factor ^a							
Responsive to advice	68.6	72	74.7	115	1.16	.28	.07
Prosocial Identity	61.0	64	78.6	121	9.5	.00	.19
High Expectations	68.6	72	80.5	124	4.8	.03	.14
Cost Benefit	60.0	63	73.4	113	5.1	.02	.14
Social Support	72.4	76	79.2	122	1.6	.20	.08
Social Control	53.3	56	68.8	106	6.4	.01	.16

Note. Percentages indicate those with the need or protective factor endorsed. Percentages exclude $n = 39$ EOS JIPs and $n = 34$ parole JIPs missing SDAC-21 or DRAOR information.

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In terms of base rates, 59.0% ($n = 85$) of the EOS group and 43.1% ($n = 81$) of the parole group experienced a post sentence charge. The mean number of possible post sentence days at risk (e.g., time between EOS and the data collection date) was 976.6 ($SD = 212.0$) for the EOS group and 734.7 ($SD = 202.9$) for the parole group. Only 22.9% ($n = 43$) of parolees experienced a charge during the period of active supervision. Parolees were supervised for an average of 299.1 days ($SD = 212.2$), and 34.0% ($n = 64$) had an incident recorded during their period of active supervision.

Theme 1: Quality Decision Making and Supervision

Research Question 1a: Likelihood of Parole by Risk Level

As per Table 5, chi-square tests of independence were used to determine if low risk JIPs were paroled more frequently than high risk JIPs (as determined by the pre-existing IVVI risk bins). The first chi-square of independence compared the observed and expected frequencies of those rated High or Low risk released on parole or released at EOS. Low risk JIPs were more likely to be released onto parole (80.8%) than released at EOS (19.2%), and the inverse was true for high risk JIPs (63.1% released at EOS and 36.9% released on parole). Group differences were significant. Furthermore, while both low-moderate and moderate-high risk JIPs were more likely to be released onto parole than at EOS, a greater portion of low-moderate risk JIPs were paroled (again, significant group differences). This represented a significant moderate effect (Cramer's $V = 0.43$) when comparing low and high risk, and a weak effect when comparing low-moderate and moderate-high risk JIPs (Cramer's $V = 0.15$).

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Table 5

Comparisons of Group Differences in Attaining Parole, by Risk Level

Risk Level	EOS		Parole		$\chi^2(df)$	<i>p</i>	<i>V</i>
	%	<i>n</i>	%	<i>n</i>			
Comparison 1					24.9 (1)	.000	.43
Low	19.2	10	80.8	42			
High	63.1	53	36.9	31			
Comparison 2					4.4 (1)	.036	.15
Low-Moderate	31.4	22	68.6	48			
Moderate-High	46.8	59	53.2	67			

Research Question 1b: Group Differences in High Risk JIP Profiles by Release Type

Chi-square tests of independence were again used to evaluate group differences in terms of the demographic, dynamic risk and protective factor profiles for high risk JIPs released at EOS as compared with high risk JIPs released on parole. Results are presented in Table 6. The profiles for both groups were very similar. Only two demographic variables, education and crime type, varied significantly between the two groups, wherein high risk parolees were more likely to have a high school education or equivalent, and more likely to be serving a sentence for property offences (and less likely to be serving a sentence for any other offence type, including violent or drug offences). No other variables indicative of need areas or protective factors were found to be significantly different among groups. Despite not achieving significance, some sizeable differences were observed on some need and protective factors. In particular, the parole group was less likely to have a need noted in negative attitudes towards authority and in sense of entitlement by a margin of approximately 10% or greater as compared to the high risk EOS group. Additionally, the high risk parole group was more likely to have protective factors noted

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in prosocial identities, cost-benefits of crime, and social control than the high risk EOS group by a similar margin. Furthermore, there was no significant difference between the high risk EOS ($M = 31.0, SD = 9.2$) and high risk paroled JIPs ($M = 31.0, SD = 7.6$) in terms of age at sentence expiration ($t(82) = .02, p = .99$).

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Table 6

Differences between High Risk Parolees and High Risk EOS JIPs

Variable	EOS <i>n</i> = 53		Parole <i>n</i> = 31		$\chi^2(1, df)$	<i>p</i>	<i>V</i>
	%	<i>n</i>	%	<i>n</i>			
Sex							
Female	1.2	1	6.5	2	1.18 (1)	.277	.12
Male	98.1	52	93.6	29			
Education							
Less than H. School	41.5	22	12.9	4	9.42 (2)	.009	.34
H. School or equiv.	54.7	29	87.1	27			
Post secondary	0.0	0	0.0	0			
Missing	3.7	2	0.0	0			
Crime Type							
Violent	60.4	32	48.4	15	10.7 (3)	.014	.36
Drug	11.3	6	0.0	0			
Property	22.6	12	51.6	16			
Public Order	5.7	3	0.0	0			
Other	0.0	0	0.0	0			
Ethnicity							
Non-Hispanic White	52.8	28	74.2	23	5.84 (3)	.120	.27
Hispanic White	7.6	4	3.3	1			
Black	34.0	18	12.9	4			
Other	5.7	3	9.7	3			
Dynamic Risk ^a							
Associates	39.0	16	41.7	10	.04	.834	.03
Attachment	75.6	31	79.2	19	.11	.743	.04
Attitudes	80.5	33	70.8	17	.79	.373	-.11
Entitlement	70.7	29	54.2	13	1.82	.178	-.17
Impulsivity	95.1	39	91.7	22	.31	.576	-.07
Problem-Solving	90.2	37	91.7	22	.04	.848	.02
Substance Abuse	85.4	35	87.5	21	.06	.810	.03
Protective factor ^a							
Responsive to advice	61.0	25	54.2	13	.29	.591	-.07
Prosocial Identity	51.2	21	62.5	15	.78	.377	.11
High Expectations	65.9	27	66.7	16	.01	.947	.01
Cost Benefit	48.8	20	58.3	14	.55	.457	.09
Social Support	70.7	29	70.8	17	.00	.993	.00
Social Control	46.3	19	66.7	16	2.52	.113	.20
Missing Data	22.6	12	22.6	7	.00	.995	.00

H. school = High school. ^a Percentages represent those with the factor endorsed, per group.

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Research Question 2a: CRCC Ratings of Quality Community Supervision Practices in Iowa

Two of eight jurisdictions in Iowa completed the CRCC. Results are presented in Table 7 below. Overall, results indicated a need to improve evidence-based practices in organizational readiness and supervision and case management practices in both jurisdictions. In particular, although all subscales in the organizational readiness domain scored 50% or less in both jurisdictions indicating a need to improve across subscale constructs (policy, commitment [to RNR and evidence-based practice], and support for evidence-based practice), there was more variability in the supervision practices subscales. For instance, while both jurisdictions were fully satisfactory in terms of use of information technology, and satisfactory in terms of selection and hiring practices, professional development was non-existent (in terms of the essential criteria noted by the tool). The subscale assessing quality assurance practices indicated that most criteria were somewhat met, but that jurisdictions were lacking guidelines for addressing circumstances of JIP non-compliance (not shown). Strengths were noted in quality assurance for both jurisdictions in terms of workload formulas and tracking of CSO overrides, with both jurisdictions assessing these as fully met. Encouragingly, both jurisdictions obtained satisfactory or fully-satisfactory ratings of evidence-based practice in risk assessment and performance measurement. Finally, discrepant results were observed between jurisdictions for programming and community engagement; however, even where overall ratings differed, actual scores remained fairly consistent. The largest difference was observed on community engagement practices, where Jurisdiction 1 scored 7 points higher on the overall domain.

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Table 7

CRCC Domain Scores and Overall Ratings from Two Iowa Jurisdictions

Variable	Jurisdiction 1		Jurisdiction 2	
	Score/Rating	%	Score/Rating	%
Organizational Readiness	Needs Imp.		Needs Imp.	
Policy (/6)	3	50	3	50
Commitment (/16)	6	38	3	19
EBP Support (/2)	0	0	1	50
Overall (/24)	9	38	7	29
Risk Assessment	Satisfactory		Satisfactory	
Reliability and Validity (/24)	21	88	18	75
Practice Issues (/18)	14	78	14	78
Overall (/42)	35	83	32	76
Programming	Satisfactory		Needs Imp.	
Program Information (/14)	8	57	8	57
Fidelity (/16)	13	81	12	75
Process Information (/16)	11	69	10	63
Evaluation (/8)	3	38	3	38
Overall (/54)	35	65	33	61
Supervision and Case Management	Needs Imp.		Needs Imp.	
Selection/Hiring (/6)	4	67	4	67
Professional Development (/6)	0	0	0	0
Quality Assurance (/24)	13	54	12	50
Information Technology (/6)	6	100	6	100
Overall (/40)	23	58	22	55
Performance Measurement	Satisfactory		Full Satis.	
Overall (/18)	14	78	16	89
Community Engagement	Satisfactory		Needs Imp.	
Overall (/22)	16	70	9	50
CRCC Total Rating	Satisfactory		Needs Imp.	
CRCC Total Score (/202)	132	65	119	59

Note. >85% = Fully Satisfactory. 65-84% = Satisfactory. <65% = Needs Improvement.

Research Question 2b: Parole Incidents as Indicators of Quality Supervision Practices in

Iowa.

It was predicted that high risk JIPs on parole would have more technical violations than low risk JIPs on parole, as an indicator of quality supervision, given that this would suggest more intensive supervision for higher risk JIPs. See Table 8 for results by follow-up time. While there

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were no statistically significant differences, low risk JIPs had a lower proportion with recorded incidents at 3, 6, and 12 months of follow-up. No high risk parolees had more than 12 months of active supervision follow up time available.

Table 8

Parole Incidents at Set Follow-Up Times for Low- and High-risk Parolees

Variable	Low Risk		High Risk		$\chi^2(1, df)$	<i>p</i>	<i>V</i>
	%	<i>n</i>	%	<i>n</i>			
3 months ^a	14.6	6	20.0	4	.28	.595	.07
6 months ^b	32.4	11	50.0	6	1.19	.276	.16
12 months ^c	40.9	9	75.0	3	1.58	.208	.25
18 months ^d	60.0	6	-	-	-	-	-
24 months ^e	100.0	1	-	-	-	-	-

^a Low risk *n* = 41; High risk *n* = 20. ^b Low risk *n* = 34; High risk *n* = 12. ^c Low risk *n* = 22; High risk *n* = 4. ^d Low risk *n* = 10; High risk *n* = 0. ^e Low risk *n* = 1; High risk *n* = 0.

Theme 2: Sustained Effect of Parole on Post Sentence Outcomes

Matched Samples

Covariate Selection. In the current study, the most important covariate to adjust for was risk. The IVVI includes traditionally important static risk factors predicting recidivism outcomes. Furthermore, a relation between age, crime type, sentence type, education, ethnicity, and gender could also plausibly affect either treatment (e.g., being granted parole) or outcome (charge).

Balance Comparisons in the Matched and Unmatched Samples. The unmatched sample contained *n* = 144 EOS (control) observations and *n* = 188 parole (treated) observations. The CEM process applied one to one nearest neighbour Mahalanobis distance matching on covariates of interest, with some covariates broadened as per Table 9 to allow more matches on the exact level. The first CEM round matched groups on all covariates, which resulted in matches for only *n* = 22 treated and control participants. Therefore, a stepwise progressive

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approach was taken, with CEM applied only for select variables. Only risk had the highest theoretical priority in that it was critical to balance the samples based on their statistical risk to reoffend. Other variables which may have been related with treatment or outcome were prioritized based on sample imbalances.

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Table 9

Broadened Matching Categories per Covariate Level

Variable	Original Levels	CEM Levels
Risk	Low Low-Moderate Moderate-High High	Low Low-Moderate Moderate-High High
Sentence Type	Aggravated Misdemeanor Serious Misdemeanor Felony – Enhancement to Original D Felony C Felony B Felony	Misdemeanor Felony (D, Enhance) Felony (B, C)
Crime Type	Violent Drug Property Public Order Other	Violent Drug Property Public Order and Other
Sex	Male Female	Male Female
Education	Less than High School High School or equivalent Post Secondary Missing	Less than High School High School or equivalent Post Secondary Missing
Ethnicity	Non-Hispanic White Hispanic White Black Other	White Black or Other

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Overall, four rounds of CEM occurred.¹⁵ The final model selected included matches on risk, crime type and sentence type, as these balanced the most important covariates, improved balance on the remaining covariates and yielded a reasonable sample size ($n = 86$ EOS and $n = 86$ parole). This yielded a better balance in covariates and sample size than previous rounds of matching on risk-crime, and risk-sentence type. Power analyses were conducted to help inform the sample selection. Using G*Power (Faul et al., 2009), power analyses for logistic regression analyses were selected. Estimated required sample sizes to detect a change in effect from a 26% probability of revocation for untreated as compared with 21% of treated (derived from estimates in Ostermann, 2013) at a desired power level of .8 and alpha of .05 was returned at $n = 515$ accounting for an estimated R^2 with other covariates¹⁶ of .18 (Round 3), and $n = 444$ for an estimated R^2 equal to .05 (Round 4). As both sample sizes fell considerably short, the actual power was estimated given the existing sample sizes. It was returned at .46 for Round 3 and .39 for Round 4. Although it was not as well powered as Round 3, Round 4 was selected as the final model as it achieved better balance among covariates. This was important as estimating marginal effects in a survival analysis is not recommended in models with covariates (Griefer, 2021).

The pre- and post-covariate balances for Round 4 matched sample are presented in Table 10. Overall, balance was achieved for all categories of risk level, sentence type and crime type. Furthermore, balance was improved between the samples for all other covariates considered, except for the high school education level, which experienced a slight reduction in balance between the samples.

¹⁵ Round 1: Risk only; Round 2: Risk and sentence type; Round 3: Risk and crime type; Round 4: Risk, crime type and sentence type.

¹⁶ As generalized linear models do not have a true R-square reflecting the proportion of variance explained by the predictors, this represents Efron's pseudo-R-square. For both Round 3 and Round 4, it was calculated by predicting group membership from the covariates risk, sentence type, crime type, age at EOS, ethnicity, sex and education. The R-square decreased for Round 4 given the improvements in covariate balance.

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Table 10

Covariate Balance in the Unmatched and Final Matched Sample

Variable	Unmatched				Matched				% Improve
	Parole N=188	EOS N=144	SMD	eCDF Mean	Parole N=86	EOS N=86	SMD	eCDF Mean	
Risk									
Low	0.22	0.07	0.37	0.15	0.12	0.12	0.00	0.00	100.0
Low-Moderate	0.26	0.15	0.24	0.10	0.21	0.21	0.00	0.00	100.0
Moderate-High	0.36	0.41	-0.11	0.05	0.49	0.49	0.00	0.00	100.0
High	0.16	0.37	-0.55	0.20	0.19	0.19	0.00	0.00	100.0
Sentence Type									
Misdemeanor	0.34	0.57	-0.50	0.23	0.49	0.49	0.00	0.00	100.0
Felony (D, Enhance Original)	0.51	0.32	0.38	0.19	0.40	0.40	0.00	0.00	100.0
Felony (B, C)	0.15	0.11	0.12	0.04	0.12	0.12	0.00	0.00	100.0
Crime									
Drug	0.23	0.08	0.36	0.15	.06	.06	0.00	0.00	100.0
Property	0.35	0.23	0.26	0.12	.03	.03	0.00	0.00	100.0
Violent	0.27	0.52	-0.58	0.25	.44	.44	0.00	0.00	100.0
Public Order/Other	0.15	0.17	-0.05	0.02	.20	.20	0.00	0.00	100.0
Ethnicity									
Black or Other	0.28	0.35	-0.16	0.07	0.24	0.29	-0.10	0.05	35.6
White	0.72	0.65	0.16	0.07	0.76	0.71	0.10	0.05	35.6
Sex									
Male	0.84	0.94	-0.27	0.10	0.83	0.91	-0.22	0.08	16.2
Female	0.16	0.06	0.27	0.10	0.17	0.09	0.22	0.08	16.2
Age									
Age at EOS	35.63	33.86	0.17	0.13	36.02	35.11	0.09	0.04	0.04
Education									
Less than High School	0.16	0.28	-0.32	0.12	0.13	0.24	-0.32	0.12	1.6
High School	0.76	0.65	0.25	0.11	0.78	0.65	0.30	0.13	-18.6
Post Secondary	0.06	0.03	0.15	0.04	0.06	0.05	0.05	0.01	67.7
Unknown	0.02	0.04	-0.21	0.03	0.03	0.06	-0.19	0.02	9.5

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In addition to the SMD evaluation, the demographic information for all variables is presented in Table 11 for the matched sample.¹⁷ The information confirmed that balance is improved on important covariates in the matched sample. Notably, there were some differences in trends from those observed in the unmatched sample. In particular, there was a lower proportion of high risk JIPs in the EOS group in the matched sample as compared with the unmatched sample, and similarly, a lower proportion of low risk JIPs in the parole group in the matched sample as compared with the unmatched sample. Furthermore, violent JIPs accounted for a greater proportion of parole JIPs in the matched versus unmatched samples, but a lower proportion of EOS JIPs. These examples underscored how the estimand of interest is based on the ATM, which may not correspond to a true population. Ultimately, balance and sample size appeared reasonable to proceed with estimating the effects of parole on charge outcome given the balance achieved in the covariates of interest.

¹⁷ See Table 3 in *Results: Descriptive Statistics and Group Differences* for the frequencies in the unmatched sample.

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Table 11

Sociodemographic Characteristics in Matched Sample, by Group

Item	EOS N = 86		Parole N = 86	
	%	n	%	n
Risk				
Low	11.6	10	11.6	10
Low-Moderate	20.9	18	20.9	18
Moderate-High	48.8	42	48.8	42
High	18.6	16	18.6	16
Sentence Type				
Misdemeanor	48.8	42	48.8	42
Felony (D, Enhance)	39.5	34	39.5	34
Felony (B, C)	11.6	10	11.6	10
Crime Type				
Drug	5.8	5	5.8	5
Property	30.2	26	30.2	26
Violent	44.2	38	44.2	38
Public Order or Other	19.8	17	19.8	17
Sex				
Female	9.3	8	17.4	15
Male	90.7	78	82.56	71
Education				
Less than High School	24.4	21	12.8	11
High School or equivalent	65.1	56	77.9	67
Post secondary	4.7	4	5.8	5
Missing	5.8	5	3.5	3
Ethnicity				
Black or Other	29.1	25	24.4	21
White	70.9	61	75.6	65

Predicting Post Sentence Survival Rates with Cox Proportional Hazards Survival Analysis

Using the matched sample, a Cox Proportional Hazards survival regression model was fit to the data predicting the rate of post sentence charges, beginning at the date of discharge for both groups. Overall, of the $n = 86$ people in the EOS group, 44.2% ($n = 38$) experienced a charge post sentence, as compared with 32.5% ($n = 28$) with a post sentence charge of the parole group. The median time followed for the EOS group was 681 days, as compared with 571 days for the parole group, indicating greater time at risk on average for the EOS group. The median time to charge (of those with a charge) was 215.5 days for the EOS group and 218 days for the parole group.

As per Table 12, group had a non-significant marginal effect on post sentence charge ($HR = .76, RSE=.24, p = .24$). The Hazard Ratio of .76 indicated a non-significant marginal effect point estimate, wherein the hazard of being charged on a given day was 24% less for a person in the parole group than for a person in the EOS group.

Table 12

Cox Proportional Hazards Regression Survival Analysis Predicting Post Sentence Charges

Variable	<i>B (RSE)</i>	<i>Wald</i>	<i>Exp(B)</i>	95% Confidence Interval for <i>Exp(B)</i>		<i>c (SE)</i>
				LL	UL	
Parole Group	-.28 (.24)	1.38	.76	.47	1.2	.54 (.03)

RSE = Robust Standard Error based on cluster subclass. *c* = Harrell’s c index. *Note.* EOS is reference group.

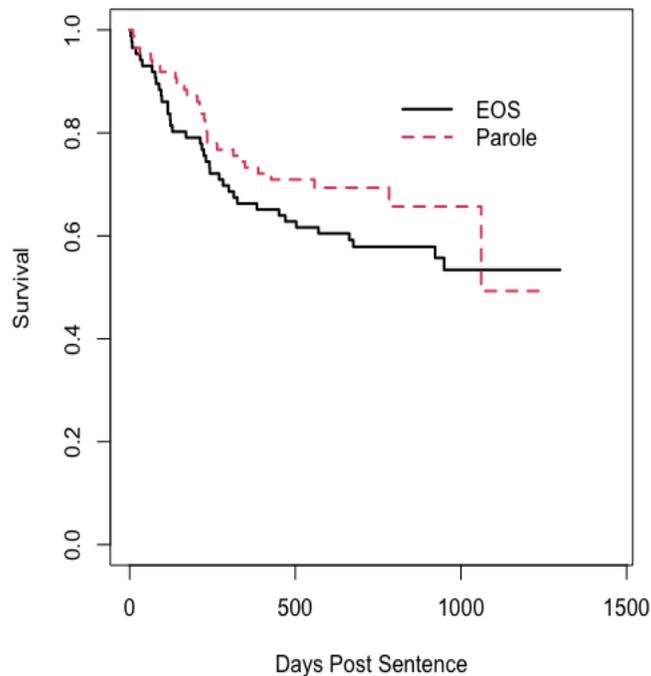
Figure 2 demonstrates the model-predicted survival rates by group over time. Visually, JIPs in the parole group had higher predicted survival rates until just over 1,000 days post sentence, whereafter the parole group had slightly lower predicted rates of survival. The model as such violated the proportional hazards assumption, although this violation was not statistically significant ($\chi^2=0.52, 1, p = .47$). According to Allison (2014), the importance of the proportional

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hazards assumption is exaggerated, and results may still be interpreted from the model. Model concordance was fractionally better than chance ($c = .541, SE = .03$), indicating that a person with a longer survival time was predicted to have a longer survival time by the model for 54.1% of cases. The AIC for this model was 639.55.

Figure 2

Predicted Survival Rates for EOS and Parole Groups Across Days Post Sentence



Life tables also provided important context for the present survival analysis. As per Table 13, parolees had a higher proportion surviving to the next time interval given reaching the start of the present interval, for all but the last two intervals (beginning on day 915 post sentence). Here, the parole and EOS group had similar proportions surviving. Notably, these estimates were affected by low frequencies of failures which yielded a sizeable impact on survival estimates.

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Table 13

Life Tables of Survival Functions for Post Sentence Charges at 6-month Intervals

Group	Interval		Beginning Total	Charges	Lost	Survival	SE	95% CI	
	Start	End						LL	UL
EOS									
	0	183	86	18	0	.79	.04	.69	.86
	183	366	68	11	0	.66	.05	.55	.75
	366	549	57	4	0	.62	.05	.51	.71
	549	732	53	3	8	.58	.05	.47	.68
	732	915	42	0	15	.58	.05	.47	.68
	915	1,098	27	2	9	.53	.06	.40	.64
	1,098	1,281	16	0	14	.53	.06	.40	.64
	1,281	1,464	2	0	2	.53	.06	.40	.64
Parole									
	0	183	86	11	0	.87	.04	.78	.93
	183	366	75	12	0	.73	.05	.63	.81
	366	549	63	2	16	.71	.05	.60	.79
	549	732	45	1	22	.69	.05	.57	.78
	732	915	22	1	14	.64	.07	.50	.75
	915	1,098	7	1	3	.52	.12	.28	.72
	1,098	1,281	3	0	3	.52	.12	.28	.72
	1,281	1,464	0						

Sensitivity Analyses

Several post-hoc analyses to examine the residuals and model sensitivity were also conducted to determine consistency of the modelled effect under various conditions and modifications. Residual analyses can expose areas of poor model fit. Martingale residuals were plotted against the covariates used in the matching process (risk, crime type, and sentence type), as well as group to explore trends, with no patterns revealed. Deviance residuals plotted against

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survival days indicated that the model did not predict equally across all timepoints (see Figure B1 in Appendix B). However, a revised model to permit group as a time-varying coefficient using annual break points worsened model fit (AIC = 938.51, as compared with the AIC for the original model = 639.55) and therefore was not further considered. A Weibull distribution to account for accelerated time to failure was also fit to the data, but also worsened model fit (AIC = 1,093.23).

Furthermore, although the inclusion of covariates in the original model failed to improve model fit (AIC = 642.10; see Table B1 in Appendix B for parameter estimates), it did substantially improve the model concordance (c index = .65, SE = .035). Furthermore, while a residual analysis of this model still suggested that the model did not predict evenly across time (with greater residuals observed earlier post sentence), it removed much of the observed pattern, suggesting a better model overall (see Figure B2 in Appendix B). Notably, the estimated effect of parole remained similar (HR = .76, RSE = .25), although importantly this now reflects an effect which is conditional on other covariates in the model as opposed to a marginal effect of treatment.

Interaction effects were also explored for the primary covariates with group on survival time: risk, crime type and sentence type. Notably, this is exploratory research given that Grierer (2021) recommends moderation effects be conducted using logistic regression. No significant relationships were observed for interactions between group and risk (high risk versus all other risk levels) or group and crime type (violent crime versus all other crime types), however, a significant interaction was found between group and sentence type (misdemeanors versus felonies; see Table 14 for parameter estimates).

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Table 14

Parameter Estimates for Survival Models with Interaction Terms Predicting Post Sentence Charges

Variable	<i>B</i>	<i>RSE (B)</i>	<i>HR</i>	95% Confidence Interval for <i>Exp(B)</i>	
				LL	UL
Parole Group ^a	-.28	.25	.76	.47	1.2
High Risk ^a	.13	.20	1.14	.77	1.6
Parole Group ^b	-.57*	.24	1.77	.35	.90
High Risk ^b	-.54	.48	1.72	.23	1.5
Group*High Risk ^b	1.38	.76	.25	.90	17.60
Parole Group ^a	-.31	.24	.73	.46	1.18
Violent Crime ^a	-.41	.25	.67	.41	1.10
Parole Group ^b	-.65*	.28	1.92	.30	.91
Violent Crime ^b	-.80*	.34	2.22	.23	.88
Group*Violent Crime ^b	.90	.51	.41	.91	6.65
Parole Group ^a	-.26	.25	.77	.48	1.25
Misdemeanor ^a	.57*	.26	1.77	1.07	2.92
Group ^b	-1.78***	.51	.17	.06	.46
Misdemeanor ^b	-.27	.33	.77	.40	1.47
Group*Misdemeanor	2.31***	.60	10.11	3.12	32.70

^aModel 1. Represents parameters when entered without the interaction term. ^bModel 2. Represents parameters when entered in the model with the interaction term. *>.05 **> .01 *** *p* >.001. *Note.* EOS is the reference group.

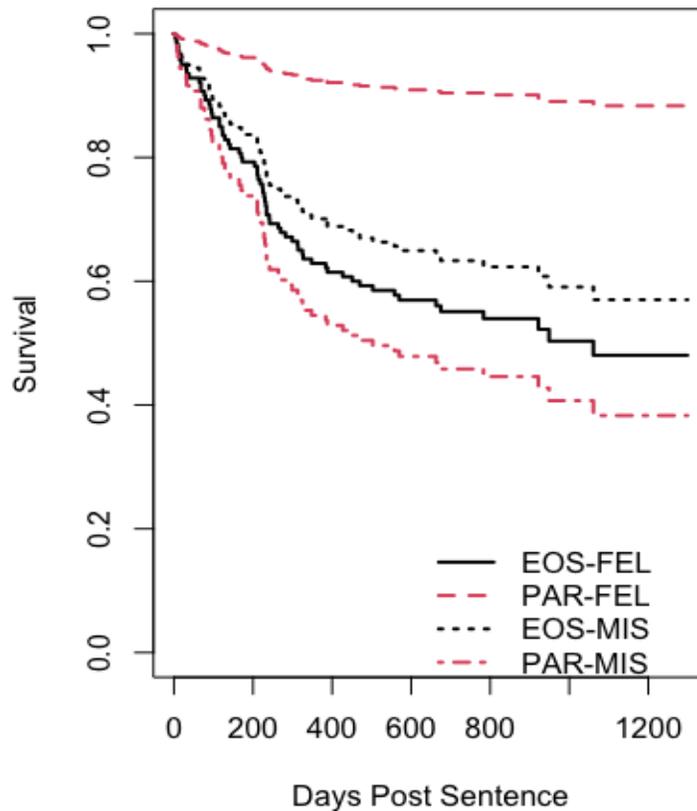
The relationship between group and sentence type is plotted below in Figure 3. Overall, results demonstrated that EOS JIPs serving a sentence for either a felony or a misdemeanor had similar predicted survival estimates, although with those serving a sentence for a misdemeanor

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were predicted to perform slightly better than those who had served a sentence for a felony. The trend among parolees was reversed, and with more sizeable effects. Parolees who had served a felony sentence had considerably improved predicted survival times than the other groups; whereas parolees who had served a sentence for a misdemeanor had the lowest predicted survival outcomes over time.

Figure 3

Predicted Post Sentence Survival Rates for EOS and Parole Groups by Sentence Type



EOS = End of Sentence group. PAR = Parole group.
FEL = Felony offence as original sentence type. MIS =
Misdemeanor as original sentence type.

Consistency over Alternate Time Period: Predicting Post Release Charges.

A sensitivity analysis was conducted to examine the consistency of effect in the period immediately following release; that is, comparing the period of active supervision of parolees with the post sentence period of EOS JIPs. Notably, the median days followed was 681 for the EOS group compared with only 167 for the parole group. The median days to charge among those with a charge was 215.5 for the EOS group, compared with 83 for the parole group. As per Table 14, The Hazard Ratio of .73 indicated a non-significant marginal effect point estimate, wherein the hazard of being charged on a given day was 27% less for a person being actively supervised than for a person in the EOS group in the period immediately following release.

Table 15

Cox Proportional Hazards Regression Survival Analysis Predicting Post Release Charges

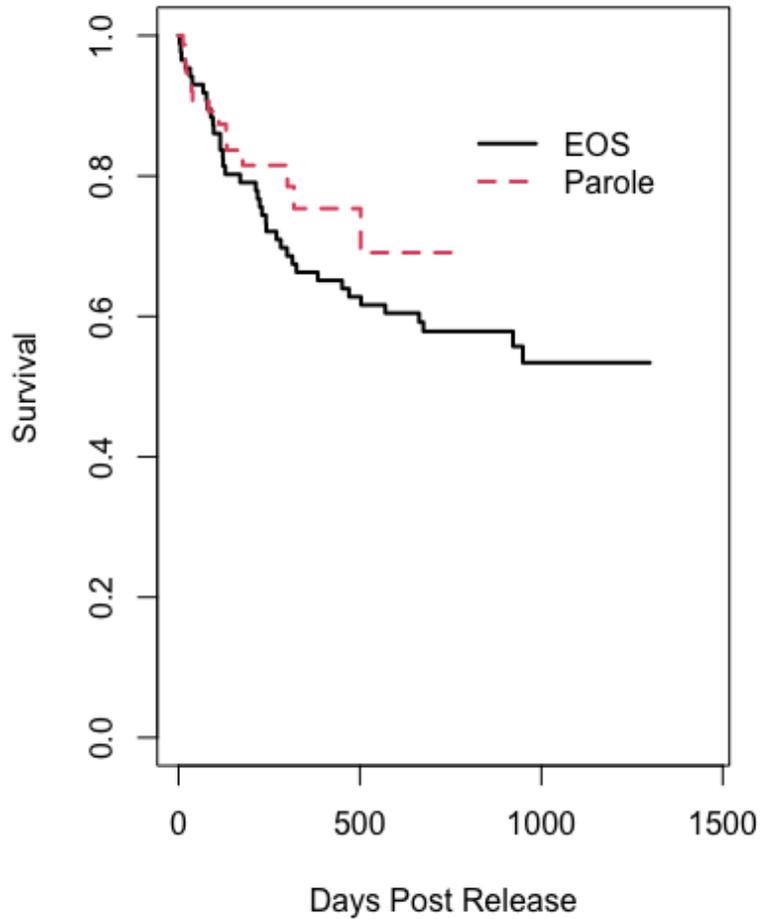
Variable	<i>B(RSE)</i>	<i>Wald</i>	<i>Exp(B)</i>	95% Confidence Interval for <i>Exp(B)</i>		<i>C(SE)</i>
				LL	UL	
Parole Group	-.31 (.32)	.92	.73	.39	1.38	.53 (.04)

RSE = Robust Standard Error based on cluster subclass. *C* = Harrell’s c-index. *Note.* EOS is reference group.

Figure 4 demonstrates the predicted survival estimates for those on active supervision (parole group) as compared with those released at EOS. Although the graph suggests a violation of the proportional hazards assumption, this was not statistically significant ($\chi^2 = 0.77 (1), p = .78$).

Figure 4

Survival Estimates Predicting Charges by Group in Post Release Period



To help clarify the trends, a life table examined the survival function of actively supervised and EOS JIPs post release at 3-month intervals. Table 15 presents these results. Notably, parolees being actively supervised had higher survival functions at each increment, although the overlapping confidence intervals suggested that these differences were not significant at any time period.

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Table 16

Life Tables of Survival Functions for Post Release Charges in 3-month Intervals

Group	Interval		Beginning Total	Charges	Lost	Survival	SE	95% CI	
	Start	End						LL	UL
EOS									
	0	92	86	10	0	.88	.03	.79	.94
	92	183	76	8	0	.79	.04	.69	.86
	183	274	68	7	0	.71	.05	.60	.79
	274	366	61	4	0	.66	.05	.55	.75
	366	458	57	2	0	.64	.05	.53	.73
	458	549	55	2	0	.62	.05	.51	.71
	549	640	53	1	3	.58	.05	.49	.70
	640	732	49	2	5	.58	.05	.47	.68
	732	824	42	0	7	.53	.05	.47	.68
	824	1,372	35	2	33	.53	.05	.41	.64
Parole									
	0	92	86	8	22	.89	.04	.80	.95
	92	183	56	4	15	.82	.05	.70	.90
	183	274	37	0	9	.82	.05	.70	.90
	274	366	28	2	4	.76	.06	.61	.86
	366	458	22	0	8	.76	.06	.61	.86
	458	549	14	1	3	.70	.08	.51	.83
	549	640	10	0	8	.70	.08	.51	.83
	640	732	2	0	1	.70	.08	.51	.83
	732	824	1	0	1	.70	.08	.51	.83

Logistic Regression and Moderation Analyses Predict Post Sentence Charges at set Follow-Up Times

Logistic regression analyses were conducted on the matched sample to further explore the effects of parole at various timepoints and to explore moderation analyses, both in terms of replicating the observed interaction between group and sentence type, as well as exploring interactions between group with risk and protective factors. Grierfer (2021) noted the importance of having balance on covariates of interest in the moderation analyses. As such, only the first three timepoints were used in the moderation analyses, as all of those in the matched sample had outcome information available. Marginal effects were again estimated to obtain baseline effect estimates, using a bootstrap method without covariates (see Table 16), then with covariates for additional sensitivity and verification.

Table 17

Univariate Logistic Regression Parameters Predicting Post Sentence Charge at 3, 6, and 12 Months

Variable	OR	Bias	SE	95% Confidence Interval for OR	
				LL	UL
3 months					
Parole Group	.57	.09	.41	.19	1.61
6 months					
Parole Group	.55	.05	.26	.23	1.27
12 months					
Parole Group	.72	.04	.24	.40	1.32

OR = Odds Ratio. Parameter estimates derived from the univariate model and represent estimated marginal effects. Note. Bootstrap estimates may vary slightly with each estimation. EOS is reference group.

For all time periods, results for the effect of group were fairly stable when comparing the models including and excluding covariates (see Table B2 in Appendix B). This was expected

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considering the samples were already balanced. As with the survival analysis, the effect of group was not significant at any timepoint. This was despite sizeable *OR* point estimates at three, six and twelve months. As with the survival analysis, the effect of group appeared to wane over time.

Moderated Logistic Regression Analyses Predicting Post Sentence Charges

A key question in this research was to explore *for whom* parole may have an effect, particularly regarding need and protective factor profiles. Therefore, in addition to conducting a sensitivity analysis on the interaction effect between group and sentence type, interactions between group and stable need areas or protective factors for the same time periods were explored. The purpose was to determine if parole moderated the effect of needs or protective factors on charge outcomes. This was exploratory research, and as group was not a significant predictor, results are tentative and should be considered only for hypothesis-testing purposes. For these analyses, missing data was an issue in that JIPs missing DRAOR or SDAC-21 information did not have any of the variables required for the moderation; 23.8% of the matched sample, $n = 41$). As such, any participants missing need or protective factor information from the matched sample were excluded. Data were then re-matched on the original covariates (risk, crime type and sentence type), resulting in a final second matched sample of $n = 55$ EOS and $n = 55$ parole JIPs. Balance was assessed for all variables, including DRAOR variables and was satisfactory (see Table B3 Appendix B).

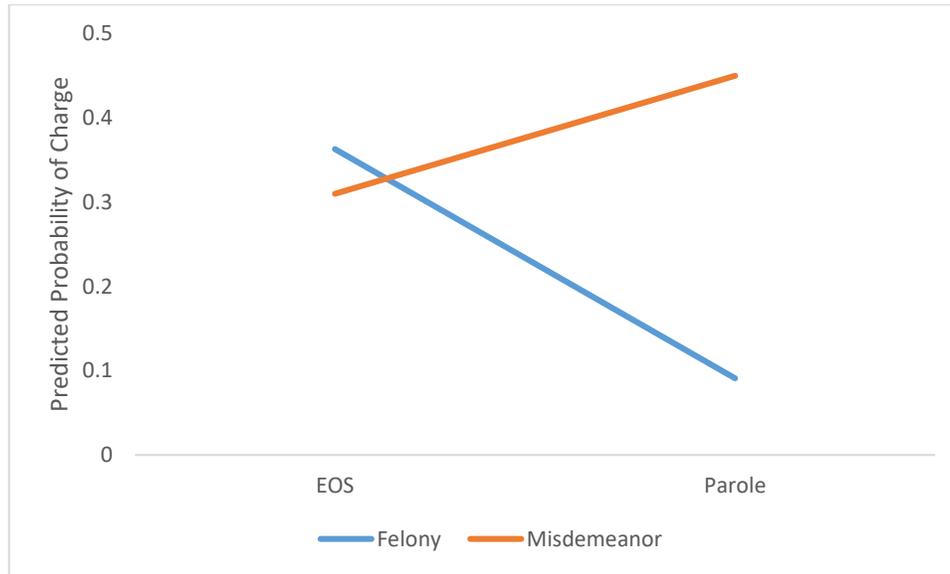
As per Table B4 in Appendix B, the interaction between group and sentence type was not significant at 3 or 6 months but was significant at 12 months. Figure 5 below demonstrates the relationship at 12 months and supports the information from the survival analysis: the difference between the predicted probability of charge by sentence type is greatest for parolees, wherein

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parolees who have served a sentence for a misdemeanor have higher predicted charge rates than those who had served a felony sentence.

Figure 5

Predicted Probability of Post Sentence Charge at 12 Months by Group and Sentence Type



Aside from sentence type, only two variables of the need and protective factors¹⁸ suggested an interaction effect with group at various follow-up timepoints that may provide insight into how parole affects outcome, presented in Table B4 in Appendix B. The presence of a need in problem solving at 12 months, and the presence of a prosocial identity at 3- and 6-months post sentence demonstrated significant¹⁹ interactions with group. As per Figure 6, the effect of a problem-solving need on the predicted probability of charge was the greatest for the EOS group, whereas the difference in the predicted probabilities of charge was smaller for parolees. Those with a problem-solving need identified had higher predicted probabilities of

¹⁸ See *Methods: Materials* for the complete list of need and protective factors examined.

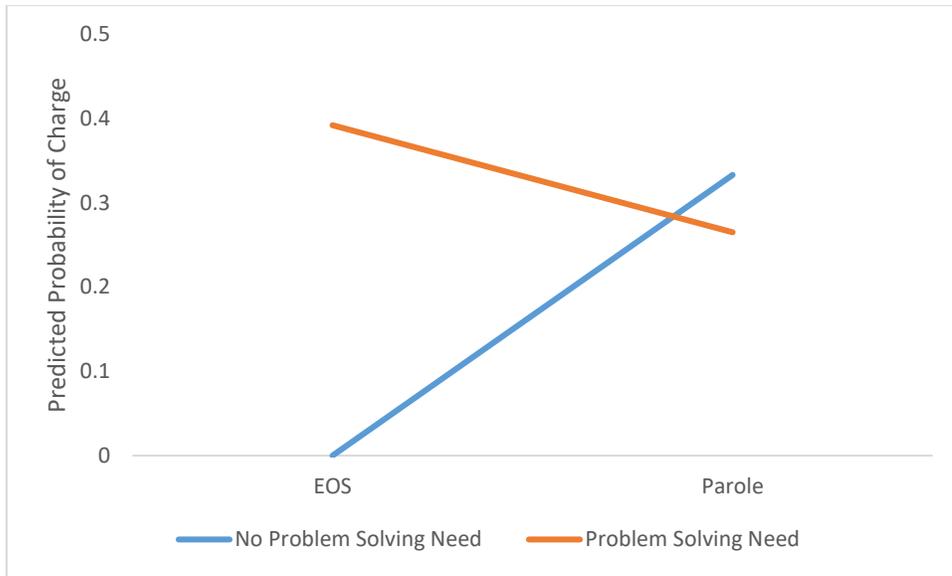
¹⁹ Significance at alpha = .05. Notably, family-wise error corrections were not applied given the exploratory nature of these moderation effects. Effects should be considered as hypothesis-generating only.

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charge in the EOS group than in the parole group, however the predicted probability of charge was similar for parolees with and without a problem-solving need.

Figure 6

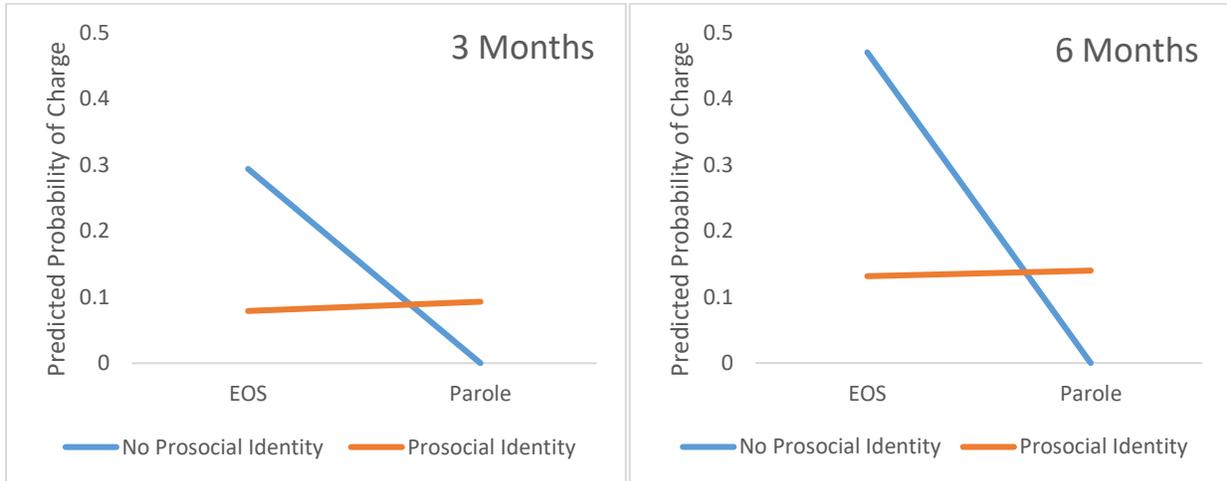
Predicted Probability of Post Sentence Charge at Levels of Group and Problem-Solving Need at 12 months



For those with a prosocial identity, trends were similar at both 3- and 6-months post sentence. As per Figure 7, while the predicted probability of charge remained the same for those with this protective factor regardless of group, those without the protective factor had a higher predicted probability of charge if released on EOS as opposed to on parole.

Figure 7

Predicted Probability of Post Sentence Charge at Levels of Group and Prosocial Identity, at 3- and 6-months



Post-hoc Analyses of Post Sentence Effects and Group Differences

Several additional analyses were performed to better understand how parole may function, by examining how features of parole affected post sentence outcome. To this end, differences in results within the parole group itself were explored, to determine if the length of the parole supervision period affected the likelihood of a post sentence charge, as well as if experiencing a parole incident or a charge during active supervision affected post sentence outcomes.

The mean number of days supervised for the parole group in the matched sample was 244.7 days ($SD = 207.7$). As per Table 17, length of period of parole supervision did not predict post sentence charge at any time period examined (3, 6, and 12 months), as per a series of logistic regression analyses with days supervised as the sole predictors, as well as with risk and sentence type included as covariates in the model. Although not the primary purpose of the analyses, risk and sentence type did emerge as potentially important within-group predictors of post sentence charge for parolees, particularly at later time points. Higher risk parolees were

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more likely to have a charge by 12 months post sentence ($OR = 1.33, SE = .14, p = .007$), although the effect of risk was not as pronounced at earlier timepoints. Furthermore, those with felony charges were less likely than those with misdemeanors to experience charges at 12 months post release, a trend which was again not evident at earlier timepoints.

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Table 18

Logistic Regression Parameters Predicting Post Sentence Charges for Parolees at Various Timepoints

Variable	OR	SE	p	95% Confidence Interval for <i>Exp(B)</i>	
				LL	UL
3 months					
Days supervised ^a	1.0	.00	.153	.99	1.0
Days supervised	1.0	.00	.71	.99	1.0
Risk	1.08	.15	.57	.82	1.42
S. T. (Misdemeanor) (REF)	-	-	-	-	-
S. T. (D/Enhance)	.30	.40	.372	.02	4.24
S. T. (B/C Felony)	1	(empty)			
6 months					
Days supervised ^a	1.0	.00	.06	.99	1.0
Days supervised	1.0	.00	.99	.99	1.0
Risk	1.23	.14	.07	.98	1.55
S. T. (Misdemeanor) (REF)	-	-	-	-	-
S. T. (D/Enhance)	.20	.22	.13	.03	1.61
S. T. (B/C Felony)	1	(empty)			
12 months					
Days supervised ^a	1.0	.00	.008	.99	1.0
Days supervised	1.0	.00	.671	1.0	1.0
Risk	1.33	.14	.007	1.08	1.64
S. T. (Misdemeanor) (REF)	-	-	-	-	-
S. T. (D/Enhance)	.07	.07	.003	.01	.41
S. T. (B/C Felony)	.11	.15	.11	.01	1.66

S.T. = Sentence type. ^a Represents univariate parameter estimates for days supervised.

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Additional post-hoc tests explored if incidents or charges during the period of active supervision predicted post sentence charges for parolees. Results of the Chi-square tests are presented in Table 18. Ultimately, while incidents were not associated with post sentence charges, receiving a charge during the period of active supervision was associated with receiving a charge post sentence. This was a weak to moderate association as per Cramer's V , and reached significance for the time period of 3 months post release.

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Table 19

Association of Incidents and Charges During Active Supervision with Post Sentence Charges for Parolees

Variable	Post Sentence Charge				$\chi^2(df)$	<i>p</i>	<i>V</i>
	Yes		No				
	%	n	%	n			
Incident during AS							
3 months							
Incident	9.1	2	90.9	20	.20 (1)	.65	.05
No incident	6.3	4	93.8	60			
6 months							
Incident	13.6	3	86.4	19	.02 (1)	.89	.01
No incident	12.5	8	87.5	56			
12 months							
Incident	7.3	6	72.7	16	.01 (1)	.95	.01
No incident	26.6	17	73.4	47			
Charge during AS							
3 months							
Charge	20.0	3	80.0	12	4.75 (1)	.03	.24
No Charge	4.2	3	95.8	68			
6 months							
Charge	26.7	4	73.3	11	3.13 (1)	.08	.19
No Charge	9.86	7	90.1	64			
12 months							
Charge	46.7	7	53.3	8	3.68 (1)	.06	.21
No Charge	22.5	16	77.5	55			

AS = Active Supervision.

Discussion

Introduction

The primary purpose of the current research was to determine the effect of parole on post sentence outcomes, comparing the rate of charges for the EOS and parole groups as of sentence discharge. As per the literature review, parole ostensibly offers many benefits to a criminal justice system; principally, reducing the financial cost associated with administering a sentence, managing high rates of incarceration via early release, and augmenting public safety by facilitating a person's re-entry into the community following a period of incarceration. Building on previous research that has established a small but consistent positive effect of parole post release (typically including the period of active supervision), the present research sought to explore the sustained effect of parole post sentence by examining the differences in rates of recidivism over time for former parolees and EOS JIPs. This study improved upon some of the methodological limitations in other studies, by theoretically distinguishing between the quality of the parole decision from the effect of community supervision, confirming the suitability of parole decision and supervision practices in the jurisdiction where the research was conducted and exploring any moderating effects between parole with criminogenic needs and protective factors on outcome.

Results Overview

Theme 1: Quality Parole Decisions and Supervision

Theme 1 sought to establish the validity of using Iowa as the jurisdiction in which to examine the question of parole effectiveness, by examining the quality of decision-making and supervision practices. Notably, quality of decision-making in this assessment was limited to examining JIP characteristics of those released as opposed to the adherence to the many facets of

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quality in the parole decision-making process (e.g., see Gamwell, 2016). Regardless, results generally supported the hypotheses, and supported the suitability of Iowa as a jurisdiction in which to conduct such research, although results nevertheless demonstrated that community corrections has room for improvement. Quality decision-making was supported for instance, in the lower risk profiles observed for the parole group over the EOS group. This suggests that parole is granted to JIPs who are good candidates for release, consistent with the stated standards of parole in Iowa (Iowa Code, ss. 906.4). However, curiously, there was little difference in the profiles of high risk JIPs released onto a period of parole as compared with those released at EOS, in terms of stable need areas, or protective factors. The primary difference between groups appeared to be the severity of crime for which JIPs were serving their sentence, wherein high risk JIPs serving a sentence for property offences were more likely to be released on parole, as compared with high risk JIPs serving sentences for other types of crime (such as for violent or drug offences). This suggests that parole decisions considered risk impact alongside risk propensity (e.g., the potential harm of recidivism to public safety among JIPs with a similar likelihood of recidivism). Overall, one cannot infer from this study design or these results that quality in all aspects of decision-making is present; yet, it does suggest that those released on parole are generally more suitable candidates than those released at EOS in accordance with the standards of parole in Iowa.

Furthermore, results demonstrated some support for the quality of supervision in Iowa, although with room for improvement. As with the assessment of quality decision-making, the assessment of quality supervision lacked information on the actual supervision practices used by the CSOs, and was instead based on practices of two of eight jurisdictions of the community corrections agency, and a review of JIP-level data. Results on the CRCC demonstrated

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variability between jurisdictions, with only one obtaining an overall rating of *Satisfactory*, the other in need of improvement. However, each jurisdiction had areas of strength, including the integration of risk assessments into practice and performance measurement. In terms of the *Supervision and Case Management* domain, there was some evidence of strong selection and hiring practices and use of information technology to promote evidence-based practices in both jurisdictions. Somewhat concerningly, professional development was lacking in terms of training provided in CCP and ongoing coaching opportunities. Quality assurance indicators were largely ‘somewhat met’ in both jurisdictions.

Notably, of the eight correctional agencies participating in the original CRCC validation (rated with respect to pre-pandemic circumstances), four were rated by external examiners as in need of improvement, three were satisfactory and one was fully satisfactory (Serin et al., 2021). As such, practices in Iowa appear consistent with a typical community corrections agency. While high quality in supervision can’t be confirmed from these results alone, further information in support of quality community supervision practices comes from the 2018 IDOC Annual Report, which emphasizes the importance of quality of and adherence to evidence-based practices, including strategic priorities of focusing resources on those most likely to reoffend and using evidence-based and research-informed practices to improve JIP reentry. The IDOC notes that evidence-based job competencies exist for key positions within the organization, including probation officers, correctional counsellors and front-line supervisors, and that its officers are provided with training to further develop key skills (although, as per the CRCC, this does not specifically focus on CCPs). Furthermore, tools are available to guide CSO interactions with JIPs; the DRAOR has been used in Iowa community corrections since 2010. This marks a commitment to EBP and a means of keeping CSOs focused on risk-relevant information during

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their sessions with JIPs. Such commitments reflect practices which are generally consistent with emphasizing quality community supervision based on existing recommendations (see *Introduction: Features of Quality Community Supervision* for a review).

Additionally, although results were not statistically significant, trends from the quantitative review generally supported the notion of quality supervision of parolees, insofar as low risk parolees were less likely to have incidents during their period of supervision than high risk parolees. As such, overall, there was some support for this hypothesis, although given the need for improvement in one jurisdiction, it is possible that improvements to the quality of supervision could yield a greater effect of parole on post sentence outcomes. Yet, in consideration of the overall evidence, it was deemed reasonable to proceed with the analyses of the effectiveness of parole, given the observed results for Theme 1, suggesting acceptable quality in the parole decision-making and supervision processes.

Theme 2: Effect of Parole on the Rate and Likelihood of Charges

This study hypothesized that parole would reduce the likelihood of receiving a post sentence charge, and reduce the post sentence rate of failure for JIPs released on a period of parole as opposed to those released at EOS, from the date of sentence discharge. Using a matched sample, the point estimates suggested that JIPs released onto parole had higher survival rates and lower probability of charges than JIPs released at EOS who shared similar demographic, risk and offence profiles, although these were not significant in the primary models. In the survival analyses, the estimated effect of parole was a 24% reduction in the rate of failure at any given time point (given the $HR = .76$). However the wide confidence intervals indicated that in a population with similar composition, this could range from a 53% reduction in the rate of post sentence charge ($HR\ LL = .47$), or to being 20% more likely to receive a post

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sentence charge as someone in the EOS group ($HR\ UL = 1.2$). Furthermore, the unimpressive concordance index indicated that only 54% of pairs were concordant, that is those with a lower risk profile (i.e., the parole group) had longer survival times. Notably, the EOS group had a greater mean time at risk (681 days compared to the 571 days for former parolees), reinforcing the need for a survival analysis to control for time. Additionally, results from the logistic regression at 3-, 6- and 1-year follow-up times were unsurprisingly consistent with the observed results in the life tables and survival probabilities noted in the Kaplan-Meier plot.

A sensitivity model with covariates included alongside group dramatically increased the observed concordance rate, and improved consistency in model predictions across time. This suggested that, despite matching the samples, group alone was not sufficient to explain outcomes and was conditional on the levels of covariates. Indeed, an exploration of interaction effects revealed that group had a significant interaction with sentence type, wherein parole was more effective for persons who had served a sentence for a felony offence (a more serious index offence with a longer sentence) than those who had served a sentence for a misdemeanor offence (a less serious index offence and shorter sentence). Overall, results from the primary survival analyses and related residual and sensitivity analyses were inconclusive regarding any effect of group on the rate of post sentence charges.

An additional sensitivity analysis sought to examine the consistency in the effect using an alternative follow-up period. The immediate effect of parole post release compared charges among parolees during the period of active supervision with those incurred by EOS JIPs post sentence, among JIPs with similar demographic, risk and offence profiles. There were limitations to this analysis, in that the time at risk for the parolees was considerably less than that for the EOS group. Furthermore, limitations in the sample building process (discussed below), meant

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that only JIPs with an EOS date on file were included. This may inadvertently have biased the active supervision results by failing to include those who experienced a charge on active supervision that did not have an EOS date within the time frame. As such, this is not a primary research question of interest in the present study, and included only to explore recidivism trends for comparison with previous research and an understanding of their function in the present sample. To this extent, an effect similar to that observed in the post sentence assessment was observed. While non-significant, JIPs released on to a period of parole had a lower rate of charges than JIPs released at end of sentence in the time immediately following release from an institution (for parolees, limited to the period of active supervision). This is consistent with previous research demonstrating lower rates of recidivism among actively supervised parolees (Ostermann, 2013; Ostermann et al., 2013).

Moderation Analyses. Results from the logistic regression moderation analyses affirmed the moderation of the parole effect by sentence type, with parolees having served a sentence for a felony offence appearing to benefit most from a period of parole. Conversely, parolees having served a sentence for a misdemeanor offence had the highest predicted probability of post sentence charge of all groups. Two additional moderation analyses also yielded some insight into the potential functioning of parole. For those with a problem-solving need, and for those without prosocial identity, parole appeared to have a moderating effect. That is, while these factors were important in distinguishing the predicted probabilities of charge for those released at EOS, there was minimal difference in the predicted probability of charge for those in the parole group. In the case of problem-solving need, it is possible that the period of supervised reintegration offered a chance for parolees to practice and improve this skill or to learn alternative coping techniques. In the case of the reduced effect of the prosocial identity, results were curious in that the predicted

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probability of charge was lower among those on parole without a prosocial identity than for those with. Regardless, the effect of having a prosocial identity was greater for those released at EOS than for those released on parole (e.g., a larger difference in the predicted probabilities of recidivism for those with vs without noted strength in this area in the EOS group than in the parole group). In this way, it is possible that the act of parole supervision and parole supports was more beneficial for those lacking a prosocial identity. Possibly, a prosocial identity provides similar insulation from engaging in risky attitudes, behaviours or situations regardless of release type, whereas parole may help to foster similar skills in the absence of this orientation. Such results reinforce the notion that strengths contribute unique information to the prediction of outcomes, beyond known risk factors (e.g., Brown et al., 2020), and may be relevant to consider in parole decisions.

Ultimately, these results were exploratory and need to be interpreted with caution. As they were intended to explore the potential functioning of parole to generate hypotheses and directions for future research, a family-wise error rate was not formally applied. As such, even those results displaying significance at the $p < .05$ level are susceptible to Type I error inflation; that is, they may be the result of chance as opposed to being true effects. Nevertheless, the observed findings may provide insight into how parole functions, and should be considered as directions for future research, as discussed in a later section.

Post-hoc Analyses

The post-hoc analyses were intended to yield further insight into how parole may function, by examining if features of the parole supervision itself affected outcome among parolees. These analyses were exploratory, and results should be considered as hypothesis-generating only. The length of parole supervision was of interest, as an indication of dosage

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effect. It is possible that parole may work best among those with at least a certain number of days actively supervised, to achieve the most benefit from the reintegration services provided. Such conclusions have been drawn from previous research (e.g., Vandenberg, 2013; Ostermann, 2013). However, the results did not support an effect of the length of time of supervision in the present sample, nor that incurring an incident during the period of active supervision (an indication of risky behaviour) was associated with post sentence charges at 3, 6 or 12 months. This may indicate that incidents are either sufficient as a disciplinary tool to deter undesirable behaviour, or simply that are not related with the recidivistic behaviours. Notably, charges incurred during the period of active supervision were associated with post sentence charges, a significant effect at 3 months post sentence. Previous research has demonstrated that the period immediately following release is a risky time (Grattet et al., 2009), with most JIPs who fail doing so closer to release. The results from the present study within this context indicate that JIPs who incur issues immediately following release on active supervision follow a similar pattern post sentence. This reinforces the need for front-loading supervision in the period following release, to ensure that CSOs can respond to JIP needs and ideally manage risk prior to incidents occurring.

Comparison with Previous Research

Overall, results from the present study were inconclusive regarding the effect of parole, although the trends suggested that, despite being a non-significant difference, paroled JIPs had improved predicted post sentence survival rates until 1,000 days post sentence (just over 2.5 years). This is consistent with trends from other research that demonstrates a diminishing effect over time (Ostermann, 2015). Notably, the same trend was not observed in the comparison between actively supervised JIPs with those on EOS. Although the follow-up time for JIPs was quite restricted, and again despite the non-significance, this general trend is consistent with

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findings from Ostermann (2013) comparing actively supervised and EOS JIPs, wherein parolees under longer periods of active supervision had improved outcomes over EOS JIPs.

Technique Overview

The present study used one-to-one coarsened exact matching to balance the treatment (parole) and control (EOS) groups to assess the importance of parole in predicting post sentence charges. While this technique has considerable benefits (e.g., in terms of reducing model dependence, mimicking a blocked randomized trial), there are nonetheless limitations. The primary limitation is the estimand that was available in the present study. Trimming observations from the parole group which did not have a suitable match in the EOS group meant that the effects observed from the matched samples (e.g., results from the survival analyses and logistic regressions), do not correspond to any actual population. These are instead theoretical results that estimate the effect of parole, in the present sample. As such, while this permits an estimation of the marginal treatment effect thus allowing a general estimation of how parole affects outcome, it is relevant only to a specific group (e.g., those with characteristics similar to those in the matched sample) which does not correspond to an existing population.

This is defensible in the case of parole, as any result will depend on the suitability of the candidates released onto parole. For example, in the present study, although results were non-significant, trends suggested that parole may improve outcomes.²⁰ However, one would not necessarily expect that granting parole to more JIPs would inherently produce this effect. Quality parole decision-making relies on assessing the suitability, timing and conditions of release (Gamwell, 2016). It cannot be presumed that parole would have a consistent effect across JIPs regardless of parole-readiness (Polaschek et al., 2018; Wilson, 2009).

²⁰ The wide confidence intervals did not preclude the possibility that those in the parole group may actually have higher probabilities of charges based on the present model. As such, results must be interpreted with caution.

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Summary and Implications

This research was predicated on the idea that parole would demonstrate its optimal effect if quality in decision-making and supervision practices were demonstrated. Yet, the measure of quality in decision-making, in addition to the aforementioned limitation of assessing the characteristics of those assessed as opposed to the decision-making process, was also restricted to assessing such in relation to legislated requirements as opposed to theoretical best practices. To clarify, in typical indeterminate parole structures, the availability of parole is restricted to those who present as suitable candidates of release; that is, lower risk and need, and less likely to recidivate during their period of active supervision. From one perspective this is logical. A parolee is indeed still serving a sentence for a prior offence; thus, they have still not completely paid their debt to society for their original offence and the liberties of parole should be restricted to those deemed capable of completing their sentence as law-abiding citizens. From another perspective, this is at odds with best practices in rehabilitation to provide more services and support to higher risk JIPs. Essentially, parole's prospective public safety objective to support re-entry and reintegration is not available to the highest risk and need persons.

Overall, despite being inconclusive regarding the primary research hypothesis regarding the effect of parole on post sentence charges, this research produced several key findings and points for consideration. In a sample matched on key covariates, parole alone did not significantly reduce the probability or rate of post sentence charges. Yet, despite the non-significance of the finding, the point estimate, reflecting the average treatment effect of the treated in this matched sample, indicated that those in the parole group performed better post sentence than they would have had they been released at EOS. Further, survival models including covariates, and permitting an interaction between group and sentence type

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meaningfully improved model fit and concordance. Additional exploration in logistic regression revealed potential differentiation of effect of parole for those with and without problem-solving needs or protective prosocial identities. The implications are therefore that parole research should continue to identify the effect of parole by exploring additional variables that may have been omitted here. Ultimately, these findings suggest that the research on parole should continue to determine if parole has a sustained effect, and for whom. Furthermore, additional consideration should be given to the purpose of parole and if its purpose is supported by the structures presently in place. Travis and Petersilia (2001, p. 306) propose a model of parole which is better aligned with evidence-based practices, wherein, “(a) the completion of the prison sentence represents payment of a debt to society, and (b) every substantial period of incarceration should be followed by a period of managed reentry”. In this way, parole supervision is available to all JIPs returning to communities, and increases in the risky behaviour can be dealt with by way of graduated sanctions. This has the benefit of not interrupting the period of parole with a return to the institution for risky behaviour that does not meet the threshold of new criminal activity.²¹ Essentially, this concept would see parole available to more JIPs, including the highest risk and need groups; and that those on parole could benefit from more consistent reentry support which continues in the critical moments of elevated risk. Such a model has potential to improve the overall sustained effect of parole.

Limitations

This study relied on administrative data to answer the research questions, which presented some challenges in the sample building. Primarily, this sample represented all released JIPs during the time period, and while cases were restricted to those released from a New Court

²¹ According to the Council of State Governments (2019), in 2017, 14% of new prison admissions were for technical violations of parole.

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Commitment, it was possible that prior sentences may have included a period of parole. In this way, incomplete JIP history may have affected the purity of the groups. In practice, this means that some JIPs in the EOS group may have received a period of parole at some point in time.

A second limitation is that the primary estimand of interest (e.g., post sentence recidivism patterns) has some inherent complications. Namely, if a JIP being actively supervised in the community experienced a charge for a serious offence, they may not have been re-released in time to have another release record or end of sentence date, and as such would have been excluded from the sample.²² For this reason, although the immediate post-release effect has been examined as a main research question in previous research, it is included within the current study as a sensitivity analysis only. This is largely given that these limitations were thought to more greatly bias the actively supervised JIP sample. An EOS date was critical for inclusion in the parole group, representing the start of the follow-up period for the primary (post sentence) question of interest. Indeed, it was also important for the active supervision question, indicating the end of the follow-up period. However, the study design meant that JIPs who incurred revocations or charges during the period of active supervision and who did not have a subsequent EOS date within the time period would have been excluded. While this sample bias was deemed tolerable for the EOS group given that such charges would not have occurred during the follow-up timeframe of interest, these would have represented critical information for the active supervision group (e.g., would have theoretically excluded some JIPs with the outcome of interest), resulting in an undue sample bias. Relatedly, while this study was interested in the comparison of results between former parolees and EOS JIPs as of the date of sentence

²² Methodological challenges in parole research are not unique to assessments of post-sentence effectiveness. See Ostermann et al. (2020) for an overview of post-release challenges, including how measures of recidivism and the consideration of technical violation revocations can affect research conclusions.

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discharge, this meant that parolees would have benefited from a prosocial period in the community that was not available to the EOS group.

While some effort was taken in the present study to reduce any implications of this in the post sentence sample (e.g., by including JIPs revoked from parole provided they had a subsequent EOS date), future studies could improve upon these limitations by imposing a different data collection strategy or accounting for the prosocial time in community. Options would include requesting an 'EOS' cohort (as opposed to a release cohort), having longer timeframes for the release cohort to permit greater inclusion of JIPs who may have experienced negative outcomes during the period of active supervision, or by using prospective study designs.

Thirdly, the assessments of quality in decision-making and supervision were limited given the administrative nature of the data. While accounting for these aspects is important within parole effectiveness literature, the present study design accounted for the characteristics of parolees and those receiving incidents as opposed to the decision and supervision process informing these outcomes.

Additionally, missing data was an issue on several covariates of interest, namely those identifying needs and protective factors. This again stemmed from the administrative nature of the data: changes in data tracking meant that this information was only available for some JIPs. Furthermore, it was not all generated from the same tool. This may explain in part why results were not detected for the role of needs and protective factors in moderating the effect of parole on outcome. The SDAC-21 and DRAOR, though containing similar items, are administered at different points in time and by different staff. Assessments closest to release for all persons would have been ideal to ensure consistency in the ratings and the greatest association with outcomes (Lloyd et al., 2020).

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Lastly, the sample size for the matched sample was under-powered to detect an effect. While this was again a limitation stemming from the nature of the administrative data, future studies should ideally include a larger sample to improve the likelihood of detecting a significant effect, should such exist.

Future Directions

Future parole effectiveness research should continue to explore the effect of parole, accounting for the differences between actively supervised and post sentence parolees. While both lines of research have an important role in the effect of parole, they represent different research questions and employing methods that permit distinguishing these aspects is critical in this research area. Furthermore, future research should attempt to address some of the limitations described above, including methods which permit the inclusion of more JIPs with parole failures in the post sentence evaluation, and with a larger sample size to improve the power to detect effects if such exists.

The results from this research point to some areas future research. Specifically, the interaction between parole effect and sentence type should be further explored. Given that the post-hoc results did not demonstrate an effect of days supervised on parole effectiveness for parolees, it seems unlikely that this interaction is a direct result of sentence length. It is possible that JIPs who have served a sentence for a felony offence had improved access to correctional programming (possibly due to longer periods of incarceration), providing them with skills to practice in the community. Future research should strive to better account for interventions received prior to release, including if aspects of RNR were respected in programming, such as suitable treatment dosage in relation to risk level and targeting of criminogenic needs.

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Furthermore, future research should better account for the dual nature of parole, in respecting the requirement for quality in both parole decisions and parole supervision. Quality parole decisions are essential for ensuring that suitable candidates are released onto parole, with relevant conditions of release. Tools such as the Structured Decision-Making Framework (Serin et al., 2009), or the Release Proposal Feasibility Assessment-Revised (Wilson, 2009) can ensure that parole decisions are defensible and consider aspects relevant to a person's readiness for parole release. Research could pursue the unique role of quality decision making further by establishing the role of structured decision making with JIP outcomes. This could be done by comparing grant rates and JIP outcomes (including false positive rates, i.e., those predicted to succeed who do not) in a pre- and post- implementation period of a structured decision making framework.

Quality in supervision is a distinct but critical element in need of greater attention in parole effectiveness research. Previous research examining the effect of active supervision has not considered the quality of the supervision received and has assumed that all supervision is equal. This assumption has proved incorrect in accordance with meta-analytic research which has clearly demonstrated that CSOs who conduct sessions in alignment with RNR and CCP principles achieve greater reductions in recidivism (Chadwick et al., 2015; Drake, 2011). However, standard practices among CSOs do not always demonstrate applying these practices with fidelity (Bonta et al., 2008). While the present study made attempts to comment on and assert the general quality of supervision within the jurisdiction, variations in practice by CSOs are inevitable and should be considered in future research. As such, it is possible that conducting studies which better account for these factors, potentially through multilevel study designs that

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can distinguish results by CSO characteristics may provide relevant insight into the functioning of parole, and features of quality supervision which make it most successful.

Both components of quality decisions and quality supervision should be present to clearly understand the effect of parole in post-release and post-sentence outcomes. These are distinct components of parole, which are both essential to its effectiveness. Quality in both aspects is required to firmly establish the possible effects of parole on improving reentry outcomes. While attempts were made in the present study to establish the suitability of Iowa in both these regards, future studies can bolster the methods used to improve confidence in the actioning of best practices. This in turn will yield greater confidence in detecting the upper bounds of any rehabilitative effect of parole. Prospective studies may be more useful in better accounting for these factors. One could imagine a study in which training is provided to half of decision-makers and half of CSOs, with JIPs randomly assigned to those with training and those operating under the status quo. Such a design would permit greater confidence in drawing conclusions about the effectiveness of parole, whilst ensuring that it is operating as intended.

Additionally, future research should continue to explore the ways in which criminogenic needs and strengths affect the functioning of parole. These are key targets for interventions that are empirically related with recidivism outcomes. As such, understanding how these may be addressed during a period of parole to improve reintegration, and potentially post sentence outcomes, is of interest within this field of research (e.g., Serin et al., in press-b). Finally, theories of desistance should also be considered and better integrated into parole effectiveness research (Serin & Lloyd, 2019). Serin & Lloyd (2009) note that many JIPs with a history of criminal acts eventually desist. They posit that the change to desistance stems from an interpersonal shift to acknowledging the rights of others and an intrapersonal shift to improve

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agency and self-restraint, alongside additional environmental factors that help to facilitate this change. Improving the understanding of how parole may assist JIPs undergoing the desistance process, and how such relates with RNR-related factors of crime acquisition, may provide additional information on how parole benefits public safety, and how it operates in practice (Serin & Lloyd, 2019).

Conclusions

This study set out to expand the body of parole research, and augment the understanding of how parole works, for how long and for whom. Results were ultimately inconclusive with respect to these questions. Trends suggested that paroled JIPs may have improved predicted survival rates as compared with EOS JIPs with similar risk, crime and sentence types, yet differences were not significant. Results from this study are largely hypothesis generating and improving upon the methodology as detailed in the *Limitations* and *Future Directions* may assist in answering these questions with greater certainty. Regardless, these remain important questions and research should continue in this area to help clarify the function of parole, and the circumstances under which it is most effective. Such research would help to ensure that criminal justice systems are receiving the maximum benefit from parole structures and profiting from its potential to reduce the costs of sentence administration and improving public safety through effective reintegration of JIPs.

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Appendix A

Corrections Report card

Community Corrections Report Card

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Agency Information & Recidivism

Agency _____

Federal _____ **State** _____ **County** _____ **Local** _____

Number of probationers/parolees under supervision _____

Number of probation/parole officers _____

Do probation/parole officers have peace officer designation **Yes/No**

Demographic:

_____ **Primarily Urban**

_____ **Primarily Rural**

_____ **Mixed**

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Gender:

_____ % male

_____ % female

_____ % transgendered

Race/ethnicity:

_____ % Black

_____ % White

_____ % Hispanic or Latino

_____ % Native Hawaiian and Other Pacific Islander

_____ % Native American/Indian/Indigenous

_____ % Asian

Risk Profile:

_____ % low

_____ % low-moderate

_____ % moderate

_____ % high

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Base rate for current risk scale (any return to jail/prison):

_____ expected failure rate for low risk cases

_____ expected failure rate for low moderate risk cases

_____ expected failure rate for moderate risk cases

_____ expected failure rate for high risk cases

Outcome (past 12 months – pre Covid-19 – March 2020):

	Low risk	Low- Moderate risk	Moderate risk	High risk	Total
Overall success rate					
Overall return to jail rate					
Technical violation rate – not resulting in return to jail					

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Technical violation rate – resulting in return to jail					
New felony crime conviction while on probation					
New felony crime arrest rate while on probation					
New violent crime arrest rate while on probation					
New violent crime conviction while on probation					

Quality Assurance Content Areas

1. Organizational readiness

- a. Policy reflective of EBP
- b. Demonstrated commitment by senior staff (communiques, etc.)
- c. Rewards and support for EBP

0 = not met; 1 = somewhat met; 2 = fully satisfactory

Items that are highlight are considered essential for a fully met rating. Hence overall ratings are:

Fully satisfactory: ≥ 80% of essential items; Satisfactory: 65 to 79% of essential items; Needs

Improvement: < 65% of essential items).

Description	0,1,2
Policy	
1. Policy emphasizes EBP (RNR, CCP, program dosage)	
2. Policy links actions to EBP approaches especially regarding assessment, case management and programming	
3. Policy requires frontloading of supervision resources	
TOTAL: /6	
Demonstration of commitment	
1. Communiques in support of RNR	
2. Communique discussing quality assurance efforts, not just audits	
3. Meetings where senior managers highlight the need for case management and programming in alignment with RNR	
4. Senior staff highlight in writing and in meetings the need to integrate the results of risk assessments into case plans and contacts, not simply score them	

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5. Assesses staff competency levels related to EBP guidelines	
6. Develop staff who do not meet EBP guidelines (additional resources - coaching, training)	
7. Identify and publicly support and reward champions who meet and exceed EBP guidelines	
8. Sharing of key information with CJS stakeholders	
TOTAL: /16	
Additional support for EBP – funding, staffing	
1. Budgets developed in support of EBP (assessing programs, funding effective programs, not funding ineffective programs)	
2. Allocate more funding to sites with better outcomes	
3. Allocate more funding to programs with better outcomes	
4. Realign funding according to established performance indicators	
Total: /2	

2. Risk assessment

- a. Specialized risk assessments
- b. Linking risk assessment to case management practice

Description	0,1,2
Reliability & Validity	
1. Measures static factors (≥4 items that measure static risk)	
2. Measures dynamic factors (≥5 of Central 8)	
3. Measures acute dynamic factors	
4. Measures strengths	

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5. Measures criminal thinking patterns	
6. Evidence of inter-rater reliability on risk instrument	
7. Evidence of validity (AUC > .70) for each instrument	
8. Evidence of validity (AUC > .65) for each instrument	
9. Evidence of validation by external researchers	
10. Evidence of validation for multiple outcomes	
11. Validation evidence within last 5 years	
12. Separate risk instrument for sex offending	
13. Separate risk instrument for domestic violence	
14. Separate risk instruments for meaningful subpopulations <i>or</i> validity with subpopulations (women, Indigenous, Black)	
15. Norms for various subgroups (cut-offs for outcomes)	
Total: /24	
Practice Issues	
1. Training provided to complete risk instruments	
2. Credentialing prior to completing risk assessments in practice	
3. User manual for each risk instrument	
4. Re-assessment guidelines (more than annually; if substantive change in case)	
5. Ongoing coaching/mentoring regarding risk assessment	
6. Ongoing measurement of scoring accuracy	
7. Ongoing efforts to improve scoring accuracy	
8. Clear guidelines for linking risk assessment to case planning and contacts	
9. Risk assessment information shared with key criminal justice partners	

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10. Risk assessment shared with clients	
11. Clear and valid guidelines for using overrides of risk assessment instruments	
12. Staff conduct risk re-assessments	
13. Agency tracks risk re-assessment scores to inform practice	
Total: /18	

3. Programming

- a. Internal and external programming; individual and group programming
- b. Management Plan

Description	Internal Programs 0,1,2	Vendor Programs 0,1,2
Program Information		
1. Program follows an empirically validated theoretical model		
2. Programs target primary criminogenic needs (cognitions, peers, self-regulation)		
3. Programs target other criminogenic needs (housing, employment, substance abuse)		
4. Programs target primary criminogenic needs 3 times as often as to other criminogenic needs		
5. Programs attempt to increase probationer/parolee strengths		
6. Program follows principles of effective reinforcement		
7. Standardized program curriculum/program manuals available		
8. Responsivity factors considered systematically in curriculum		
9. Responsivity factors are considered (reading level, motivation, age, gender, trauma, culture)		
10. Responsivity factors considered systematically in admission criteria		

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11. Responsivity factors considered in pre-program primers		
Total: /14		
Fidelity		
1. Stable funding for programs		
2. Clinical supervision <i>or</i> coaching for program staff		
3. Standardized program curriculum/program manuals available		
4. Participant manuals available		
5. Presence of inclusion/exclusion criteria for program participation		
6. Program dosage varies by risk level of participants		
7. Credentialed clinical supervision <i>or</i> coaching for program staff - program expertise		
8. Credentialed clinical supervision <i>or</i> coaching for program staff - supervision expertise		
9. Specialized training of program staff		
10. Credentialing of program staff		
Total: /16		
Process Information		
1. Group programs provide for individual sessions with client probationer/parolee.		
2. Programming targets motivational enhancement in initial sessions		
3. Programming includes role play		
4. Programming includes homework		
5. Programing includes structured skill building		
6. Programming includes problem solving		

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7. Programming includes relapse prevention		
8. Groups co-facilitated		
9. Group programs not to exceed 8 probationer/parolee with 1 facilitator or 14 probationer/parolee with 2 facilitators		
Total: /16		
Evaluation		
1. Structured review of programs by agency and/or oversight agency		
2. Tracks attrition, completions		
3. Measures program aspects of program performance		
4. Evidence of change measures having predictive validity		
5. External review of contracted correctional programs (internal by this community corrections agency) using standardized approach		
6. External review of contracted correctional programs (external/contracted – not by this community corrections agency) using standardized approach		
7. Evidence of effect sizes > .10 (Cohen's d)		
Total: /8		

4. Supervision and case management

- a. Skills based training and supervision
- b. Modernization/OMS

Description	0,1,2
Selection/Hiring/Initial Training	
1. University degree required for POs	
2. Initial selection has knowledge requirement	

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3. Initial selection has skills competency requirement	
Total: /6	
Professional Development	
1. POs trained in Core Correctional Practice	
2. POs credentialed in Core Correctional Practice	
3. Ongoing coaching and mentoring provided	
4. Annual training provided (minimum 5 days)	
Total: /6	
Quality Assurance	
1. Workload formula informed by probationer/parolee risk level	
2. Caseload allocation informed by training specialization (gender, race, sex offenders, domestic violence)	
3. Quarterly review of Case Plan (Case Management Review) for consistency with risk assessment	
4. Review of PO overrides by executive leadership	
5. Review of the circumstances surrounding probationer/parolee failures to inform best practices	
6. Assessment of people, places, situations, things and thoughts (e.g., Offense chain to identify drivers, triggers) related to criminal behavior	
7. Develop strategies to enhance probationer/parolee motivation (related to drivers and triggers)	
8. Develop strategies to build probationer/parolee skills (related to drivers and triggers)	
9. Use of probationer/parolee handouts to facilitate change	
10. Standardized guidelines to address supervision noncompliance and violation behaviors	
11. Standardized guidelines to address supervision noncompliance and violation behaviors based on probationer/parolee risk and specialized group (SO, DV)	
12. Guidelines to link risk assessment to case planning and contacts	

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13. Quality assurance practices for Case Plan	
14. Formal requirement for collateral information to promote effective supervision	
15. Quality assurance to monitor/review application of Core Correctional Practice Skills in sessions	
16. Quality assurance to monitor/review balance of compliance versus change work in contacts	
17. Quality assurance to monitor/review contact length	
18. Guidelines provided regarding contact structure	
19. Considers cognitive restructuring to be an important component of sessions contacts	
20. Contacts include role play	
21. Contacts include homework	
22. Contacts include problem solving	
23. Contacts include relapse prevention	
24. Contacts include structured skill building	
25. Measurement of working relationship	
26. Capacity to examine probationer/parolee level outcome for individual POs	
Total: /24	
Information technology for case management	
1. Capacity to auto-populate report fields from case management system	
2. Navigation capacity in case management system to search risk and need domains (at the individual case level???)	
3. Capacity to track probationer/parolee failure (technical violations, new crimes, new violent crimes)	
4. Capacity to track intermediate probationer/parolee outcomes – positive urinalysis, missed sessions without a valid reason, program compliance/completion, electronic monitoring	
5. Capacity to track program referrals (dates, number of programs, type of program) and completion	

PAROLE EFFECTIVENESS

Total: /6	
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5. Performance measurement

- a. Recidivism and other outcomes
- b. OMS/Case level capacity

Description	0,1,2
1. Capacity to track discretionary level risk overrides	
2. Capacity to track discretionary level supervision overrides	
3. Quality assurance (independent review of files – not supervising officer) regarding risk assessment, case planning	
4. Capacity to examine multiple probationer/parolee outcomes (technical violations, new crimes, new violent crimes, time to failure) by probationer/parolee risk level	
5. Navigation capacity to search probationer/parolee outcomes at the PO and office level, while controlling for risk (LSI-OR, Static, Stable, Acute, ODARA) for men, women, Indigenous, Black probationer/parolee)	
6. Capacity to examine multiple probationer/parolee outcomes (technical violations, new crimes, new violent crimes, time to failure) by program involvement	
7. Capacity to examine days saved (survival time by managing probationer/parolee noncompliance (violation behavior not new crimes)	
8. Capacity to measure frequency of contacts	
9. Capacity to measure duration of contacts	
10. Capacity to measure specific CCP skills provided by PO during contacts with the probationer/parolee	
11. Policy that reflects importance of case level change work (versus referral) by POs	
Total: /18	

6. Community Engagement

Description	0,1,2
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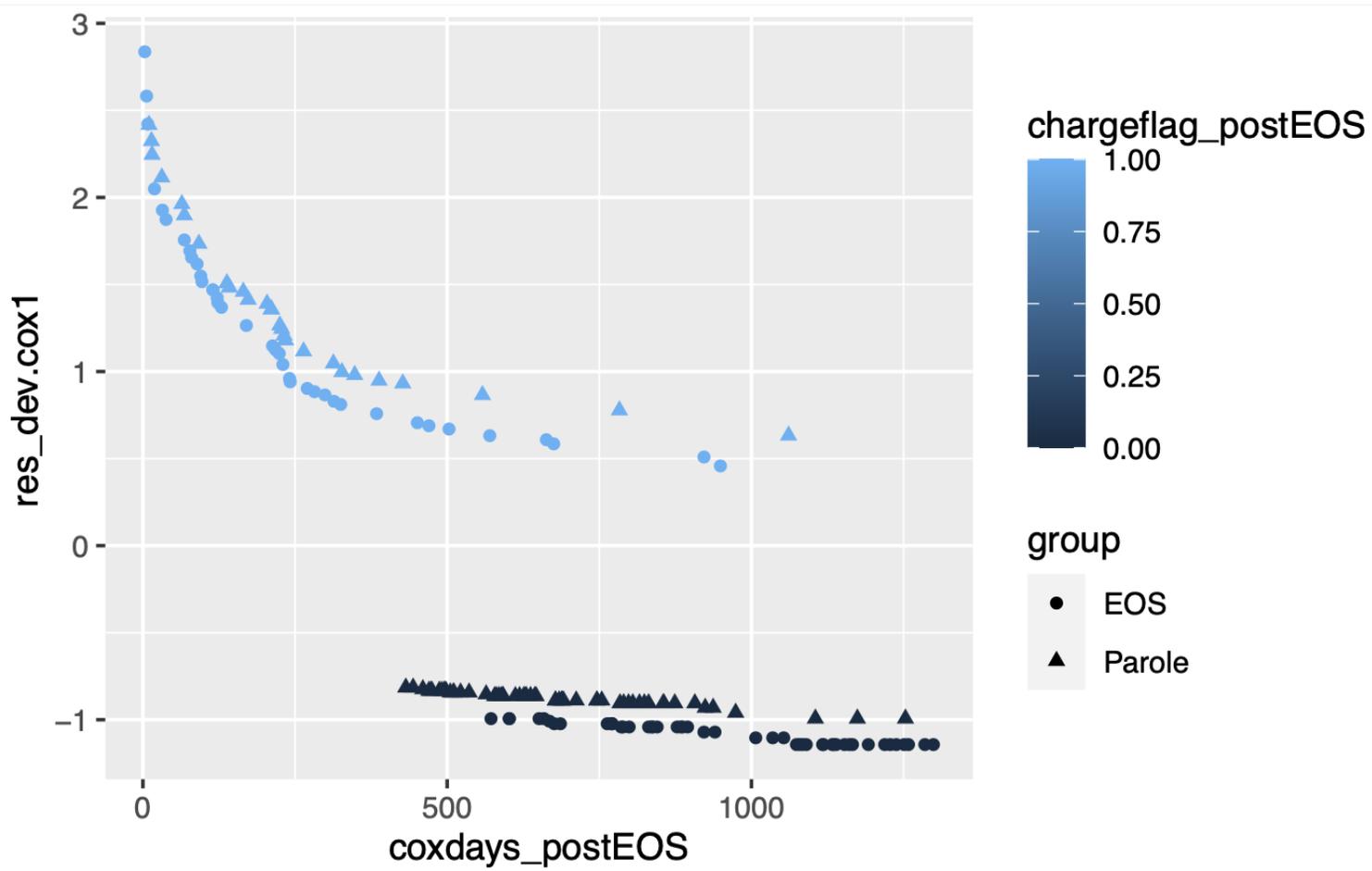
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1. Practices that demonstrate a commitment to re-entry and community engagement.	
2. Practices that give weight and support to community resources that support re-entry and probation.	
3. Practices that recognize the need to support social capital (employment, family, faith) in the community to augment probation success.	
4. Refers probationer/parolee to non-criminal justice community resources.	
5. See probationer/parolee in the community more than in the office.	
6. Use community contact for engagement and change work, not just surveillance/monitoring.	
7. Recognizes RNR programming isn't the only pathway to probationer/parolee success.	
8. Recognizes that probationer/parolee success is a collaborative endeavor between PO, client and community.	
9. Recognizes the working relationship between PO and probationer/parolee is paramount to probationer/parolee success.	
10. Sees technical violations as learning moments, not necessarily reasons to return the probationer/parolee to jail.	
11. Has a violation grid in place to avoid over-incarceration for non-criminal behavior on supervision.	
Total: /22	
Overall Total: / 202 (162= 80%)	

Appendix B

Figure B1

Deviance Residuals Against Time at Risk for Original Survival Analysis Model, by Group and Outcome



PAROLE EFFECTIVENESS

Table B1

Parameter Estimates for Survival Model including Covariates Predicting Post Sentence Charges

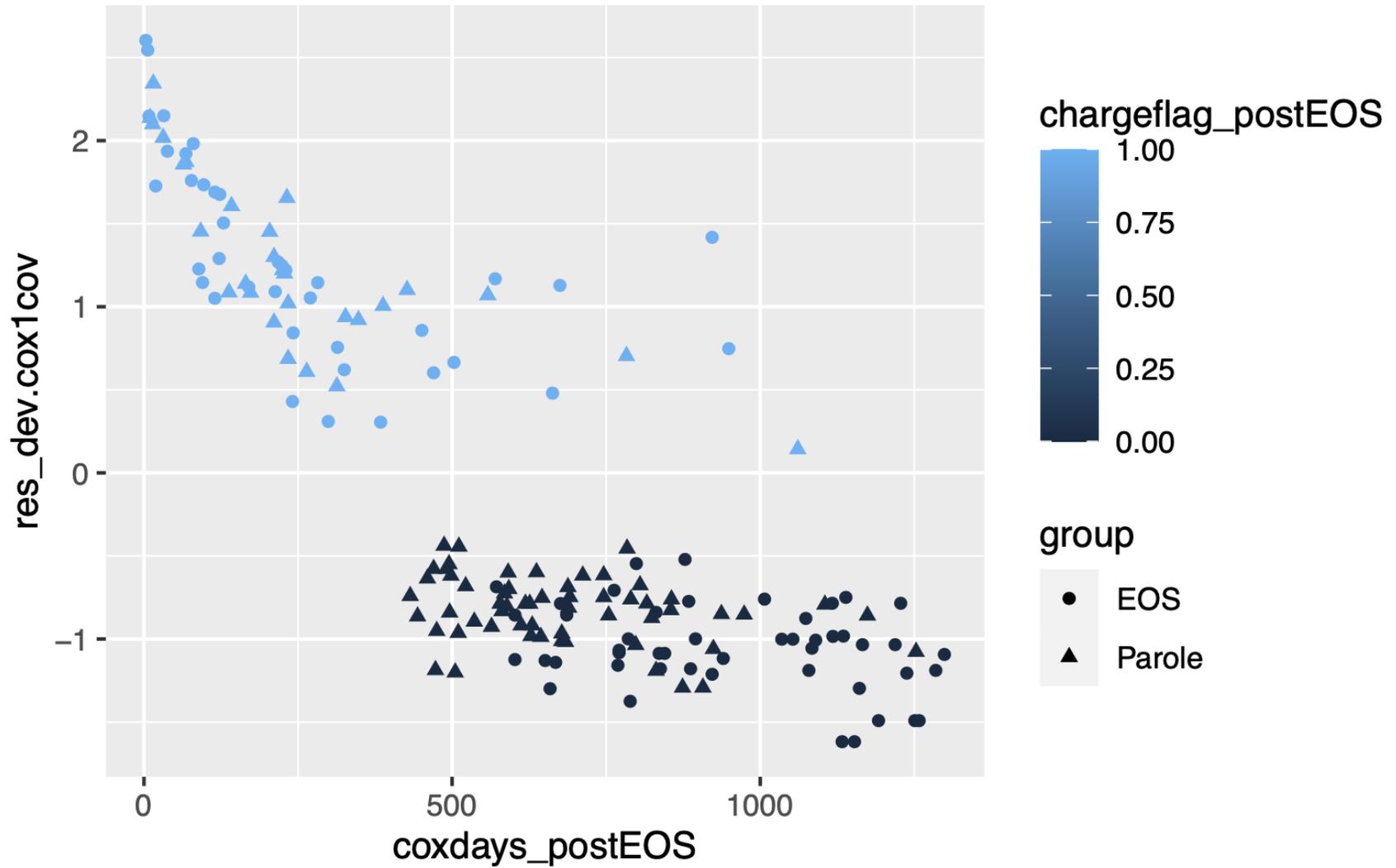
Variable	<i>B</i>	<i>RSE (B)</i>	<i>HR</i>	95% Confidence Interval for <i>Exp(B)</i>	
				LL	UL
Parole Group	-.27	.25	.76	.46	1.26
Risk					
Low	-.48	.65	.62	.17	2.2
Low-Moderate	-.38	.31	.68	.37	1.25
Moderate-High	.16	.28	1.18	.68	2.02
High	REF		REF		
Crime Type					
Drug	.14	.78	1.15	.25	5.34
Public Order/Other	.31	.36	1.36	.67	2.74
Property	.45	.27	1.57	.93	2.67
Violent	REF		REF		
Sentence Length					
Misdemeanor	.99	.49	2.7	1.03	7.07
Felony – D or Enhancement to Original	.55	.51	1.7	.64	4.71
Felony – B or C	REF		REF		

Note. EOS is the reference group.

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Figure B2

Deviance Residuals Against Time at Risk for Survival Analysis with Covariates, by Group and Outcome



PAROLE EFFECTIVENESS

Table B2

Logistic Regression Parameters for Group Predicting Post Sentence Charge at 3, 6, and 12 Months, Modelled with Covariates

Variable	OR	Bias	SE	95% Confidence Interval for $Exp(B)$	
				LL	UL
3 months					
Parole Group	.53	.13	.46	.10	1.71
6 months					
Parole Group	.58	.02	.27	.24	1.39
12 months					
Parole Group	.72	.04	.27	.37	1.41

Note. Parameter estimates for Group when covariates (IVVI risk (factored), sentence type (factored), crime type (factored), gender, education (factored), ethnicity, and age) included in the model. EOS is the reference group.

PAROLE EFFECTIVENESS

Table B3

Balance in the Matched Sample, Restricted to those with Complete Case Information on SDAC-21 or DRAOR

Variable	Revised Matched Sample ^a			
	Treated N=55	Control N=55	SMD	eCDF Mean
Risk				
Low	.11	.11	0.00	0.00
Low-Moderate	.13	.13	0.00	0.00
Moderate-High	.58	.58	0.00	0.00
High	.18	.18	0.00	0.00
Sent Length				
Misdemeanor	.45	.45	0.00	0.00
Felony (D, Enhance)	.44	.44	0.00	0.00
Felony (B, C)	.11	.11	0.00	0.00
Crime				
Drug	.07	.07	0.00	0.00
Property	.31	.31	0.00	0.00
Violent	.45	.45	0.00	0.00
Public Order/Other	.16	.16	0.00	0.00
Ethnicity				
Black or Other	.16	.38	-.51	.22
White	.84	.62	.51	.22
Sex				
Male	.85	.89	-.10	.04
Female	.15	.11	.10	.04
Age				
Age at EOS	35.18	34.11	.10	.04

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Need Items					
Associates	.33	.38		-.12	.06
Attitudes	.71	.73		-.04	.02
Attachment	.69	.71		-.04	.02
Problem Solving	.89	.93		-.11	.04
Impulsivity	.91	.89		.06	.02
Entitlement	.71	.67		.08	.04
Protective Items					
Prosocial	.78	.69		.22	.10
Social Control	.62	.60		.04	.02
Soc Support	.71	.75		-.08	.04
High Expectations	.77	.75		.04	.02
Responsive to Advice	.75	.78		-.08	.04
Cost Benefit	.62	.71		-.19	.10

^a For logistic regression moderation analyses only

PAROLE EFFECTIVENESS

Table B4

Logistic Regression Parameters for Sentence/Need/Protective Factor Interactions with Group Predicting Post Sentence Charges at 3, 6, and 12 months

Variable	3 Months				6 months				12 months			
	Coef.	SE	t	p	Coef.	SE	t	p	Coef.	SE	t	p
Parole Group ^a	-.05	.05	-.99	.322	-.08	.056	-1.46	.146	-.07	.07	-1.06	.292
Sentence Type ^a	.10*	.04	2.35	.020	.09	.06	1.23	.129	.15*	.07	2.10	.038
Parole Group ^b	-.05	.04	1.77	.079	-.16	.06	-2.46	.015	-.27***	.08	-3.6	.000
Sentence Type ^b	.10	.07	1.41	.161	.01	.09	.11	.913	-.05	.10	-.52	.601
Group*Sentence Type ^b	-.00	.10	-.02	.982	.16	.11	1.43	.154	.42***	.13	3.32	.001
Parole Group ^a	-.07	.06	-1.2	.234	-.12	.07	-1.7	.08	-.08	.09	-.94	.349
Problem Solving ^a	.11**	.03	3.3	.001	.18***	.04	4.1	.000	.12	.14	.87	.386
Parole Group ^b	0.0	0.0	0.0	1.0	0	0	0	1	0.33	0.20	1.69	.094
Problem Solving ^b	.15**	0.05	3.01	.003	.20***	.06	4.08	.000	.39	.06	5.61	.000
Group*Problem Solving ^b	-.07	.06	-1.19	.237	-.13	.07	-1.73	.08	.05*	.2	-1.99	.05
Parole Group ^a	-.07	.05	-1.21	.229	-.12	.07	-1.71	.091	-.08	.09	-.91	.370
Prosocial ^a	-.08	.08	-1.04	.30	-.13	.09	-1.46	.148	-.07	.11	-.65	.517
Group ^b	-.29*	.11	-2.60	.01	-.47***	.12	-3.80	.000	-.22	.17	-1.26	.209
Prosocial ^b	-.22	.12	-1.76	.08	-.34*	.14	-2.49	.014	-.15	.15	-1.06	.291
Group*Prosocial ^b	.31**	.12	2.67	.009	.48***	.13	3.81	.000	.18	.18	.99	.321

^a Model 1. Represents parameters when entered without the interaction term. ^b Model 2. Represents parameters when entered in the model with the interaction term. ***>.001 **>.01 *>.05 Note. EOS is the reference group.