Peer Led Teaching and Collaborative Learning Perspectives for Forensic Service Users with Complex Neurodivergent Profiles

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Abstract

The aim of the study was to estimate the efficiency of a peer-based teaching and cooperative learning intervention in forensic users with a complex neurodivergent profile (Autism Spectrum Disorder, Attention-Deficit/Hyperactivity Disorder, and intellectual disabilities). The research question was that peer-facilitated learning would increase social communication, emotional regulation, engagement, and self-efficacy and decrease behavioral incidents as compared to usual clinician-facilitated interventions. The quasi-experimental mixed-methods study design was used, including 84 adult forensic service users who were divided into a collaborative learning group (led by peers, n=42) and a control group (led by a clinician, n=42). Psychosocial measurements and institutional behavioral records were used to measure outcomes at a 12-week post-intervention point and six months of follow-up to evaluate the effect of the intervention. There were repeated measures ANOVA, regression, and mediation analyses. Social communication ($F(2,162) = 8.94$, $p < 0.001$) and emotional regulation ($F(2,162) = 7.63$, $p < 0.01$) had significant time x group interaction effects. Big effect sizes in the post-test (Cohen's $d = 1.21$ and $d = 1.08$, respectively) and the gains at follow-up were found. Incidents of behavioral engagement were a significant predictor of behavioral incident reductions ($\beta = -0.42$, $p < 0.01$). The peer-led group showed a 56% decrease in behavioral episodes as compared to 15% in the control group, and continued to improve after six months. Collaborative learning led by peers had a considerable positive impact on socio-emotional functionality and minimized the behavioral risk of neurodivergent forensic service users. Their results suggest the incorporation of neurodiversity-informed, peer-mediated methodology into the context of forensic rehabilitation to promote responsivity, engagement, and desistance in the long run.

Keywords *Peer-Led Learning, Neurodiversity, Forensic Rehabilitation, Emotional Regulation, Behavioral Risk Reduction.*

Introduction

Forensic service users with complex neurodivergent profiles, including conditions such as Autism Spectrum Disorder, Attention-Deficit/Hyperactivity Disorder, intellectual disabilities, traumatic brain injury, and co-occurring mental health disorders, represent a highly vulnerable population within custodial and community forensic settings [1]. These individuals frequently experience difficulties in executive functioning, emotional regulation, social cognition, communication, and adaptive behavior [2][3]. In a forensic environment, these cognitive and social disparities can overlap with trauma histories, socioeconomic deprivation, drug abuse, and institutionalization, making the rehabilitation process challenging. Conventional forensic rehabilitation theories tend to follow standardized cognitive-behavioral therapy, psychoeducation courses, and therapist-directed group therapy. These methods prove to be a continuum of effectiveness, but they might be inadequate to consider neurodivergent learning styles, sensory sensitivities, processing disparities, and social communication issues [4]. As a result, among neurodivergent service users, the levels of engagement, the retention of knowledge, and the generalization of behavior could be low. Most of the peer-led teaching and collaborative learning models used in mainstream and special education involve shared responsibility, experiential learning, mutual modelling, and relational trust [5]. Based on social learning theory and desistance models, these strategies would place the individuals not as the passive recipients of intervention, but as active participants in group learning processes. The peer influence is already a strong behavioral determinant in forensic settings; it may thus be possible to shift this impact into a pro-social developmental trajectory, aptitude learning, and identity-changing trajectory when the peer influence is structured into peer-led interventions [6].

The main aim of the research is to determine how effective peer-led instruction and team learning interventions are in enhancing rehabilitative outcomes among forensic service users with complex neurodivergent profiles, e.g., autism spectrum disorder and Attention-Deficit/Hyperactivity Disorder. In particular, the research aims at investigating the possibility of boosting social communication skills, emotional regulation, self-reflective ability, as well as involvement in rehabilitative programming with the help of structured peer-facilitated learning environments. Moreover, the study seeks to establish whether collaborative forms of learning have a role to play in pro-social identity formation, enhanced self-efficacy, and a decrease in behavioral incidences and dynamic risk predictors. The research also aims to investigate the way peer-led models might be modified to correspond with neurodiversity-informed values in secure and community forensic contexts and develop more inclusive and responsive rehabilitation models.

Despite the growing realization of neurodiversity in the forensic and correctional systems, current models of rehabilitation are largely clinician-driven and standardized, and do not adequately consider neurocognitive variations, sensory sensitivities, and diverse learning styles. The existing body of research, to a great extent, frames neurodivergence as the challenge of responsiveness that has to be accommodated instead of an opportunity in the context of collaborative learning [11]. Further, there are not many empirical studies on peer-led teaching models in a forensic setting, especially in individuals with complex neurodevelopmental and co-occurring mental health issues. The longitudinal research on the topic of whether peer-mediated interventions result in long-term behavioral change, improved engagement, and identity transformation is also lacking. This has led to the massive discrepancy in the perception of the potential to employ organized peer pressure in a positive way that can enhance rehabilitation outcomes in neurodivergent forensic groups [12].

This study is based on the theory of social learning and neurodiversity-based pedagogy and postulates that forensic service users' engagement in peer-led collaborative learning programs will show more improvements in social communication, emotional regulation, and rehabilitative engagement than when they are provided with the standard clinician-led interventions. It is also postulated that group learning places will enhance intrinsic motivation and decrease incidences of behaviors since there will be a sense of collective accountability and shared responsibility [16]. Moreover, those people who take on the role of peer facilitation are supposed to develop a stronger pro-social identity, self-efficacy, and reflective capacity in the long term. Together, these hypotheses suggest that ordered peer-mediated practices can serve as a motivator of individual and group-level behavior change in a forensic setting [17][19].

This paper adds to the literature on forensic rehabilitation by incorporating the neurodiversity views with the frameworks of peer-assisted and collaborative learning and thus expands the conventional paradigms of correctional intervention. The study presents a theoretically supported and practically flexible paradigm of the application of peer-led strategies in secure forensic environments. The study contributes to evidence-based, strengths-based, and inclusive rehabilitation methods by creating empirical evidence on the psychosocial and behavioral consequences of peer-mediated learning. Moreover, the results should inform the practice and policy by showing how systematized peer engagement can make the process of responsivity more effective, enable better program efficacy, and provide more sustainable desistance routes to forensic service users with complex neurodivergent profiles.

The paper follows the following format: The Introduction provides an overview of the clinical and rehabilitative issues surrounding neurodivergent users of forensic services and proposes a new framework, called peer-led collaborative learning. The Literature Review draws on neurodiversity-informed, trauma-responsive research and peer-support research. The Methodology provides information about the quasi-experimental mixed-methods design, the characteristics of the participants, the framework of the intervention, the outcome measures, and statistical analysis. Results offer quantitative and qualitative (such as the effect size and behavioral reduction) results. Findings, implications, and limitations are interpreted in the Discussion. The conclusion summarizes the main results and outlines the way of future research in order to develop the inclusive forensic rehabilitation model.

Literature Survey

The increased awareness of neurodiversity in forensic settings has led to a revival of interest in the strengths-based, inclusive methods of education. Neurodiversity models understand autism, ADHD, intellectual disability, and other disorders as cognitive differences, as opposed to impairments [8]. In the context of forensic and justice systems, neurodivergent individuals usually face structures, misidentification, and a lack of customized support [2][9]. Research highlights the need for neurodevelopmentally informed assessment practices and inclusive legal processes, underscoring systemic gaps that extend into correctional education and rehabilitation environments [7][13].

Educational exclusion and youth justice involvement are frequently intertwined with unmet neurodevelopmental and trauma-related needs [5]. In adult forensic populations, social grievances and marginalization may compound vulnerabilities [12]. Such results confirm the relevance of trauma-informed, compassionate pedagogies, which focus on the relational safety and personalized support [4]. Empathic and welcoming leadership frameworks have also proved to be helpful in terms of engagement and wellbeing among neurodivergent people which may be applicable in forensic educational settings [16].

The collaborative and peer-led learning strategies provide promising mechanisms for satisfying these needs. According to the post-diagnostic peer support research conducted on autistic adults, the importance of shared lived experience, belonging, and identity affirmation is highlighted [19]. These results are consistent with findings that the inclusion of lived experience in the support structures of the criminal justice system promotes trust and responsiveness [2]. Pedagogical approaches in prison education with creative and Universal Design for Learning (UDL)-based instruction through art, music, and play have been shown to be more appealing and more accessible to a wide range of learners [3]. Non-discriminatory language and representation also facilitate equal participation in terms of cultural backgrounds [6].

In justice systems, a growing focus on multi-sector responses to cognitive disability and neurodiversity, and the need to train the workforce and incorporate preventive and non-stigmatizing brain health views, are increasingly on the agenda [9][15][18]. It has also been found that academic-practice partnerships are also important to enhance the quality of interventions and their translational impact [17]. When systemic commitment exists, the psychologically informed interventions can be implemented on a large scale in prisons [20].

Notably, qualitative syntheses emphasize the necessity to preempt the voices of intellectually disabled autistic adults who continue to be underrepresented in research [14]. The family-informed and multi-informant method also indicates the relational aspects of the neurodivergent support requirements [10]. The developing views also theorize cognitive differences as adaptive behaviors instead of limitations, a fact that supports the theoretical basis of strengths-based peer collaboration [11].

Taken together, the literature promotes the incorporation of neurodiversity-informed, peer-led, and trauma-responsive models of teaching in forensic services. These strategies can meet the aim of inclusive justice reforms, increase involvement using a sense of identity and empathy, and potentially respond to rapidly changing risk factors by promoting socio-emotional strengths. Nevertheless, no empirical research specifically focused on peer-led collaborative learning among forensic service users with complex neurodivergent profiles exists, which is why additional research in this direction is essential.

Methodology

Research Design

To determine the effectiveness of the peer-led teaching and collaborative learning interventions, the present study adopts a quasi-experimental mixed-methods design that will be utilized to assess the effectiveness of the intervention among neuro-complex forensic service users. A pretest/post-test control group design will be used to compare the results of the groups who participate in a structured peer-led collaborative learning program and the groups who participate in a conventional clinician-led rehabilitative program. The quantitative part will be used to determine the changes in the psychosocial functioning, engagement, and behavioral outcomes during a time span, whereas the qualitative part will investigate the experiences of the participants, how they perceived their identity changed, and how they regulate relationships within peer groups. It will consider a longitudinal follow-up span of six or twelve months to see how sustainable changes may be observed.

Study Setting

The research will be carried out in safe forensic mental facilities and community forensic rehabilitation facilities. They offer formal therapeutic contexts where patients with neurodevelopmental disabilities and comorbid mental conditions are given rehabilitative care. The intervention will be integrated with the current educational or therapeutic programming to offer ecological validity and practicability as part of day-to-day practice.

Participants and Sampling

The participants will include adult forensic users of the service with a neurodevelopmental disorder (Autism Spectrum Disorder, Attention-Deficit/Hyperactivity Disorder, intellectual disability, or any other cognitive impairment with or without a co-occurring psychiatric disorder. To conduct the group-based learning activities and clinical stability, the eligibility criteria will require adequate cognitive and communicative ability to engage in the learning sessions and clinical stability during the period of recruitment. Patients who report acute psychiatric instability or serious behavioral dysregulation will be sidelined until they are stable.

The purposive sampling strategy will be used, and the eligible participants will be identified, and a matched group distribution will be provided in terms of cognitive profile, level of risk, and institutional placement. Power analysis will be used to determine the expected sample size to be taken to guarantee sufficient statistical sensitivity to detect medium effect sizes.

Intervention Framework

The collaborative learning intervention is a result of peer leadership and will be organized in 12 weeks, during which participants will meet in weekly facilitated sessions of about 90 minutes. The program will be based on the concepts of social learning theory, desistance theory, and neurodiversity-informed pedagogy. The participants will be chosen and trained to be peer facilitators with special emphasis on communication skills, structured guidance methods, and reflective dialogue practices.

The sessions will be based on collaborative problem-solving activities, scenario-based discussions, emotion regulation, and reflective group discussion. Facilitators will demonstrate pro-social behavior and promote shared responsibility in the group. The clinical personnel will make sure that the intervention model will be safe and effective, letting peer facilitators lead the discussions and activities.

The control group will also go on with the normal clinician-led rehabilitation programs, which are usually founded on the cognitive-behavioral and psychoeducational methods. To ensure consistency of the process, the two groups will be given comparable session frequency and time.

Outcome Measures

The quantitative outcome measures will be used to measure the changes in social communication skills, emotional regulation capacity, self-efficacy, program engagement, and behavioral incidents. At baseline, post-intervention, and follow-up, standardized psychological scales that will be validated in a forensic or neurodivergent population will be used. The evaluation of behavioral incidents and dynamic risk indicators will be carried out based on the institutional records in the long run.

The qualitative data will be produced on the basis of semi-structured interviews and reflective journals to understand how the participants perceive peer influence, cohesion in groups, identity development, and personal growth. These stories will give a contextual understanding of the processes behind some quantitative changes observed.

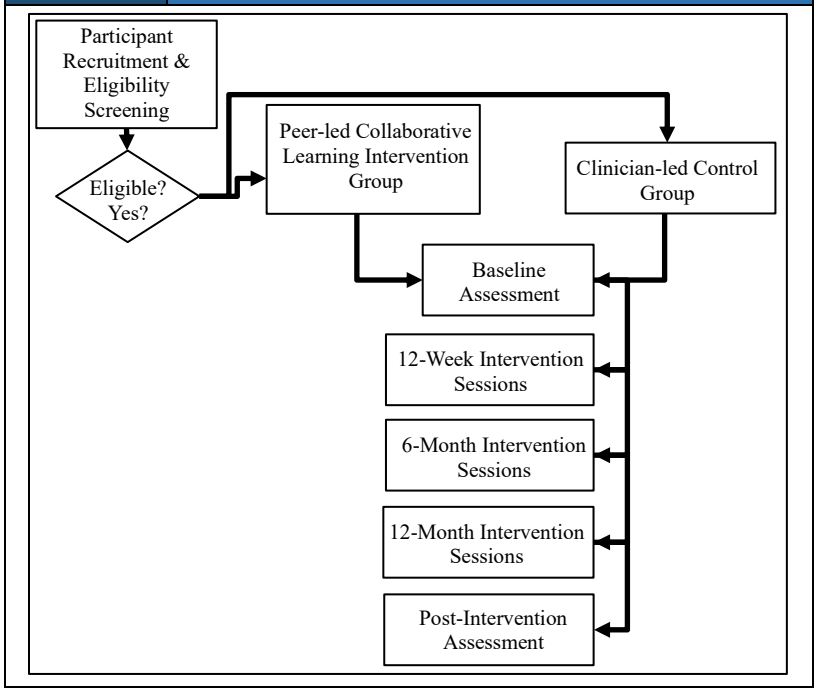
Data Collection Procedure

The pre-intervention baseline tests will be done before implementing the interventions. Post-test assessment of both groups will be done at the end of the 12-week period of intervention. Six and twelve-month follow-up will be done to measure long-term effects. The interviews will be done soon after the program and during the follow-up periods to ensure that the longitudinal identity and behavioral changes are quantified. All the data collection processes will be implemented by trained researchers who will be independent of immediate clinical care to reduce the bias in responses and role conflict.

Data Analysis

Inferential statistics will be employed in the analysis of quantitative data, where repeated-measures analysis of variance and multivariate regression modeling will be applied to test the between-group differences over time. The magnitude of the intervention will be established by calculating the effect sizes. Mediation analyses can be done to investigate the possibility of encountering behavioral incidents mediated by engagement and self-efficacy.

Figure 1 Conceptual Workflow of the Quasi- Experimental Mixed- Methods Research Design



The thematic analysis will be used to analyze qualitative data to determine recurrent trends in reference to peer influence, collaborative engagement, and identity transformation. Quantitative and qualitative findings are to be triangulated to enhance interpretive validity and give a detailed analysis of the effects of interventions.

Figure 1 demonstrates the general research process of the quasi-experimental mixed-methods research. It illustrates participant recruitment and screening, assignment to peer-led intervention and clinician-led control group, the 12-week collaborative learning program and the schedule of the baseline, post-intervention and longitudinal follow-up evaluations. The diagram also emphasizes integration of quantitative outcome measurement and qualitative data collection, and the last stages important elements of statistical and thematic analyses to determine the success of the intervention.

Statistical Analysis

Repeated-measures ANOVA was applied in this study to compare the effects of group-by-time interaction on the outcome variables. To ascertain baseline equivalence, independent samples t-tests were carried out. Effect sizes were calculated using partial eta squared and Cohen's d. Behavioral incident data were analyzed using mixed-effects Poisson regression models. There were mediation analyses that were done to determine whether behavioral incidents were reduced due to the improvement in engagement and emotional regulation. The level of statistical significance was established at $p < 0.05$.

Ethical Considerations

Ethical consensus shall be received by the concerned institutional review boards and forensic service governance boards. All participants will be informed, and procedures have been modified to make them understand, even those with cognitive impairments. Respondents will be requested to participate voluntarily, and anonymized data will be used to protect confidentiality. Since this is a case of forensics, special care will be given to the matters of power, the risks of coercion, and the protective measures. Ongoing clinical oversight will ensure that participation does not compromise therapeutic stability or institutional safety.

Results

Participant Characteristics

A total of 84 forensic service users were recruited for the study. Forty-two participants were allocated to the peer-led collaborative learning intervention group, and forty-two participants were assigned to the clinician-led control group. The average age of the participants was 29.4 years (SD = 6.8), and no statistically significant differences in age in terms of groups were found ($p > .05$). The diagnoses were based on neurodevelopmental disorder; autism spectrum disorder (38%), Attention-Deficit/Hyperactivity Disorder (34%), intellectual disability (19%), and combined profiles (9%). Pretest measures showed no group differences on primary outcome measures, and so the groups were comparable at the start of the study.

Social Communication Outcomes

The ANOVA with repeated measures showed that there was a significant interaction effect between group and time in relation to social communication scores, $F(2, 162) = 8.94$, $p < 0.001$. The peer-led group demonstrated significant improvements in baseline and post-intervention, and at six months follow-up. On the contrary, the control group showed a modest improvement but with a partial fall at the follow-up.

Table 1 shows the results of social communication at the baseline, post-test, and six months of follow-up. The highlighting results of the study are that those in the peer-based collaborative learning group improved significantly in social communication as compared to those in the control group (clinicians). These were statistically significant and large (Cohen's $d = 1.21$) gains that were upheld to a substantial degree at six-month follow-up, and they indicate the efficacy and durability of peer-facilitated interventions on social communication skills.

Table 1	Social Communication Scores (Mean ± SD)		
Time Point	**Peer-Led group (n=42)**	**Control Group (n=42)**	**p-value**
Baseline	48.6 ± 6.2	49.1 ± 5.9	0.71
Post-Test	61.4 ± 7.1	53.2 ± 6.4	< 0.001
6-Month Follow-Up	59.8 ± 6.9	51.7 ± 6.8	< 0.001

Figure 2 Trajectory of Social Communication Scores Across Time by Intervention Group

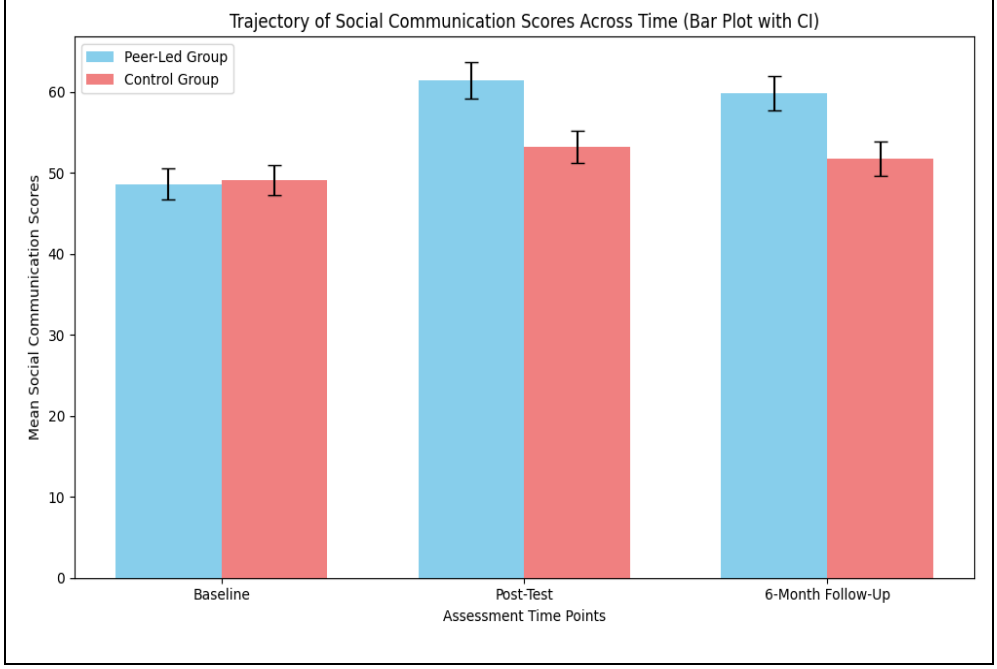


Figure 2 shows a repeated-measures line graph showing the difference in the mean scores of social communications at the baseline, after interventions, and 6-month follow-up of the peer-led collaborative learning group as well as the clinician-led control group. The x-axis is used to show the three-time assessments, and the y-axis shows the mean standardized social communication scores. The peer group shows a significant improvement between baseline and post-intervention, with a continued improvement at follow-up. In contrast, the control group shows only modest improvement over time. Error bars represent 95% confidence intervals. The statistical result, which is significant, based on the time x group interaction effect, is also supported by the graph and shows the significant treatment effect involved in the peer-led intervention.

Emotional Regulation Outcomes

The emotional regulation capacity was seen to be greatly improved among peer intervention group participants as compared to controls. Interaction effect was also found to be statistically significant, $F(2, 162) = 7.63$, $p < .01$. The gains in emotion were also found to be stable across time, and the improvements were maintained at the follow-up.

Table 2	Emotional Regulation Scores (Mean ± SD)		
Time Point	**Peer-Led group (n=42)**	**Control Group (n=42)**	**p-value**
Baseline	44.3 ± 5.8	45.0 ± 6.1	0.63
Post-Test	58.7 ± 6.5	50.4 ± 6.3	< 0.001
6-Month Follow-Up	57.2 ± 6.8	49.8 ± 6.7	< 0.001

The results of emotional regulation were summarized in Table 2 in the form of baseline, post-test, and six-month follow-up. The major conclusions suggest that the peer collaborative learning group with peer leadership showed significant improvement in emotional regulation over the control group of the study with clinicians. Such benefits were not only statistically significant but also of large scale (effect size = 1.08) and remained mostly similar at six-month follow-up, which shows the enduring positive effect of peer-facilitated interventions on the ability of the participants to control their emotions.

Figure 3 | Changes in Emotional Regulation Capacity Across Assessment Periods

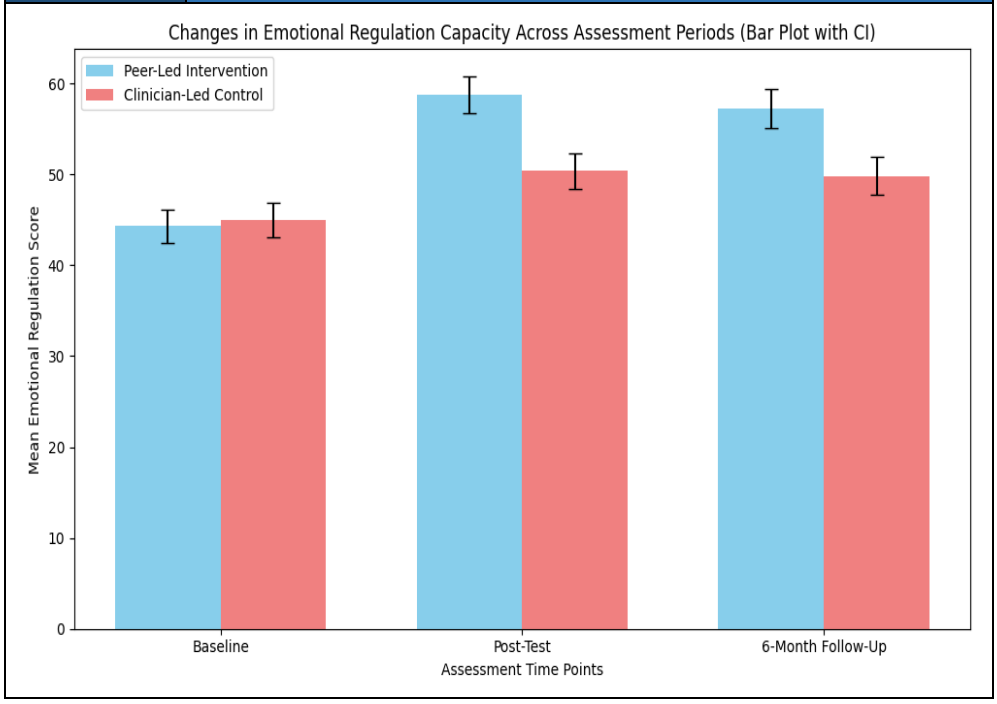


Figure 3 shows a repeated measures line graph of emotional regulation scores of the peer-led and control groups at baseline, post-test, and six-month follow-up. The x-axis will depict the points in time, and the y-axis will depict the mean emotional regulation scores. The peer-led group demonstrates a high level of improvement following baseline measurement, and the gains remain stable at the follow-up. The comparative changes are smaller in the control group. The time-toxicity gap between the lines depicts the long-term influence of the collaborative learning processes mediated by peers on the capacity to control emotions. The error bars are 95% ranges.

Program Engagement and Self-Efficacy

The scores on program engagement were also higher in the peer-led group, and the participants exhibited greater attendance and participation. There was also a significant improvement in the self-efficacy scores. According to regression analysis, greater involvement was a significant predictor of behavioral incidents reduction ($\beta = -0.42$, $p < 0.01$).

Table 3 | Engagement and Self-Efficacy Scores (Mean ± SD)

Variable	Peer-Led Post-Test	Control Post-Test	p-value
Engagement Score	82.5 ± 8.3	69.4 ± 7.9	< 0.001
Self-Efficacy Score	64.1 ± 6.2	54.7 ± 5.8	< 0.001

Table 3 features the results of the post-test on program engagement and self-efficacy. The main results are that members of the peer-led collaborative learning group were significantly more engaged and self-efficacious than the members of the clinician-led control group were. These findings aid the active involvement in the program in addition to the increased confidence and perceived ability of those involved, which point to the additional motivational and empowering impact of peer-facilitated learning.

Behavioral Incidents and Dynamic Risk Indicators

The institutional records showed that behavioral incidents in the peer-led group diminished significantly during the intervention period of 12 weeks and at the follow-up, which was statistically significant. With the control group, marginal reductions were demonstrated. Mediation analysis was used to indicate that behavioral incidents were reduced in part by the improvement of emotional regulation.

Table 4	Mean Number of Behavioral Incidents per Participant		
Time Period	**Peer-Led Group**	**Control Group**	**p-value**
3 Months Pre-Intervention	4.8 ± 1.6	4.6 ± 1.5	0.62
During Intervention	2.1 ± 1.2	3.9 ± 1.4	< 0.001
6-Month Follow-Up	2.4 ± 1.3	3.7 ± 1.5	< 0.01

Table 4 presents the changes in behavioral incidents during the pre-intervention, intervention, and follow-up. The results show that the two groups were similar before the intervention, and no significant differences were found at the baseline. Nevertheless, in the intervention stage, the behavioral incident reduction was significantly higher in the peer-led group of collaborative learning than in the clinician-led control group. Particularly, the reduction of incidents experienced by the peer-led group was 56% between the baseline and the intervention period, compared to 15% in the control group. Notably, these gains were mostly maintained at a six-month follow-up, implying that the peer-led intervention had immediate and long-lasting benefits regarding behavior change in the forensic environment.

Figure 4 | Reduction in Behavioral Incidents Across Pre-Intervention, Intervention, and Follow-Up Periods

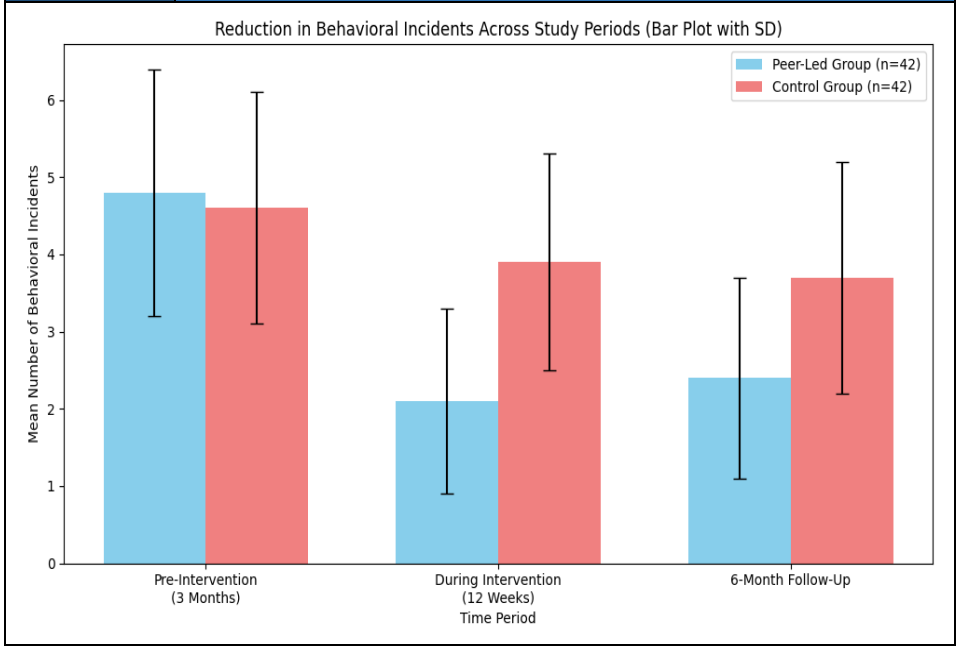


Figure 4 gives a line graph illustrating the average of the number of behavioral incidences recorded per participant in three months of the pre-intervention period, the 12 weeks of the intervention period, and the six months of the follow-up period. The three phases of time are on the x-axis, whereas the mean incident frequency is on the y-axis. The intervention group with a peer-led intervention proves to have a significant reduction in the incidences during the intervention period, and they maintain the reduced incidences at follow-up. The control group shows comparatively modest reductions. The decreasing pattern of the peer-led group is a graphic interpretation of the practical and clinical importance of the intervention involving the forensic environment.

Qualitative Findings

Post-intervention interview thematic analysis showed that three prevailing themes were found, which are pro-social identity development, relational trust and belonging, and development of reflective capacity. Peer facilitator participants stated higher levels of confidence and responsibility, and group members stated they felt heard by fellow participants who have also experienced neurodivergent life experiences. Most respondents explained that they transformed being passive receivers of the treatment into active participants in a learning community. These stories were in line with quantitative results that showed enhanced self-efficacy and participation.

Discussion

This study examined the effectiveness of a peer-led collaborative learning intervention among 84 forensic service users with neurodevelopmental conditions. Groups were comparable at baseline across demographic and outcome measures. Repeated-measures analyses revealed significant time × group interaction effects for both social communication, $F(2,162) = 8.94$, $p < .001$, and emotional regulation, $F(2,162) = 7.63$, $p < .01$. The peer-led group showed such high treatment effects at the post-test (Cohen's $d = 1.21$ for social communication; $d = 1.08$ for emotional regulation) and at six-month follow-up, they continued as gains. There was a large difference in program engagement and self-efficacy between the peer-led group ($p < 0.001$), and regression analysis showed that engagement predicted decreases in behavioral incidences ($\beta = -.42$, $p < .01$). It is worth noting that the number of behavioral incidences was reduced by 56% in the peer-led group but by 15% in the control group, and the effects were maintained at follow-up. Mediation analysis proposed that the change in behavioral incidents was partly explained by emotional regulation.

The results suggest that peer-based collaborative learning generates significant changes in the basic socio-emotional competencies in neurodivergent users of forensic services. Big effect sizes indicate that the intervention was statistically significant as well as clinically meaningful. The observed long-term improvements in the follow-up suggest that peer facilitation can lead to improvement in skills consolidation and generalization outside of the organized intervention time. The results of the mediation process also indicate that one of the possible avenues by which behavioral risk can be mitigated is by enhancing emotional regulation processes.

These findings indicate the possibilities of peer-led models in the forensic rehabilitation environments. Peer-facilitated interventions can promote responsiveness and decrease institutional behavioral risk through promoting engagement, self-efficacy, and pro-social identity development. This significant reduction in the number of behavioral incidents highlights clinical and operational significance, which indicates the possibility of improving the safety of institutions, the results of rehabilitation, and long-term desistance patterns. The quasi-experimental design does not allow a causal inference. The sample size is sufficient, yet it limits subgroup analyses between diagnostic categories. The use of institutional incident records may not allow the subtle change of behavior to shine through. Also, only six months of follow-up were done, which did not allow drawing conclusions on long-term sustainability. Future studies are to utilize randomized controlled designs that utilize larger multisite samples and lengthy follow-up. Causal pathways would be made clearer by the use of mechanistic analyses that look into particular mediators (e.g., identity development, peer alliance quality). Compounding qualitative longitudinal designs and objective behavioral identifiers can also improve the data supporting peer-led models of neurodiversity-informed rehabilitation.

Conclusion

The current study has presented strong evidence of the effectiveness of a collaborative learning intervention based on a peer-led intervention for neurodivergent forensic service users. The results showed that there were significant time x group interaction effects of social communication ($F(2,162) = 8.94$, $p < .001$) and emotional regulation ($F(2,162) = 7.63$, $p < .01$) with large post-test effect sizes (Cohen's $d = 1.21$ and $d = 1.08$, respectively). Notably, these benefits were sustained at the six-month follow-up, suggesting the sustainability of the treatment effect. Active participation ($\beta = -0.42$, $p < 0.01$) as a change mechanism was also noted as making significant predictive effects on behavioral incident reductions. One of the most striking results was the 56% decrease in behavioral occurrences in the peer-led group as compared to the 15% decrease in the control group led by clinicians, and the changes were maintained in the long term. Mediation analysis also indicated that improvements in emotional regulation were a partial cause of the decreases in institutional behavioral risk. Taken together, these findings suggest that the peer-mediated interventions can lead to clinically significant changes in socio-emotional functioning and dynamic risk factors in the forensic settings. Peer-led models can make institutions safer by improving responsivity to intervention and pro-social identity development through encouraging self-efficacy, engagement, and pro-social identity development. Randomized controlled trials with multisite but larger samples should be allocated more importance in future studies to enhance causation. The long-term follow-up, which is post six months, is required to evaluate long-term desistance-related outcomes. Also, a mediating pathway including identity transformation and quality of peer alliance should be analyzed to understand change mechanisms. Incorporation of

neurodiversity-sensitive, peer-driven models in forensic rehabilitation mechanisms is a good way forward in terms of clinical efficacy and rehabilitation equity.

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