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Basic Study

Reasoning and Rehabilitation cognitive skills programme for mentally disordered offenders: Predictors of outcome

Young S *et al.* R&R2 predictors of outcome

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Abstract

AIM

To investigate factors predicting treatment completion and treatment outcome of the Reasoning and Rehabilitation Mental Health Programme (R&R2MHP) cognitive skills programme for mentally disordered offenders (MDOs).

METHODS

Secondary analysis of data previously obtained from 97 male patients who were sectioned and detained under the United Kingdom Mental Health Act in low, medium and high security hospitals and who had completed R&R2MHP. Predictors of treatment completion included background variables and five outcome measures: four self-reported measures of violent attitudes, social problem-solving skills, reactive anger and locus of control and an objective measure of behaviour on the ward that was completed by staff. Completion of the 16 session programme, which was delivered on a weekly basis, was classified as ≥ 12 sessions.

RESULTS

It was found that the R&R2MHP is appropriate for delivery to participants of different ages, ethnic background, and at different levels of security without the completion rate or treatment effectiveness being compromised. Participants taking oral typical psychotropic medication were over seven times more likely to complete the programme than other participants. Behavioural disturbance on the ward prior to commencing the programme predicted non-completion (medium effect size). As far as treatment completion was concerned, none of the background factors predicted treatment effectiveness (age, ethnic background, level of security, number of previous convictions and number of previous hospital admissions). The best predictor of treatment effectiveness was attitude towards violence suggesting that this should be the primary outcome measure in future research evaluating outcomes of the R&R2MHP cognitive skills program.

CONCLUSION

The findings suggest that a stable mental state is a key factor that predicts treatment completion.

Key words: Treatment; Completion; Outcomes; Mentally disordered offenders; Reasoning and Rehabilitation Mental Health Programme; Cognitive skills program

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Core tip: This study adds important new information to understanding factors that predict treatment completion of the Reasoning and Rehabilitation Mental Health Programme cognitive skills programme for mentally disordered offenders. Out of 97 male patients, 76 (78.4%) completed the programme. There were two factors that predicted treatment completion, low level of behavioural disturbance on the ward prior to treatment commencing, and most importantly patients currently being on oral typical psychotropic medication, which increased over seven times the likelihood that they would complete the programme. The findings suggest that a stable mental state is a key factor that predicts treatment completion.

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INTRODUCTION

An increasing number of mentally disordered offenders (MDOs), who have severe mental illness, are at far greater risk of committing violent offences and within these populations of MDOs recidivism is high. In the UK, within 5 years of release 15% of MDOs re-offend, 3% of whom commit serious violent offences^[1]. In a large longitudinal cohort study of 47326 Swedish prisoners, Chang *et al*^[2] reported that up to 20% of violent reoffending in men and 40% in women was attributable to the diagnosed psychiatric disorders.

There are well-recognised predictors of recidivism in MDOs, with examples including beliefs and attitudes supporting a criminal lifestyle and poor social problem-solving skills^[3-4]. Consequently, there is a rising demand for evidence-based treatments designed to minimise antisocial behaviour in MDOs and manualised programmes have been developed in an attempt to reduce the rates of offending through cognitive skills training^[5]. The most widely applied programme is the 36 session 'Reasoning and Rehabilitation' (R&R) programme, which employs a cognitive-behavioural paradigm and is accredited for use by the correctional services^[5]. R&R aims to encourage self-control, meta-cognition, social skills, interpersonal cognitive problem-solving skills, creative thinking, critical reasoning, social perspective-taking, values enhancement, emotional management and helper therapy^[6]. While R&R has previously been shown to be effective in reducing recidivism rates in young offenders and juveniles, completion rates may be poor ^[7,8].

In an attempt to be more responsive to the needs of offenders, Young *et al*^[9] developed a revised version of the original R&R, referred to as 'Reasoning and Rehabilitation Mental Health Programme' (R&R2MHP), which specifically focuses on helping offenders with serious mental health problems (*e.g.*, psychosis) and has substantially fewer sessions (*i.e.*, 16 versus 36). While the original R&R had been shown to be effective in reducing offending in both institutional and community settings with moderate effect sizes^[10], it was not considered sufficient to meet all the needs of special offender groups, including those with mental disorders^[9].

In their multi-site controlled trial using the R&R2MHP, Rees-Jones, Gudjonsson *et al*^[11] found that 52 out of 67 (78%) of participants completed the

programme (*i.e.*, completing 80% or more of the sessions). Yip *et al*^[12] found a completion rate of 80% in a maximum secure unit setting. A completion rate of 92% was found among patients with intellectual disability^[13]. These studies have reported a number of positive outcomes relating to attitudes towards violence, social-problem solving skills, reactive anger, locus of control and behaviour on the ward.

In spite of the high completion rate of the R&R2MHP, it is nevertheless important to identify factors that may either facilitate or hinder successful completion of the programme. Young *et al*^[14] found that most non-completers were from maximum security, suggesting that the institution's level of security is a possible factor. No other predictors of non-compliance were examined in this study. Rees-Jones *et al*^[11] found that there were no significant differences between the completers and non-completers in age, previous convictions, previous admissions, and motivation to engage in treatment. The only difference was that non-completers had significantly better problem-solving skills at baseline than the completers (Cohen's $d = -0.65$, medium effect size), which seems counter-intuitive. Yip *et al*^[12] found no significant difference between completers and non-completers in age, number of previous convictions or admissions, but the non-completers were rated by informants to be significantly more behaviourally disordered (Cohen's $d = -0.88$, large effect size) as measured by the Disruptive Behaviour and Social Problem Scale (DBSP)^[15]. This provides strong evidence that participants who are rated by nursing staff as behaviourally disturbed prior to the commencement of the R&R2MHP are more likely than other participants to not complete the programme.

The purpose of the current study is to combine data from the Rees-Jones *et al*^[11] and Yip *et al*^[12] studies, which include all three levels of security (low, medium, maximum), in order to answer the following research questions: (1) what factors predict treatment completion/non-completion; and (2) what factors predict treatment outcome among those completing the programme.

The variables we investigated in the current study include the age of the participant, ethnic background ('white' versus 'other'), level of security (*i.e.*, low, medium and high), number of previous convictions, number of previous hospital

admissions, medication status, and the scores on typical psychometric outcome measures at baseline (*i.e.*, prior to the commencement of the programme) relating to attitudes towards violence, social-problem solving skills, reactive anger, locus of control and behaviour on the ward. Of particular interest is type and form of administration of the psychotropic medication the patient is prescribed at the time of the programme, because deteriorating mental state is an important factors that leads to non-completion^[16]. The distinction drawn in this study is between the 'First' and 'Second' generation antipsychotic drugs and whether they are prescribed orally or by a depot injection. We also analysed differences between completers and non-completers in the outcome measures at baseline.

MATERIALS AND METHODS

Participants

Participants were a mixed sample of 97 males who were sectioned and detained under the United Kingdom Mental Health Act (1983) in either a low, medium or high secure hospital setting [$n = 25$ (25.8%), 42 (43.3%), 30 (30.9%) respectively] in 13 secure forensic facilities across the United Kingdom (three low secure, nine medium secure and one high secure). These settings differ in their staffing arrangements and physical security measures. Patients are stratified based on whether they present a serious danger to themselves and others and have potential to abscond, hence reside within a graded care system relative to their individual needs.

All patients participated in the treatment condition (R&R2MHP) and inclusion criteria included an age range of 19-63, history of severe mental illness (*e.g.*, schizophrenia, schizoaffective disorder, bipolar disorder), no previous experience of participating with R&R2, and proficiency in the English language. Exclusion criteria included intellectual disability, patients who were mentally unstable (*e.g.*, experiencing serious current psychotic symptoms), and/or who posed a risk of violence to the researcher.

Intervention

R&R2MHP^[9] is a structured, manualised CBT programme comprised of sixteen 90-min sessions, delivered on weekly basis, and developed for antisocial youths and adults with mental health problems. The programme is a revised version of the original 36 session Reasoning and Rehabilitation programme, initially developed for use in correctional facilities^[5]. The aim of the programme is to reduce anti-social behaviour and attitudes and improve pro-social thinking, emotional and behavioural control and problem-solving skills. R&R2MHP consists of five treatment modules: (1) a neurocognitive model which introduces techniques to increase attention control, impulse control, memory, and constructive planning; (2) a problem-solving module which encourages problem identification, generation of multiple alternative solutions, and consequential thinking; (3) and emotional control module which involves management of anxiety, anger, and conflict; (4) a social skills module which aims to increase awareness of the thoughts and feelings of others; and (5) a critical reasoning module which aims to develop skills in the assessment and evaluation of information, *e.g.*, evaluating options and effective behavioural skills. The programme offers a novel approach by allowing participants to engage in both individual and group therapy, with the latter being achieved by the inclusion of a mentoring paradigm whereby a member of staff meets with the patient between group sessions to assist the participant to transfer skills learned in the group into their daily lives. Mentors receive written guidance about how to structure each mentoring session and received training and on-site supervision from programme facilitators. As a structured, manualised programme, R&R2MHP fosters consistency in delivery and programme integrity. A steering committee, attended by site principal investigators and clinical staff, met regularly to maintain a consistent approach to research and treatment.

Treatment completion

A cut-off of ≥ 12 sessions was used to classify patients as completers, in line with the methodology and recommendation provided by Cullen *et al*^[7] thus representing at least 80% attendance of the programme. Hence, non-completers were classified as those attending < 12 sessions.

Baseline assessments

Demographic data (*e.g.*, age, and ethnic background), psychiatric diagnosis, medication status, and index offence information were obtained from clinical file review at the beginning of the study. Medication status at the time of study was categorised into the following groups according to the type of medication and method of delivery (*i.e.*, oral versus depot injection): (1) currently on oral typical psychotropic medication; (2) currently on oral atypical psychotropic medication; (3) currently on depot typical psychotropic medication; (4) currently on depot atypical psychotropic medication; (5) currently on antidepressant psychotropic medication; (6) currently on mood stabilisers psychotropic medication.

The 'typical' psychotropic medication' category included: Haloperidol, Thioridazine, Thiothixene, Fluphenazine, Trifluoperazine, Perphenazine, Molindone, Loxapine and Prochlorperazine.

The 'atypical' psychotropic medication category included: Risperidone, Olanzapine, Quetiapine, Clozapine, Ziprasidone, and Aripiprazole.

Outcome measures

The following outcome measures were administered at baseline (Time 1) and repeated at post group (Time 2) to assess the violent attitudes and social problem-solving skills, reaction to provocation (anger), and disruptive behaviour and social functioning. All measures are self-reported with the exception of the Disruptive Behaviour and Social Problem Scale (DBSP) which is rated by an informant.

Maudsley Violence Questionnaire (MVQ)^[17-18]: is a 56-item true/false questionnaire with a score range of 0-56. The MVQ measures cognitive style in relation to violence attitudes and is designed for use across a spectrum of violent offenders and non-violent individuals. Following factor analysis the 56 items can be stratified into two factors: *Machismo* – endorsing stereotypical expectations of men as strong and tough (42 items based on this factor) and *Acceptance* – accepting and

enjoying violent behaviour (14 items based on this factor). The MVQ has high internal consistency (Cronbach's α ranges from 0.76 to 0.91) and validity [17].

Social Problem-Solving Inventory-Revised Short (SPSI-RS)[19]: is a 25-item questionnaire with a 5-point Likert-type response format. The Inventory is comprised of five subscales: two of which measure problem-solving orientation (positive and negative problem orientation) whilst the remaining three assess problem-solving style (rational problem-solving, impulsivity/carelessness, and avoidance) (scores range between 0 and 20 for each domain). An adjusted total score was obtained (score range = 0-20) with higher scores reflecting better problem-solving ability. The measure is reported to have high test-retest reliability (0.68 - 0.91) and internal consistency (Cronbach's α ranged from 0.69 to 0.95).

The Novaco Anger Scale and Provocation Inventory: Reaction to Provocation/ Personal Affect Questionnaire (NAS-PI)[20]: was used to assess cognitive, arousal, and behavioural domains of anger experience. Forty-eight items, each rated on a 3-point Likert-type format scale, provide these domains with higher scores indicating higher anger levels (score range between 16 and 48 for each domain); a total score can also be obtained by summing the domain scores (score range from 48-144). The NAS-PI has been shown to have good reliability (test-retest coefficients ranged from 0.78 to 0.91) and internal consistency of 0.92[21-22].

The Locus of Control Scale (LoC)[23]: was used to assess the extent to which participants believe events to be internally or externally controlled. The LoC is a 40-item yes/no questionnaire with a high score indicating that the person perceives events as externally controlled, whereas a low score indicates that a person believes they control events internally (score range from 0 - 40). The scale has been found to have varied level of internal consistency, ranging from 0.37 to 0.86[24].

The Disruptive Behaviour and Social Problem Scale (DBSP)[15]: is an informant-rated questionnaire consisting of 14 statements rated on a 7-point Likert-type format

scale relating to a person's behaviour and social interactions over the past month (score range of 14 - 98) in their current environment (*i.e.*, in this study, this was completed by a member of the healthcare staff who knew the patient well and rated their behaviour on the ward). The scale consists of two factors: (1) disruptive behaviour, for example, whether the participant is difficult to manage; if they are verbally aggressive or attention seeking (score range 8 - 56), and (2) social and psychological functioning, for example, insight into behaviour, feelings of guilt, and positive social interactions with others (score range of 6 - 42). Higher scores indicate a greater degree of problems. Both factors have good internal consistency in male offenders (Cronbach's α 0.92 and 0.84, respectively).

Procedure

We combined the existing data bases from the Rees-Jones *et al*^[11] and Yip *et al*^[12] studies. The two studies included 67 and 30 male participants in the treatment group, respectively. Both studies involved non-randomised controlled trials. For treatment effectiveness we relied on differences in the outcome measures between baseline and end of treatment for those participants who completed the programme. In controlled trials the failure to complete the programme reduces the real differences between the treatment and control groups^[25].

Statistical analysis

Descriptive statistics summarised demographics, clinical and forensic baseline characteristics. To assess differences between groups t-tests were performed on continuous data and χ^2 -tests on categorical data. Change scores in the outcome measures between baseline (Time 1) and end of treatment (Time 2) were measured in two ways: (1) change in mean scores over time and use of a paired t-test (Cohen's *d* was calculated by the mean difference score over the standard deviation of the difference); and (2) by categorising an improvement of one or more points on each test as an 'improvement' and no change or a worse score as 'no improvement'. A binary logistic regression was used to investigate which of the outcome measures best predicted completion versus non completion.

We ran a binary logistic regression for each of the outcome measures with improvement between Time 1 and Time 2 being the independent variable and predictors being participants' age, ethnic background ('black' versus 'other'), oral typical psychotropic medication (yes versus no), and level of security (low/medium versus high).

RESULTS

Patient demographics and baseline characteristics

The sample were of mixed ethnicity; White ($n=52$, 53.6%), Black Caribbean ($n=13$, 13.4%), Black African ($n=11$, 11.3%), Black Other ($n=12$, 12.4%), Asian ($n=2$, 2.1%), Mixed Race ($n=4$, 4.1%) or Other ($n=2$, 2.1%). These were reclassified as 'White' ($n=52$, 53.6%) and 'Other' ($n=44$, 45.4%). The age range of participants was 19-63 with an average age of $\bar{x}=35.31$, $SD=9.16$. All participants had a history of severe mental illness, most commonly psychotic disorders ($n=87$, 89.7%), as well as mood disorders ($n=9$, 9.3%) and developmental disorders ($n=1$, 1%).

The majority of index offences were violence related ($n=85$, 73.9%), for example homicide and assault; other index offences for current admission included financial ($n=6$, 5.2%), drug ($n=4$, 3.5%), sexual ($n=12$, 10.4%), arson ($n=7$, 6.1%) and other ($n=1$, 0.9%).

Treatment completion rate

The average number of sessions attended was 13.22, $SD=3.84$; 78.4% ($n=76$) participants completed R&R2MHP and 21.6% ($n=21$) did not (*i.e.*, they did not complete the minimum of 12 sessions). Information on the reason for drop out was only available for 10.3% ($n=10$) of cases: these were due to non-compliance ($n=6$), poor mental state ($n=1$) and 'other unknown reason' ($n=3$).

Factors predicting treatment completion

Background measures: There was no significant age difference ($t=1.0$) between the completers ($\bar{x}=35.8$, $SD=9.4$) and non-completers ($\bar{x}=33.5$, $SD=8.0$).

The completion rates for the three levels of security (low, medium, high) were 76.0% (n=19), 78.6% (n=33) and 89.0% (n=24), respectively. The difference was not significant ($\chi^2=0.131$, $df=2$).

Similarly there was no significant difference between the number of 'White' (n=43, 82.7%) and 'Other' (n=32, 72.7%) ethnic participants who completed the programme. This difference was not significant ($\chi^2=1.39$, $df=1$).

There was no significant difference ($t=-0.32$, $df=86$, ns) in the number of previous convictions between the completers ($\bar{x}=8.34$, $SD=14.88$) and non-completers ($\bar{x}=8.45$, $SD=9.62$).

No significant difference ($t=-0.85$, $df=82$, ns) was found in the number of previous hospital admissions between the completers ($\bar{x}=3.89$, $SD=3.86$) and non-completers ($\bar{x}=4.79$, $SD=4.60$).

Table 1 shows the differences in the medication status between completers and non-completers. Out of the six medication categories only 'Currently on oral typical psychotropic medication' showed a significant difference between the two groups ($\chi^2=4.86$, $df=1$, $OR=7.62$, $95\% CI=0.97-60.62$).

Baseline measures: Out of the five baseline psychometric measures, only the DBSP discriminated significantly between completers and non-completers (see Table 2). Completers had a significantly lower score ($t=-2.27$, $df=76$, Cohen's $d=0.60$). A further analysis of the DBSP showed that the Disruptive Behaviour subscale ($t=-2.19$, $df=76$, $p<.05$, Cohen's $d=0.59$) differentiated better between the completers and non-completers than the Social Problem subscale ($t=-1.36$, $df=76$, ns, Cohen's $d=0.38$).

Factors predicting treatment outcome among completers

Background predictors of therapeutic outcome: The binary logistic regression for each of the outcome measures showed that none of the predictors (age, ethnic background, oral typical psychotropic medication, and level of security) predicted therapeutic outcome (categorical measure).

Outcome predictors of therapeutic outcome: Table 3 shows the difference in the outcome measured between Time 1 and Time 2. There was a significant improvement over time on four of the outcome measures: MVQ, SPSI-R:S, NAS-PI and DBSP with the effect sizes (Cohen's *d* for a paired sample) being 0.43, 0.27, 0.23, and 0.27, respectively. No significant improvement was found for LoC.

DISCUSSION

The findings suggest that R&R2MHP can be used with participants of different ages, ethnic background, and at different levels of security without the completion rate or treatment effectiveness being compromised.

Two specific findings are relevant to the completion rate, namely psychotropic medication and ward behaviour. The medication status of the participants appears to influence the completion rate. Those participants who were on oral typical psychotropic medication at the time of the study were over seven times more likely to complete the programme. Yet being on oral typical psychotropic medication did not predict treatment effectiveness on any of the five outcome measures. The implication is that this type of medication helped participants complete their required sessions, but it did not have any additional benefit relevant to treatment effectiveness. Participation in cognitive skills group programmes of this type require a reasonably stable mental state, however none of the other types of medication predicted completion. There is evidence that atypical antipsychotics do not offer clinical superiority over typical antipsychotics (with the exception of clozapine)^[26-27], and we have found that those patients on oral route of typical antipsychotics are more likely to complete the programme. Oral medication may provide greater flexibility to cope with changes in mental state and prevent deterioration. Furthermore patients who are on an oral route of antipsychotic administration rather than depot are likely to be more clinically stable in terms of insight and attitude towards treatment, and this is likely to translate into better compliance with psychological treatment^[28]. This is a novel finding and finding and merits further research.

At baseline the completers had a significantly lower total score on a measure of ward behaviour rated by staff (the DBSP) than the non-completers with a medium effect size. The disruptive behaviour subscale was a much better predictor of non-completion than the social and psychological functioning subscale (Cohen's d 0.59 versus 0.38). This suggests that patients whose behaviour is often disruptive on the ward are at much greater risk of non-completion than other patients. The implication is that their behavioural disturbance on the ward needs to be addressed before they are able to participate fully in a cognitive skills intervention. Future research should investigate the causal and contributory factors to behavioural disturbance in the ward setting and this may relate to a range of problems, including poor mental state^[29] and symptoms of attention deficit hyperactivity disorder (ADHD)^[30].

As far as treatment effectiveness is concerned, the MVQ performed much better in terms of effect size than the other outcome measures. The two main violent attitudes measured by the MVQ, which have implications for treatment targets, are the use of violence to defend or enhance vulnerable self-esteem and the general acceptance that violence is justified as a way of life. Typically, controlled treatment trials compare the treatment group with a control group with the former including outcome measures of those who did not complete the programme ('Intention to Treat'; 'ITT'), which in fact reduces the effect size where there is a poor completion rate^[25]. This may bias the apparent effectiveness of specific outcome measures. The answer is either to delete the non-completers from the group differences comparison (*i.e.*, conduct a per-protocol analysis) or control for factors that may cause drop-out. The latter is methodologically sounder than the former^[31].

Everitt and Pickles (2004) outline six factors that influence treatment adherence, including completing all the sessions: (1) the amount of time and inconvenience; (2) the perceived importance of the procedure; (3) the potential health benefits versus potential risks; (4) the amount of discomfort caused by the treatment; (5) the amount of effort required; and (6) the number and type of side effects caused by the treatment^[31]. They point to a number of factors that may improve treatment adherence, including short treatment trials, close supervision (*e.g.*, inpatient settings), and staff maintaining a positive attitude during the trial.

Future research should investigate the effects of these six factors. Reducing the sessions of the original R&R has clearly improved treatment completion; completion in institutional settings may be better than programmes delivered in the community^[32, 25].

LoC showed no significant treatment effects in the current study. It failed to distinguish between completers and non-completers, using a categorical measure of improvement. In addition, it showed no significant difference between the Time 1 (baseline) and Time 2 (end of treatment) measures, unlike the four other outcome measures. Rees-Jones *et al*(2012) found no difference in LoC between Time 1 and Time 2 for males in low and medium security, but there was a significant improvement at Time 3 (at three month follow-up)^[11]. In contrast, Jotangia *et al*(2013), investigating females in low and medium security, found an improvement on the LoC scale both at Time 2 and Time 3^[16]. This suggests two possibilities. Firstly, LoC is more effecting in measuring treatment improvement in females than males. This possibility merits further research. Secondly, LoC may take longer than the other measures to show treatment effects; this has been found for other outcome measures^[25].

The main limitations of the study are the lack of documented reasons for the non-completion, the relatively low number of participants in the non-completion group, which resulted in limited power, the lack of information about institutional factors that may have influenced non-completion, and the fact that the participants were a convenience sample from previously published studies. In addition, the effects of gender could not be ascertained and this should be investigated in future studies.

This is a cross-sectional study that investigates associations rather than causation, nevertheless, this study has added important new information to understanding factors predicting treatment completion/non-completion among MDOs. For patients who were on oral typical psychotropic medication, this very significantly improved completion. In contrast, disturbed ward behaviour prior to commencing treatment was significantly associated with non-completion. No background factors were found to predict treatment outcome among those who

completed the programme but among outcome measures attitudes towards violence was the best predictor of treatment effectiveness suggesting that this should be the primary outcome measure in future research.

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COMMENTS

Background

Cognitive skills programmes have been found to be effective in reducing offending through reduced violent attitudes and improved social problems skills. It is important to understand the factors that best predict completion of programmes, as well as those predicting a successful treatment outcome among those who completed the programme. The factors that best predict completion may not be the same factors as those that predict treatment outcome.

Research frontiers

Identification of the variables that predict treatment completion and treatment outcome will lead to more personalised treatment and better use of resources.

Innovations and breakthroughs

No previous research has investigated the effects of typical versus atypical psychotropic drugs as predictors of treatment completion and treatment outcome among mentally disordered offenders. The findings show that typical psychotropic drugs, administered orally, increased seven-fold the likelihood of the patients completing the programme, whereas it had no effect on treatment effectiveness. This is a novel finding.

Applications

The mental state of patients engaging in cognitive skills programmes needs to be carefully assessed and continually reviewed during the programme as well as their medication status. In addition to mental state, this includes the behaviour of the patient on the ward. The fact that the age of the patient, ethnic background, number of previous convictions, number of hospital admissions, and level of security did not predict treatment completion or treatment outcome shows that the Reasoning and Rehabilitation Mental Health Programme (R&R2MHP) programme can be applied to most patients at different levels of security provided their mental state is stable.

Terminology

A typical medication comprised the first generation of psychotropic drugs, followed by the atypical (second generation) drugs.

Peer-review

This is, in summary, an interesting research paper aimed to investigate factors predicting treatment completion and treatment outcome of the R&R2MHP cognitive skills programme in a sample of 96 mentally disordered offenders.

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Table 1 Differences in medication status of completers and non-completers

	Completers	Non-completers	χ^2	OR
	<i>n</i> (%)	<i>n</i> (%)	df = 1	(95%CI)
Currently on oral typical psychotropic medication	22 (29.7)	1 (5.3)	4.86 ¹	7.62 (0.97-60.62)
Currently on oral atypical psychotropic medication	39 (52.7)	13 (68.4)	1.51	0.51 (0.18-1.50)
Currently on depot typical psychotropic medication	10 (13.5)	3 (15.8)	0.65	0.83 (0.21-2.38)
Currently on depot atypical psychotropic medication	6 (8.1)	0 (0)	1.65	0.91 (0.86-0.98)
Currently on antidepressant psychotropic medication	16 (21.6)	2 (10.5)	1.2	2.34 (0.49-11.2)
Currently on(mood stabilisers psychotropic medication	20 (27.0%)	5 (26.3)	0.01	1.04 (0.33-3.25)

¹*P* < 0.05.

Table 2 Differences in the baseline scores of completers and non-completers on the Maudsley Violence Questionnaire, Social Problem-Solving Inventory-Revised Short, Novaco Anger Scale and Provocation Inventory, Locus of Control Scale and : Disruptive Behaviour and Social Problem Scale

	Completers	Non-completers	t-value	Cohen's d
	Mean (SD) (n)	Mean (SD) (n)	(df)	
MVQ (Total)	15.8 (12.2) (76)	17.4 (13.3) (21)	-0.52 (95)	0.05
SPSI-RS	11.8 (3.0) (76)	12.6 (3.3) (21)	-1.15 (95)	0.22
NAS-PI	81.0 (19.9) (76)	80.3 (18.4) (21)	0.14 (95)	0.01
LoC	16.77 (5.4) (52)	13.93 (4.4) (15)	1.85 (65)	0.57
DBSP	35.2 (11.4) (63)	43.1 (14.6) (15)	-2.27 (76) ¹	0.60

¹*P* < 0.05. MVQ: Maudsley Violence Questionnaire; DBSP: Disruptive Behaviour and Social Problem Scale; NAS-PI: Novaco Anger Scale and Provocation Inventory; LoC: Locus of Control Scale; SPSI-RS: Social Problem-Solving Inventory-Revised Short.

Table 3 Differences between pre and post measures on the psychometric tests

Measure	<i>n</i>	\bar{x} (pre)	SD (pre)	\bar{x} (post)	SD (post)	t(df)	Cohen's d
MVQ (Total)	76	15.78	12.19	12.23	9.61	3.75 (75) ²	0.43
SPSI	76	11.73	3.00	12.54	3.04	-2.33 (75) ¹	0.27
NAS-PI	76	80.99	19.89	77.09	15.86	2.09 (75) ¹	0.23
LoC	52	16.77	5.42	16.32	5.39	1.91 (51)	0.08
DBSP	63	35.21	11.40	32.57	11.32	2.16 (62) ¹	0.27

¹*P* < 0.05; ²*P* < 0.01. MVQ: Maudsley Violence Questionnaire; DBSP: Disruptive Behaviour and Social Problem Scale; NAS-PI: Novaco Anger Scale and Provocation Inventory; LoC: Locus of Control Scale; SPSI-RS: Social Problem-Solving Inventory-Revised Short.