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Examining the impact of a group treatment using cognitive and social cognition remediation for young offenders: The justice health NSW school-link advantage pilot study

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Abstract

Aim: Young offenders experience higher rates of neurodevelopmental and mental health disorders than the general population, and significant access barriers to health treatment. Treatment combining Cognitive Remediation Therapy (CRT) and Social Cognition Remediation Therapy (SCRT) has demonstrated benefits for functional improvements and social development. However, there is limited information regarding group treatment programs in custodial settings for young offenders. This pilot study explores the effectiveness and feasibility of a group treatment program for youth offenders with cognitive deficits and mental health concerns in youth detention.

Methods: The School-Link Advantage pilot study designed and tested a 10-week group treatment program combining CRT and SCRT for young offenders in custody. The closed groups incorporated interactive activities focussed on emotional recognition and regulation skills, optimizing executive functioning, understanding values, exploring belief systems, improving relationships, and safety planning.

Results: Of the 22 male participants recruited in an Australian Youth Justice Centre, 12 completed all aspects of the treatment program, reflecting a 54.5% completion rate in a typically challenging to engage population cohort. Results demonstrated significant improvements in the ability to store and retrieve information, recognize information, and control emotions. Planning and organizing skills also showed considerable development.

Conclusions: This pilot study suggests that a combined CRT and SCRT group treatment program has the potential to effectively target cognitive challenges associated with mental health disorders in young offenders in custody. These promising outcomes suggest exploring randomized controlled trials with increased cultural sensitivity for diverse populations.

KEYWORDS
cognitive remediation therapy, group treatment program, mental health interventions, neurocognitive, remediation therapy, social cognition, youth offenders

1 | BACKGROUND

Young offenders (14–21 years) suffer high rates of mental health disorders worldwide (Marr et al., 2023; Singh et al., 2017; Whitney et al., 2022) and this is a contributing factor to high recidivism rates (Singh et al., 2017). In Australia, young people with mental health and/or intellectual disabilities are six times more likely to enter custody than those without impairment (Baldry et al., 2013; Marr et al., 2023). Exposure to risk factors such as adverse childhood experiences (e.g., neglect, domestic violence, and parental incarceration) and untreated neurodevelopmental and/or mental health conditions (e.g., attention deficit hyperactivity disorder, depression, and post-traumatic stress disorder) are contributing factors before entering custody (Baetz et al., 2021; Marr et al., 2023).

While youth custodial centres are challenging environments for any young person, there are opportunities to facilitate access to education and health services during a period of incarceration (Farrington et al., 2012). Indeed, due to the complex range of social, family, health, educational, and economic challenges that characterize this group, there are significant barriers for young people in contact with the criminal justice system in accessing adequate mental health treatment (Farrington et al., 2012; Singh et al., 2017). These challenges are exacerbated in the presence of young people who have reduced cognitive capacity, underdeveloped emotional capacity, and limited vocabulary that impact capacity to communicate their needs and symptoms (Gill et al., 2023; Hopkins et al., 2016; Marr et al., 2023).

Mental illness experienced in young people during developmental periods critical for cognitive and social development (van Duin et al., 2019) are associated with longer term neurocognitive and social cognitive deficits (Couture et al., 2006; Mesholam-Gately et al., 2009). These deficits are often underestimated as important factors that reduce the capacity for a young person to complete important developmental tasks such as completing school. These deficits also limit the development of social skills and can significantly disadvantage young offenders leaving custody and returning to an independent life in the community (Hajri et al., 2022; Himelstein et al., 2012; Penner et al., 2011). In turn, this can have a detrimental impact on employment, relationships, and educational outcomes, contributing to poorer life outcomes for young offenders.

Combining two separate treatment protocols, Cognitive Remediation Therapy (CRT) and Social Cognition Remediation Therapy (SCRT), has proven effective in enhancing cognitive performance for people with severe mental illness (Dark et al., 2018; Fernandez-Gonzalo et al., 2015; Harris et al., 2022; Lindenmayer et al., 2018; Vidarsdottir et al., 2019; Peña et al., 2018) and improving life outcomes for those with mental illness and/or cognitive impairment (Darmedru et al., 2017; Harvey & Sand, 2017; Isaac & Januel, 2016; Jones & Harvey, 2020; van Duin et al., 2019; Vita et al., 2021). Studies that combined CRT with rehabilitation programs (i.e. strategies to improve daily living skills) also showed functional improvements (Lindenmayer et al., 2018; McGurk et al., 2008; Wykes et al., 2011; Wykes et al., 2012), with individuals with fewer years of education, a lower premorbid intelligence quotient, and higher levels of symptomatology having a better response (Vita et al., 2021). Age is an influential factor in several studies, with younger participants demonstrating more significant improvements through learning cognitive skills (McGurk & Mueser, 2008; Radhakrishnan et al., 2016; Wykes et al., 2011; Wykes et al., 2012). In addition, the combination of CRT and SCRT treatments has been shown to decrease violent and aggressive behaviours by reducing impulsivity and targeting interpersonal relationships and social functioning (Darmedru et al., 2017; Jones & Harvey, 2020; O'Reilly et al., 2015).

Improving cognitive ability can enhance offender outcomes significantly (Ahmed et al., 2015; O'Reilly et al., 2019; Schwalbe & Medalia, 2007). Teaching cognitive skills to adults in prison has been shown to reduce recidivism by 20%–30% (Bush, 2016). Similarly, results are favourable for social cognition treatment in a forensic setting (Combs et al., 2007; Taylor et al., 2016; van der Stouwe et al., 2016). Programs targeting social-cognitive skills and thinking styles have been shown to be effective in the adult and youth forensic population (Cullen et al., 2012; Joy Tong & Farrington, 2006; Pullen, 1996). Despite the evidence for the effectiveness of cognitive and social remediation, there has been limited research into treatments explicitly targeting young people in custody experiencing mental health issues. Research into effective youth interventions has relied primarily on social learning approaches, psychoeducation with parents, cognitive behavioural therapy, and regulation skills development (Salekin, 2015; Underwood & Washington, 2016). A positive therapeutic alliance is correlated with a stronger response to cognitive remediation intervention among young people in custody (Pooley, 2020). Similarly, when a group experience reflects a "family-like" situation, where young people listen, accept, and support one

another, a greater response to the respective group intervention is observed (Aronson & Kahn, 2004; Leader, 1991).

1.1 | Aims of the school-link advantage pilot study

The pilot study aimed to explore the effectiveness and feasibility of a group treatment program for young people in custody with cognitive difficulties and/or mental health conditions. This was achieved by comparing participants' cognitive, social, and general functioning pre- and post-treatment.

We hypothesised that: (1) delivering this combined group treatment program will be feasible in the restrictive custodial environment and acceptable to the youth population experiencing mental health conditions; and (2) both neurocognition and social cognition will improve with the delivery of the combined treatment, and (3) participants will show improved functioning.

2 | STUDY DESIGN

2.1 | Participants

Participants were recruited from an Australian Youth Justice Centre between March 2021 and January 2023. All participants self-nominated for the study and had backgrounds of mental health and/or neurodevelopmental disorder. Each participant had four one-on-one meetings with group facilitators before the group treatment sessions commenced. These meetings covered (1) information on the treatment, (2) consent, (3) a 45-min pre-assessment, and (4) feedback on the results of their assessments, including a discussion of treatment goals.

Inclusion criteria for the treatment program were (1) a diagnosis of a mental health condition, as recorded in the participant's clinical file by the Justice Health NSW consultant psychiatrist; (2) the presence of neurocognitive or social-cognitive deficits as measured by the research team; (3) a minimum length of incarceration ranging from 8 to 14 weeks; (4) ability to provide written consent (if under 16 years of age consent from a guardian was required); and (5) sufficient oral English skills. Exclusion criteria for the pilot study were a diagnosis of intellectual disability recorded in the participant's clinical file by the Justice Health NSW consultant psychiatrist; severe visual impairment; severe hearing impairment; and/or recipient of electroconvulsive therapy in the past six months.

All participants consented to their data being used to evaluate the treatment program. They were designated to groups of four and five and asked to attend 20 face-to-face group treatment sessions twice weekly over 10 weeks. Three of the four groups ran during the pilot study, one was cancelled due to COVID-19 restrictions.

Demographic information collected for the study included participants' age, gender, cultural background, mental health condition, identified brain injury, educational attainment, and relationship status. All participants and facilitators were offered the opportunity to discuss their perspectives on the project using a semi-structured interview. A thematic analysis was undertaken to examine their feedback, however, this part of the study is the subject of a separate paper.

2.2 | Clinical/medical supervision

Two youth mental health clinicians from our research team facilitated each 90-min session. Clinical supervision was provided by a consultant psychiatrist, service manager, and the research team. It was planned for an Aboriginal support worker to be involved in the treatment sessions. However, this was only possible for Group 2 due to resourcing and availability.

All participants continued receiving their usual mental health and medical treatments while undertaking the group treatment program.

2.3 | Group treatment program approach

The 10-week manualised group treatment program trialled in the School-Link Advantage pilot study used interpersonal learning, group cohesiveness, socialization, and information sharing as therapeutic factors underpinning the combined treatments of CRT and SCRT. The CRT intervention (using smart devices/iPads) aimed to improve participants' cognitive ability, such as increasing attention, memory, language, and executive functioning capacity. Due to the restrictions in custody, the applications/games were played without internet connectivity and were individually sourced. The SCRT intervention aimed to improve emotional recognition and generated group discussions about personal biases. Groups were closed and used interactive activities, skill-building and discussions about emotional recognition and regulation, executive functioning, values and beliefs, relationships, health and wellness and safety planning.

The CRT component used a drill and practice-plus strategy approach to enhance cognition. It incorporated goal setting related to real-life demands (e.g., schoolwork, relationships, and daily tasks) (van Duin et al., 2019), and covered practical life skills and thinking strategies for everyday living. This entailed strategies to improve self-awareness and resolve relationship dilemmas using the thought-feeling-behaviour cycle. Challenge tasks throughout the program involved modules analogous to everyday tasks such as deciding on a mobile phone deal and debating ethical issues. The program was fluid, adapting to the needs of participants as required. Group facilitators used peer experiences to share and develop positive interpersonal skills. Participants were given a breakdown of their strengths and weaknesses based on their pre-intervention assessments, and individual goals were collaboratively set for them to work towards. The treatment program manual utilized for this pilot study intervention can be accessed by emailing the first author.

2.4 | Measures

For the pilot study, assessments were not blinded. Cognitive abilities were assessed using the following measures. All measures, except for

Clinical Global Impression, were completed by participants pre- and post-intervention. The Clinical Global impression was completed only post-intervention.

2.4.1 | Rey complex figure test and recognition trial (RCFT)

The RCFT is a standardized and reliable cognitive ability test that measures working memory, attention, planning and visuospatial abilities (Meyers & Meyers, 1995). Age-corrected *t*- scores were analysed using the norms provided by Meyers and Meyers (1995).

2.4.2 | Hinting task (HT)

The HT was used to measure theory of mind and assessed participants' capability to deduce the true intent of indirect communication (Corcoran et al., 1995).

2.4.3 | Penn emotion recognition task (ER-40)

The ER-40 measured participants' facial emotional processing (Carter et al., 2009).

2.4.4 | Behaviour rating inventory of executive functioning (BRIEF) version 2

(Gioia et al., 2015) or Adult (Roth et al., 2005). To assess executive function, the study utilized the BRIEF-2 for participants 18 years and under and the BRIEF-A for those 19 years and above. Three subscales (Behaviour Regulation Index, Emotion Regulation Index, and Cognition Regulation Index) and the Global Executive Composite (EC) were also calculated. The scores were converted into age-appropriate *t*-scores.

2.4.5 | Personal and social performance scale (PSP)

The PSP was used to measure real-world functional performance, indexing the severity of participants' social and personal dysfunction (Patrick et al., 2009). The PSP was completed by support workers who rated participants across four domains: socially beneficial activities, personal and social relationships, self-care, and disturbing/aggressive behaviours.

2.4.6 | Clinical global impression (CGI)

The CGI was used to evaluate the severity of mental illness (Busner & Targum, 2007).

2.5 | Sample size

The primary aim of the pilot study was to examine the effectiveness and feasibility of the group treatment program; therefore, a formal sample size calculation was not warranted. Despite a global pandemic and associated public health measures and restrictions, the study was able to recruit 22 young offenders over the study period. This was considered to be sufficient to provide useful information about the effectiveness and feasibility of the group treatment program.

2.6 | Data analysis

All data analysis was conducted using IBM SPSS Statistics (version 24.0, Armonk, NY: IBM Corp). Eighteen matched paired *t*-tests were used to compare pre- and post-assessment scores for the RCFT (i.e., IR, DR and RT scores), the HT, the ER-40, the BRIEF inhibition, self-monitoring, shift, emotion control, task completion, working memory, planning/organizing scores, as well as the BRIEF Behaviour Regulation Index, Emotion Regulation Index, and Cognition Regulation Index, the BRIEF Global EC, and PSP and CGI scores. Effect sizes were calculated using Cohen's *d* (Cohen, 1988). Findings were not corrected for multiple comparisons. All data was deidentified and securely stored to ensure confidentiality of participant information throughout the study.

2.7 | Ethics approval

Human Research Ethics Committee (HREC) approval was obtained from the Justice Health and Forensic Mental Health Network HREC (Reference 2019/EH13827), Aboriginal Health and Medical Research Council HREC (Reference 1629/20), and Youth Justice New South Wales Ethics Committee (Reference D20/313). Informed written consent was obtained from all participants.

3 | RESULTS

A total of 65 young people self-referred or were nominated by staff to attend the program. After the first meeting (to discuss the research study and consent), 22 young people consented to continue the treatment program.

Of the 22 participants, three were transferred to another site, one dropped out, and six were released during COVID-19 restrictions, leaving 12 male participants who completed the treatment program (retention rate = 54.5%). The 12 completing participants were males from 16 to 19 years of age ($M = 17.40$, $SD = 1.14$) who either had a conviction or were awaiting the outcome of an alleged offence. Justice Health NSW clinical notes identified participants diagnosed with the following mental health conditions: post-traumatic stress disorder (25%); attention deficit hyperactivity disorder (25%); autism (16%);

depression (50%); anxiety (8%), and drug and alcohol misuse (58%). Brain injury had been experienced by 16.5% of participants.

All participants completing the program attended the on-site school and had achieved 9–12 years of schooling ($M = 10.75$, $SD = 0.82$). Ten participants (83%) had various experiences working before entering custody. Five participants were of Anglo-Saxon background, three were Māori, two were Samoan (16.5%), and two were of Ghanaian (16.5%) family heritage. Three participants (25%) reported that they were in relationships.

Eighteen matched pre- and post-assessments were conducted for all measures of cognitive, social, and general functioning (see "Functional changes pre-and post-treatment assessment" in Data S1). The results showed that after completing the treatment program, participants' ability to store and retrieve information (i.e., RCFT Delay Recall), $t(11) = -3.65$, $p < .05$, $d = -0.88$, 95%, *CI* [−18.71, −4.462], and ability to recognize information (i.e., RCFT Recognition Trial), $t(11) = -2.97$, $p < .05$, $d = -0.75$, 95% *CI* [−18.56, −2.77] significantly increased. Additionally, participants demonstrated a significant reduction in BRIEF emotion control scores, reflecting an improvement in emotional control across the study, $t(11) = 573$, $p < .05$, $d = 0.42$, 95% *CI* [0.70, 8.97]. Participants also demonstrated significant improvements in their planning and organizing skills (i.e., BRIEF Plan/organize), $t(11) = 296$, $p < .05$, $d = 0.68$, 95% *CI* [0.31,14.53].

4 | DISCUSSION

The pilot study analysed the potential effectiveness and acceptability of a combined CRT and SCRT group treatment program for young males with neurodevelopmental and/or mental health conditions in a youth custody setting. Results suggest the treatment produced a positive effect for participants with broad improvements in neurocognitive ability that were significant in the domains of information retrieval, information processing speed and emotion control.

Participants' ability to store, retrieve and recognize information showed significant improvements after the treatment program, as measured by the RCFT. This result was similar to the findings of Fisher et al. (2015), who demonstrated that combined treatments significantly improved memory skills in young people with schizophrenia. Memory skills improvement may help vulnerable young people to develop their capacity to learn and remember information (Hajri et al., 2022), and this can assist with vocational opportunities, help with reintegration into the community and reduce the likelihood of reoffending. Participants also showed a statistically significant change in emotion control. Learning to manage emotions supports young people to better cope with everyday life stressors and helps them to make constructive decisions and build relationships, reducing the risk of recidivism (Hodgkinson et al., 2021). Teaching emotional regulation to young people in detention has been shown to improve wellbeing and reduce challenging behaviour (van der Stouwe et al., 2016). Participants also demonstrated significant improvements in their ability to plan and organize. This skill helps in planning day-to-day activities, achieving life goals, and managing time more effectively (Hajri et al., 2022). These positive cognitive changes demonstrate the feasibility of the treatment program in the custodial setting for these young male participants.

The study failed to observe any changes in social cognition. This has also been found in several other studies that combined CRT with SCRT (Harris et al., 2022). However, the effect sizes found matched those observed in other studies (Nijman et al., 2020), likely reflecting the underpowered nature of the pilot study (see small sample size discussed below) and the effects of COVID-19 on recruitment.

4.1 | Limitations

Several limitations of the pilot study are noted. First, the small sample size affected the generalisability and reliability of our results. This was compounded by the effects of COVID-19, which shut the centre down for extended periods during the research study. This disruption likely contributed to the challenges in the participant retention. Second, the findings were not corrected for multiple comparisons, increasing the risk of Type 1 errors, where statistically significant results may occur by chance due to the increased number of statistical tests conducted. Caution is advised in interpreting the significance of participant findings. Third, group facilitators were also part of the research team, which could have led to researcher bias when scoring the CGI. However, having facilitators as part of the research team was also a strength, as this gave them access to participants' psychological histories, allowing them to guide the group from a more trauma informed approach. Fourth, the support workers had difficulties completing the BRIEF and PSP measures due to either limited knowledge of the participant or insufficient time. The environment of the Youth Justice Centre also imposed some challenges to participant attendance and completion rate, including staff availability and the need to transfer participants to other custodial facilities. Transfer of participants to other centres affected the retention rate.

A fifth limitation was that only a small number of Aboriginal participants enrolled in the study, limiting the generalisability of results to Aboriginal young people. This is particularly significant, given the disproportionately high numbers of this cohort in detention. The high dropout rate for potential Aboriginal participants occurred primarily during the consent process of the first meeting, suggesting that further cultural support is required during the recruitment and facilitation phases of future iterations of the program.

5 | CONCLUSIONS

Overall, the pilot study has demonstrated that improving the social and thinking skills of young people in custody who are also dealing with cognitive and/or mental health issues is potentially possible. These promising results suggest that if widely adopted, the program could provide a much-needed improvement in functional and mental health-related outcomes for such young people. Future studies need to assess the group treatment program on a broader scale, for example, with larger and more diverse samples in a randomized controlled

trial with appropriate blinding of assessors. Additionally, increased accessibility to Aboriginal young people could be achieved by integrating more culturally appropriate elements into the promotion and recruitment phases.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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