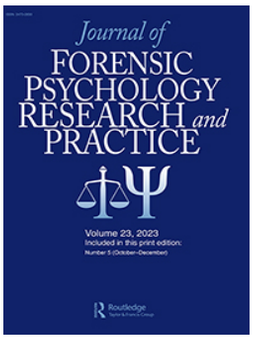

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The Effectiveness of Violence Reduction Therapy in Detained Adult Male Populations: Insights from a Systematic Review and Treatment Evaluation Capturing Individual Level Changes

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ABSTRACT

A systematic review examined the effectiveness of violence reduction therapy in detained forensic populations, capturing 23 papers. This demonstrated several themes and a failure to consider individual change alongside group effects. Consequently, the review was followed by evaluation of an aggression therapy program (Life Minus Violence-Enhanced: LMV-E) among adult male forensic patients (n = 26), which considered group and individual treatment change. Collectively, the research demonstrated a positive effect on emotional regulation (anger), with the ability to control and experience this particularly evidenced following therapy. The paper highlights the importance of accounting for individual change and developing theory informed evaluations.

KEYWORDS

Aggression therapy; LMV-E; male forensic patients; male prisoners; therapy outcome; evaluation

The effectiveness of psychological interventions for violence among detained samples has been considered, with some research failing to find a significant effect (e.g. Bowes et al., 2012; Lardén et al., 2018) and others reporting positive outcomes (e.g. DiPlacido et al., 2006; Travers et al., 2013). There has been a focus by some on anger management intervention as opposed to the broader treatment aims of aggression therapy. Positive effects for anger management therapy have been reported (Henwood et al., 2015), including an impact on risk for violence. Henwood et al. (2015), for example, reported an overall risk reduction of 28% for violent recidivism for those completing such intervention.

Thus, the evaluation of treatment for aggression has been of interest, with research further suggesting several factors that could negatively impact on effectiveness in detained samples. This includes evidence for complex mental health presentations (Bianchini et al., 2019; McGonigal et al., 2018) and raised levels of attrition compared to non-detained populations (Baggio et al., 2020). However, focus has certainly been on

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determining the overall effectiveness of such interventions as opposed to trying to capture the mechanisms through which change may occur or be limited.

In forensic mental health settings, research examining the effectiveness of violence therapies is comparatively scarce, although positive treatment effects have been found for CBT informed therapies and Aggression Replacement Therapy (Daffern et al., 2018; Haddock et al., 2009). The paucity of research examining aggression treatment effectiveness among forensic patients may be attributable to challenges that arise from working with this population. Studies in this field are usually limited by accessibility for researchers and small sample sizes (Horgan et al., 2019). There is also an absence more broadly of randomized designs, a lack of controls (Klein-Tuente et al., 2020; Richter et al., 2018) and variability in outcome measures. For example, some have considered longer term impacts, such as reconviction rates, and others more immediate outcomes, such as in-service incidents of verbal aggression, self-harm, and security breaches (Horgan et al., 2019). Self-reported changes have also focused on the use of psychometric measures (Daffern et al., 2018). In addition, there has seemingly been focus on group effects to determine treatment change, as opposed to accounting for individual improvement, including *levels* of improvement (Ireland et al., 2020). The latter is arguably important to consider since positive *progression* toward treatment aims is just as important in terms of program success as trying to determine a recovery effect (Ireland et al., 2020), which may be limited by the sample under review.

What is not disputed, however, is the complexity of completing research in this area accounting for the range of factors that require consideration. Accounting simply for "anger management" arguably fails to capture several factors of importance and is not consistent with multifactorial models of understanding aggression. The *General Aggression Model* (GAM: Anderson & Bushman, 2002), for example, draws from several factors, including social, cognitive, biological, and developmental to describe aggression as a repeated interaction that comprises proximate and distal influences (Allen & Anderson, 2017; Allen et al., 2018). The GAM captures a role for individual features, the situation, cognition, affect, and arousal, further capturing how appraisal and decision-making is influenced in a manner that produces an aggressive response. Such a response can be carefully considered and/or impulsive, with this further influenced by an individual's internal state and the cognitive resources available to them. By highlighting several factors as important to aggression, the GAM emphasises the necessity to address several treatment needs, including challenging aggressive scripts, managing affective states, and reducing impulsivity. The importance of cognition, notably social cognition, is further well recognized in the *Integrated Social Information Processing Model* (ISIP) outlined by Huesmann (1988; Huesmann, 2018). The ISIP is perhaps the more fundamental model to consider for aggression treatment (Ireland, 2023) and precedes the framework offered by the GAM. ISIP illustrates

well how aggression is a *choice* made through a process of cognitive and social appraisal, which captures individual learning history, cognitive appraisal skills and biases, a range of affects and consequence evaluation. Both theories are important for aggression treatment and have been applied as a fundamental basis to some long-term violence therapies used within forensic mental health services (e.g. Life Minus Violence-Enhanced [LMV-E] program, Ireland & Ireland, 2019).

Consequently, the aims of the current study are to consider systematically the literature on treatment evaluation for aggression therapy in detained samples and to broaden this beyond anger management therapy. This will capture factors of relevance to evaluation that will then be incorporated into consideration of the effectiveness of a high dosage aggression therapy in a detained forensic mental health sample, a therapy that specifically captures factors outlined in the GAM and ISIP. This evaluation will build further on the systematic review by capturing a population noted as under-researched and by determining if reported treatment outcomes can be replicated through consideration of both individual *and* group change. Based on the findings of the systematic review, we predicted that the evaluation would demonstrate evidence for improvements in coping and problem-solving skills, a decrease in aggressive beliefs and hostility and improvements in emotion regulation. We predicted these findings would be replicated at group and individual level.

Systematic review and treatment outcome study

The systematic review aimed to examine the effectiveness of therapy designed to address aggression among adult men detained in prison or forensic hospital, focusing on evaluating therapy outcomes. This was then followed by the evaluation of the impacts of a long-term violence intervention in a high secure forensic mental health sample, since this emerged specifically as an under-researched sample in the review. This focused on the outcomes noted in the review themes and extended them to incorporate individual as well as group change, with the former indicated by the systematic review as absent from the literature.

Method

Systematic review

PRISMA guidelines were adhered to (Moher et al., 2009), with a search conducted across seven databases: PubMed, PsycINFO, SCIE, PsycARTICLES, Cochrane Library, Medline, and Google Scholar. These databases were selected as they are sensitive to social science research and also allow for more recent publications to be accessed. The search terms were (Male OR Men OR man OR males) AND (Forensic psychiatric patients OR sectioned OR incarcerated OR

inmates OR prison OR offenders OR mentally disordered offenders) AND (violence reduction intervention OR aggression therapy OR anger management OR therapeutic intervention) AND (risk of violence OR dynamic risk factors OR protective risk factors OR aggregate violence risk OR violence OR violent incidents OR aggression OR habitual aggression OR emotional regulation OR reactive aggression OR proactive aggression OR violent attitudes).

The search terms and inclusion criteria were established using the PICO search strategy protocol (Miller & Forrest, 2001). The population, intervention, comparison, and outcomes were identified, key terms highlighted, and alternate terms generated for the search strategy. Additional articles were found through manual searching of the reference lists of relevant papers.

Inclusion criteria

Studies were considered eligible if they reported on (a) the effectiveness of a therapeutic violence intervention among adult males, (b) studied intervention effectiveness in an inpatient adult male forensic sample, (c) presented findings derived from an empirical research method where the method was explicitly described, and (d) were available in English. No time limits were placed on the searches.

Exclusion criteria

Studies were excluded if they (a) did not report on the effectiveness of a therapeutic intervention for violence/aggression, (b) studied the effectiveness of a program in a solely female population or individuals under the age of 18, (c) utilized a case study design, (d) focused on services or an intervention not designed *specifically* for aggression (e.g. life skills, schema therapy), (e) focused on intimate partner violence and/or sexual violence as opposed to general violence (f) did not contain primary data, and (g) were not available in English.

Eligibility screening

Titles and abstracts were screened to determine if they met the inclusion criteria. Papers not meeting any exclusion criteria were included for full-text screening. Full texts were then screened to determine if they met the inclusion criteria.

Quality assessment

The Effective Public Health Practice Project (EPHPP) quality assessment tool was used to screen articles that met the inclusion criteria (Thomas et al., 2004). This tool is suitable for use in systematic reviews of effectiveness and has good psychometric properties (Armijo-Olivo et al., 2012; Deeks et al., 2003). The tool integrates eight components to give a global rating of strong, moderate, or weak. These components are selection bias, confounders, blinding, data

collection methods, withdrawals and dropouts, intervention integrity, and analyses (Thomas et al., 2004). Studies rated "weak" were examined closely to determine whether they presented a risk of bias to the review.

Theme extraction

Braun and Clarke's (Braun & Clarke, 2006) approach to thematic analysis was employed. Features of the data were organized by codes, allowing for identification of initial patterns. Following this, several themes were identified based on patterns that emerged at the coding stage. These themes were refined through a process of inter-rater reliability with another coder.

Treatment outcome study: Life Minus Violence-Enhanced (LMV-E)

Setting and participants

The evaluation took place in a high-secure forensic mental health hospital that provided treatment for adult men considered a high risk of harm to themselves and/or others. All participants ($n = 26$) had a history of violent behavior. All fully completed the program. The mean age of participants at treatment commencement was 34.3 years (SD = 7.8). Participants primarily completed the treatment as a group (76.9%), with six completing it individually (23.1%). The program lasted on average 10 months.

Therapeutic intervention

The intervention completed was Life Minus Violence-Enhanced (LMV-E). This is a high dosage Multifactorial Integrated Therapy for Treatment (MITT) for aggression (Ireland & Ireland, 2019). LMV-E targets improvement in insight, motivation, interpersonal skills, empathy, and decreased minimization of violence. It applies a "strength-based" approach, which captures an understanding of protective as well as risk factors. The program entails a minimum of 125 group treatment sessions over a nine to 10-month period, with up to eight individual consolidation sessions between modules to support learning. The program can be conducted on an individual basis. It comprises around 300 hours of therapy. Several therapeutic techniques are employed within the program, including group discussion, skills role-plays, cognitive rehearsal, and mindfulness (Daffern et al., 2018).

Measures

The following self-report measures were examined pre- and post-intervention.

Aggression Questionnaire (AQ). The AQ examines aggression, and comprises four subscales: physical aggression, verbal aggression, anger, and hostility (Buss & Perry, 1992). Reliability ranged from $\alpha = .72$ to .85 across scales and for the total.

Coping Scale Questionnaire-3 (CSQ-3). The CSQ-3 examines four coping strategies: rational, detached, emotional, and avoidance coping (Roger et al., 1993). Reliability ranged from α = .70 to .80 across subscales.

Emotional Control Questionnaire (ECQ). The ECQ measures the extent to which someone utilizes four emotional control strategies: rehearsal (the tendency to ruminate on upsetting events), emotional inhibition, aggression control, and benign control (correlated with impulsivity; Roger & Najarian, 1989). Reliability ranged from α = .77 to .86.

Expressive and Instrumental Aggression Questionnaire (EXPAGG). The EXPAGG is designed to measure social representations of aggression as either instrumental or expressive (Campbell et al., 1999; Driscoll et al., 2005). Subscale reliabilities were α = .70 and .83.

Novaco Anger Scale and Provocation Inventory (NAS-PI). The NAS-PI contains two parts: the anger scale measures cognitive, arousal, and behavioral domains of anger, and the Provocation Inventory measures anger intensity across provocative situations (Mills et al., 1998; Novaco & Taylor, 2004). Reliabilities for subscales ranged from α = .82 to .95.

Social Problem Solving Inventory-Revised Short Version (SPSI-R:S). The SPSI-R measures an individual's problem-solving style and comprises five subscales: Positive Problem Orientation (PPO), Negative Problem Orientation (NPO), Impulsivity-Carelessness Style (ICS), Avoidance Style (AS), and Rational Problem Solving (RPS; D'Zurilla et al., 2001; Wakeling, 2007). Subscale reliabilities ranged from α = .73 to .95.

State Trait Anger Expression Inventory II (STAXI-II). The STAXI-II measures the intensity of anger, frequency of anger, disposition for anger, the expression of anger toward others, and suppression/control of anger (Gilderthorp et al., 2020). Subscale reliabilities ranged from α = .81 to .96.

Barratt Impulsivity Scale-IIr (BIS-IIr). The BIS-IIr measures impulsiveness, consisting of three subscales: attentional, motor, and non-planning impulsivity (Stanford et al., 2009). One item was removed was the original scale, which referred to moving location frequently. This did not apply to the current sample (see Daffern et al., 2018). Subscales ranged from α = .59 to .83.

Determining clinical change: approach to analysis

Group change was determined using Wilcoxon Signed Rank Tests, comparing pre- and post-presentation. Individual change was examined using reliable change criterion (RCC). In order to calculate the RCC, a standard error of

change (SE of change) was calculated using the pre-intervention standard deviation (SD) and the reported internal consistency (α) of the measure. A confidence level of 95% was utilized (1.96) to calculate the RCC level. Individuals were classified as having made a reliable improvement or deterioration if their change score exceeded the calculated RCC. Determination of a clinical cut-off was also applied, where a clinical cut-off was used to indicate whether an individual's post-intervention scores moved into a "recovery" range of a functional population, falling two SD or more from the pre-intervention mean. This applied 1 SD and 0.5 SD as cut-offs to indicate "improvement" and "minimal positive response", respectively (Atkins et al., 2005). Finally, the Jacobson–Truax method was employed. This uses both a reliable change index (RCI) and a 2 SD cut-off to classify individuals into recovered, improved, unchanged, or deteriorated (Jacobson et al., 1999). This method ensures that an individual is considered "recovered" when they have made a significant improvement over time in treatment and have entered the range of a functional population.

Procedure

Approval was granted from the relevant NHS Trust to conduct the intervention evaluation. Participants completed the self-report measures prior to treatment commencing. Post-intervention measures were conducted at the end of the LMV-E program. All patients agreed for their evaluation data to be used.

Results

Systematic review

Through database searching, 4813 articles were identified and further 30 records were identified through hand searching of the literature. After duplicates were removed, 4385 articles remained. Titles and abstracts were screened, resulting in 299 articles read in full. At this stage, 273 articles were excluded, leaving 26 articles to be examined with the EPHPP tool. Three papers were excluded after quality assessment, resulting in 23 included papers. Figure 1 captures the screening process.

Intervention information

Interventions focused on those specifically designed to manage general aggression and not sexual aggression or that targeted for intimate partner violence. Therapies also included those focused on the anger in those with a history of aggression. Two-thirds of the sample (65.2%) were based in a prison, with the remainder in secure forensic hospitals. Only 13% were based in a high secure hospital. Just under a half (43.5%) employed single group designs, with only

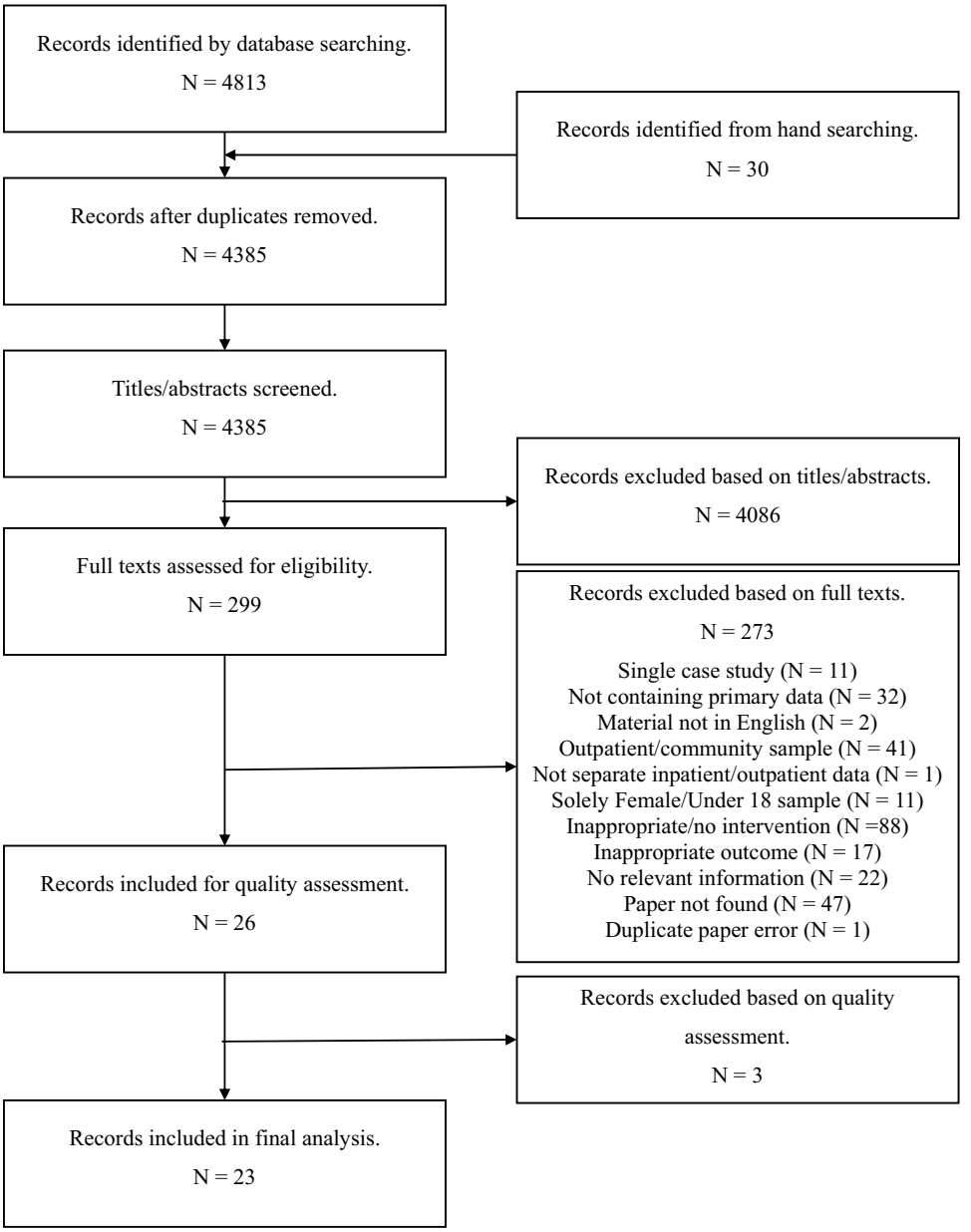

Figure 1. Flow chart depicting the systematic review process.

two using random assignment to groups and one using matched controls. The remainder used comparison groups that included primarily waiting list controls, with a smaller proportion capturing completers versus non-completers. One study included a small proportion of women in the sample but did not exclude them from group analysis. Two studies made no reference to sex but consideration of the locations where data was located suggested that

a primarily male sample could be assumed. Detail of the samples and named interventions are listed in Table 1. The studies all considered group effects, with consideration of individual effects a noted omission.

Thematic analysis of group effects: effectiveness of therapies

The thematic analysis examined whether the therapies achieved positive treatment outcomes and what these comprised. Six themes were identified, as follows.

Theme 1: Evidenced improvements in self-control and problem-solving skills. Improvements in self-control, impulsivity (e.g. Klein-Tuente et al., 2020) and problem solving were captured (Daffern et al., 2018; Wilson et al., 2013). Those completing therapy showed an increased tendency to seek social support, reflected on decreased feelings of loneliness, and demonstrated improvements in interpersonal skills related to dealing with authority (Kennedy, 1990).

Theme 2: Evidenced decrease in aggressive beliefs and hostility to others. Interventions were also effective in reducing maladaptive cognitive distortions and offense-supporting beliefs, including endorsement of violence and angry cognitions (e.g. Holbrook, 1997; Polaschek et al., 2010) and hostility or provocation disposition (e.g. Hornsveld et al., 2008; Klein-Tuente et al., 2020; Wilson et al., 2013). This demonstrated application to several cognitions but also diversity in what areas of cognition a program chose to focus on.

Theme 3: Improvements noted in emotion regulation. Emotional regulation improvement was a core positive outcome for several interventions, with this primarily measured in relation to anger (e.g. Blacker et al., 2008; Daffern et al., 2018; McGonigal et al., 2018; Taylor et al., 2005; Wilson et al., 2013), including a reduction in anger intensity evidenced (Jones & Hollin, 2004; Kennedy, 1990).

Theme 4: Decreased risk of violence and institutional misconduct. A reduction in institutional misconduct (Cortoni et al., 2006; McGonigal et al., 2018; Wang et al., 2000) and reported aggressive behaviors (Bowes et al., 2012; Daffern et al., 2018; Polaschek et al., 2010; Taylor et al., 2016; Wilson et al., 2013) were noted. However, the latter was mixed, with several studies finding no evidence for self-reported or observed aggression (e.g. Hornsveld et al., 2008; Kennedy, 1990; Klein-Tuente et al., 2020; Valliant & Raven, 1994). However, there were reported improvements in overall violence risk (Horgan et al., 2019), including dynamic risk factors (Daffern et al., 2018), with this positively related to time spent in treatment (Daffern et al., 2018). This theme also demonstrated diversity being applied in outcome measures, capturing aggression, violence, misconduct, self-report and observed aggression.

Table 1. Included Papers Capturing Key Findings and Quality Assessment ($n = 23$)

Paper	Country	Intervention	Target Population	Setting and Participants	Key Findings	EPHPP Rating
Blacker et al. (2008)	UK	Insult to Injury – drama-based programme.	Prisoners with problems with emotionally driven violence.	62 adult male prisoners recruited from six prisons, convicted of violent and aggressive offences. Single group design.	Drama based intervention aimed at enhancing anger management with offenders with a history of violence was associated with significant improvements in state anger, trait anger, anger expression, anger control, and anger index.	Strong
Bowes et al. (2012)	UK	Control of Violence for Angry and Impulsive Drinkers (COVAID)	Angry, impulsive drinkers with incidents of alcohol related violence	115 men from medium security prisons, who had at least three recorded incidents of alcohol-related violence in their most recent period in the community. Feasibility study for RCT including treatment as usual group.	No differences between groups on violent reconvictions or all reconvictions. Self-reported improvement on alcohol-related aggression in treatment group.	Moderate
Cortoni et al. (2006)	Canada	Violence Prevention Program (VPP)	Incarcerated male offenders deemed to be persistently violent.	500 male offenders who had participated in VPP, and 466 matched controls. Professional report.	Results showed that completion of the VPP was related to significantly fewer major institutional misconduct charges in the 6-month and 1-year period following completion of the VPP when compared to the corresponding pre-program periods.	Strong
Daffern et al. (2018)	UK	LMV-E	Offenders with a history of violence.	33 male inpatients with a history of interpersonal violence in conditions of high security. Comparison group used ($n = 42$).	Reductions in aggressive behavior. Improvements in social problem solving, anger regulation, and improved sensitivity to provocation observed during treatment.	Moderate
Gerchow (2015)	USA	Aggression Replacement Therapy and Thinking for Change	Chronic young adult prisoners	156 male prisoners aged between 19 and 23, detained in a county detention facility. Two groups – 90 who just completed ART and 66 who completed ART and the Thinking for Change programme. Doctorate dissertation.	ART and Thinking for Change participants demonstrated lower recidivism rates than those completing ART only. Those completing both therapies stayed longer in the community.	Moderate
Holbrook (1997)	USA	Anger Management Training	Chronically overcontrolled aggressive prisoners	26 male prisoners selected based on histories of assaultive behavior. Single group design.	Significant decrease in vengeance scores following the intervention.	Strong

(*Continued*)

Table 1. (Continued).

Paper	Country	Intervention	Target Population	Setting and Participants	Key Findings	EPHPP Rating
Horgan et al. (2019)	UK	Violence Reduction Programme (VRP)	Forensic Psychological Treatment Service inpatients	Male offenders admitted to a medium secure hospital for a serious interpersonal offence and with a diagnosis of personality disorder. Treatment completed by 27 men with pre and post date available for 19. Single group design.	Offenders with personality disorder who completed the VRP evidenced a substantial reduction in risk of violence. Over half evidenced a reliable reduction in risk scores.	Strong
Hornsveld et al. (2008)	The Netherlands	Aggression Control Therapy.	Violent forensic psychiatric patients.	136 inpatients admitted to six forensic psychiatric institutions. Control condition used for inpatients. Sex not indicated. 38 inpatients completed the therapy.	Post-treatment scores for hostility, aggressive behavior, and social anxiety were significantly lower than pre-treatment scores. There was no significant decrease in aggressive behavior or significant increase in social behavior.	Moderate
Jones & Hollin (2004)	UK	Managing Problematic Anger	Mentally disordered offenders in a high security setting.	Eight male patients with a diagnosis of personality disorder detained in a high-security psychiatric hospital. Single group design.	Significant reduction in frequency and intensity of anger incidents and several psychological variables, during treatment and maintained at 4-week follow up.	Strong
Kennedy (1990)	Canada	Anger Management Training	Aggressive male prisoners	37 adult male prisoners. Single group design.	Subjects self-reported decreases in frequency, intensity, and duration of anger to a variety of provocations common to a prison setting, as well as more appropriate modalities of expression and more prosocial attitudes. Therapeutic gains primarily occurred during the first phase of treatment.	Moderate
Klein-Tuente et al. (2020)	The Netherlands	Virtual Reality Aggression Prevention Therapy (VRAPT)	Forensic psychiatric populations	128 forensic psychiatric inpatients, 64 in each condition. Waiting list control. Random assignment. Sex not indicated.	VRAPT did not significantly decrease self-reported or observed aggressive behavior. Hostility, anger control, and non-planning impulsiveness improved significantly in treatment group compared to control group following the intervention.	Strong
Lardèn et al. (2018)	Sweden	Aggression Replacement Training (ART)	Offenders with a history of violence.	1124 (1,091 men) convicted of any nonsexual or non-intimate partner violence with medium to high risk of recidivism. Intervention completed in prison, follow up during probation. Used comparison group.	Negligible, non-significant reduction in reconviction for general and violent crime compared to control group.	Moderate

(*Continued*)

Table 1. (Continued).

Paper	Country	Intervention	Target Population	Setting and Participants	Key Findings	EPHPP Rating
McGonigal et al. (2018)	USA	Cage Your Rage: 12-week group anger management intervention	Prisoners	30 adult male prisoners. Single group design.	Significant reductions in anger and increased emotion regulation strategies reported. Disciplinary infractions decreased.	Strong
O'Brien & Daffern (2016)	Australia	Moderate and High Intensity Violence Prevention Programmes	High and moderate risk prisoners	114 male violent prisoners serving a sentence in a state operated prison, with 84 commencing the programme. Overall a single group design but compared differences with psychopathy scores and those who dropped out.	Treatment completion did not have a significant main effect on recidivism but psychopathy scores moderated the effects of treatment.	Moderate
Polaschek et al. (2010)	New Zealand	Cognitive-behavioral rehabilitation programme for high-risk violent prisoners.	High-risk violent prisoners.	30 male prisoners who completed the intervention. Single group design.	Men found weapons significantly less likeable following treatment, but there was no change in their evaluations of violent words. Post-program, men reported being less aggressive and disagreed more strongly with violent attitudes.	Moderate
Robinson et al. (2021)	England and Wales	RESOLVE offending behavior programme	Prisoners with a history of violence at medium risk of reoffending.	2,509 adult male prisoners with matched comparison applied. Professional report.	Reoffending data showed reduction in overall offending, re-offended less frequently and time to offend increased. Found at 1-year and 2-year time point. Did not impact uniformly on violent re-offending but positive indication of significantly less violent offending at 1 year in the subgroup that only completed RESOLVE.	Moderate
Serin et al. (2009)	Canada	Persistently Violent Offender Treatment Programme	Prisoners with a history of three or more violent offenses.	256 male prisoners. Seventy of those completing the programme were compared to two control groups who completed an alternative programme and to a group who failed to complete either.	Many changes in treatment targets were in the expected direction, but none of the measures differed significantly from pre-intervention to post-intervention. The programme was unsuccessful in meeting treatment targets and not superior to the alternatives.	Moderate

(*Continued*)

Table 1. (Continued).

Paper	Country	Intervention	Target Population	Setting and Participants	Key Findings	EPHPP Rating
Taylor et al. (2005)	UK	Modified Cognitive Behavioural Anger Treatment	Intellectually disabled offenders with aggressive histories.	40 detained male patients. Allocated to either anger treatment ($n = 16$) or routine care waiting list ($n = 20$) with four not completing.	The treatment group's self-reported anger scores on several measures were significantly lower following treatment compared to the waitlist control group, and this was maintained at follow up.	Strong
Taylor, Novaco & Brown (2016)	UK	Anger Treatment	Individuals with mild and borderline intellectual disabilities.	50 forensic hospital patients (44 men, six women). All completed an individually delivered anger treatment and who remained in the hospital for 12 months following treatment. Single group design.	Significant reductions in assaults. Odds of a patient being assaultive declined significantly after anger treatment and controlling for covariates.	Strong
Valliant & Raven (1994)	Canada	Anger Management Program	Prisoners split across assaultive, property and those convicted of both.	57 male prisoners, with a control group of six, two from each group (assaultive, property, combined)	No decrease in measures of aggression and anxiety, but guilt feelings increased over the course of the program.	Weak
Wang et al. (2000)	USA	Program for the Aggressive Mentally Ill Offender (PAMIO)	Aggressive mentally ill offenders.	66 offenders who had completed PAMIO and had served 1 year both prior to and following the intervention. Single group design.	Median annual rates of total disciplinary problems, staff assaults, and inmate assaults decreased significantly following intervention.	Strong
Watt & Howells (1999)	Australia	Skills Training for Aggression Control	Violent prisoners.	Two samples of adult male violent prisoners ($N = 32$: 18 treatment completers and 14 waiting list control), $N = 38$ completing post assessments; 19 treatment and 19 waiting list control.	Failure to find treatment effects. Treatment gains in anger were not supported.	Moderate
Wilson et al. (2013)	UK	Anger Management group	Individuals with anger management difficulties and violent behavior.	86 male offenders detained in a high secure forensic hospital with evidence of anger management difficulties and violent behavior. Seventy of the sample completed the therapy. Compared completers and non-completers.	Completers reported improvement in capacity to solve problems when experiencing anger, as well as a reduction in duration of feelings of anger, acts of aggression, and disposition to be provoked.	Moderate

Theme 5: Mixed reconviction outcomes. Not all studies captured reconviction rates, but those that did present mixed findings. This included an impact on general offending at a 1-year and 2-year follow-up (Robinson et al., 2021) and lower general recidivism rates in those receiving a *combination* of aggression therapy and a cognitive skills program (Gerchow, 2015). Conversely, Robinson et al. (2021) noted a positive impact on violent offending rates but only at the 1-year follow-up and only for those receiving the violent intervention and nothing further. This showed that an increased treatment dosage in terms of therapy modalities was not improving violence conviction outcomes but seemingly was for general offending. Other studies, however, noted no impact on either violent reconvictions (Bowes et al., 2012; Lardén et al., 2018; O'Brien & Daffern, 2016) or general reconvictions (Lardén et al., 2018).

Theme 6: Absence of positive treatment outcome. Two studies appeared *characterised* by the lack of positive findings (e.g. Serin et al., 2009; Watt & Howells, 1999), with this highlighting a need to explore the reasons for this in terms of design, period of follow-up and/or the utility of outcome measures.

Treatment outcome study: Life Minus Violence-Enhanced (LMV-E)

Group level change

Table 2 outlines all means, standard deviations, and results of the group effects analysis.

Improvements in emotion regulation were found for all subscales of the ECQ. Thus, patients reported less rumination and emotional inhibition at the end of the intervention and more frequently employed emotional control. Feelings of anger, assessed by the AQ, also decreased, with this further evidenced in improvements in the NAS-PI scales overall and for anger arousal, behavior and provocation. This was also captured in the STAXI, where there were improvements in state anger, various expressions of anger, trait and temperament anger and anger control. This shows that patients had a reduced tendency toward angry reactions, particularly lower frequency, intensity, and duration of anger, lower impulsive reaction to anger, and reductions in anger expression *and* anger suppression following the intervention.

Improvements in coping post intervention were also noted, with patients employing emotional coping styles less frequently (CSQ). Patients also demonstrated improvements in problem-solving, with a reduced tendency to view problems as threatening (SPSI–NPO). There was less endorsement of beliefs connected to instrumental aggression (EXPAGG), with positive belief change also noted with hostile beliefs (AQ). Overall trait aggression, physical and verbal aggression scores

Table 2. Results of Wilcoxon Signed Rank Tests for Main Effects of Time Across the LMV-E

Measures	Pre-Intervention Mean (SD)	Post-Intervention Mean (SD)	*Z*-Value	*p* value
AQ Total	80.26 (26.58)	57.05 (15.15)	−3.14	.002*
Physical Aggression	26.53 (9.45)	17.57 (4.99)	−3.18	.001*
Verbal Aggression	13.47 (4.73)	1.48 (3.17)	−1.96	.05*
Anger	18.89 (6.76)	13.67 (4.54)	−2.79	.005*
Hostility	20.16 (9.12)	15.33 (5.56)	−2.01	.044*
BIS				
Attentional Key	19.60 (5.17)	17.24 (3.91)	−1.62	.105
Motor Key	20.63 (6.12)	16.90 (5.05)	−1.94	.05*
Non-Planning Key	22.53 (4.89)	21.57 (4.09)	−0.60	.55
CSQ				
Rational Coping	24.39 (6.41)	26.70 (5.19)	−1.71	.088
Avoidant Coping	23.06 (6.20)	21.05 (5.97)	−1.14	.254
Detached Coping [Detached]	21.83 (5.72)	23.90 (5.63)	−1.31	.191
Detached Coping [Emotional]	**30.83 (6.21)**	**35.95 (4.89)**	−2.68	.007*
ECQ				
Rumination	**6.58 (3.45)**	**4.19 (2.42)**	−2.65	.008*
Emotional Inhibition	**7.26 (2.90)**	**5.95 (2.27)**	−2.30	.021*
Aggression Control	**5.94 (3.47)**	**9.52 (2.73)**	−3.06	.002*
Benign Control	**5.39 (3.18)**	**7.67 (2.46)**	−2.80	.005*
EXPAGG				
Expressive Aggression	25.58 (6.96)	21.95 (5.92)	−1.59	.111
Instrumental Aggression	**25.26 (8.68)**	**16.85 (7.21)**	−3.16	.002*
NAS-PI				
NAS Total	**85.80 (21.98)**	**68.25 (14.38)**	−1.98	.048*
NAS Cognitive	29.13 (7.80)	24.00 (5.08)	−1.76	.078
NAS Arousal	**28.20 (8.06)**	**22.80 (4.82)**	−2.28	.023*
NAS Behavioural	**29.13 (6.23)**	**21.45 (5.36)**	−2.48	.013*
PI Total	**61.23 (18.76)**	**45.95 (18.18)**	−2.06	.039*
PI Anger Regulation	25.08 (2.78)	25.70 (5.68)	−0.14	.888
SPSI Total	11.45 (2.97)	12.57 (3.24)	−1.22	.224
Positive Problem Orientation	13.33 (5.27)	11.88 (4.42)	−.94	.35
Negative Problem Orientation	**9.78 (5.40)**	**6.19 (4.71)**	−1.99	.05*
Rational Problem Solving	11.10 (5.48)	11.14 (4.22)	−0.34	.733
Impulsivity	8.94 (4.84)	7.00 (4.45)	−1.43	.154
Avoidance	8.44 (5.28)	7.00 (4.53)	−0.88	.377
STAXI				
State Anger	**18.63 (5.72)**	**15.76 (1.61)**	−2.01	.04*
Feeling Angry	**6.79 (2.49)**	**5.19 (.68)**	−2.61	.009*
Feeling like expressing anger verbally	**6.37 (2.34)**	**5.14 (.48)**	−2.10	.036*
Feeling like expressing anger physically	5.47 (1.39)	5.43 (.98)	−0.36	.723
Trait Anger	**20.26 (8.19)**	**14.43 (4.88)**	−3.27	.001*
Angry Temperament	**8.00 (4.04)**	**5.38 (1.75)**	−2.78	.005*
Angry Reaction	**7.95 (3.03)**	**6.00 (2.28)**	−2.25	.024*
Anger Expression Out	**16.21 (4.52)**	**13.95 (2.44)**	2.75	.006*
Anger Expression In	**18.32 (4.52)**	**14.29 (4.58)**	−2.86	.004*
Anger Control Out	**21.37 (5.22)**	**24.24 (5.18)**	−2.16	.031*
Anger Control In	21.74 (5.87)	24.48 (5.80)	−1.40	.162
Anger Expression Index	**39.42 (14.34)**	**27.52 (12.46)**	−2.78	.005*

* = *p* level was significant

decreased, with less endorsement of aggressive behaviors and beliefs, including hostility, following intervention. An absence of group change was found in trait impulsivity (BIS), although there was improvement in motor (behavioral) impulsivity.

Individual level change

Table 3 shows results of the individual change analysis.

Use of the clinical cutoff demonstrated minimal "recovery" across measures but with notable proportions moving into the "improved" range. The largest frequencies for *at least* achievement of improvement using the clinical cutoff (i.e. where around half the sample reached this range or above) were found in relation to trait aggression and the subscales of physical aggression and anger (AQ scales), overall anger management, anger arousal, behavioral expressions of anger, management of provocation (NAS scales), emotional coping (CSQ scale), rumination, aggression control (ECQ scales), trait anger, anger expression control (STAXI scales), and instrumental beliefs (EXPAGG scale). The most notable "recovery" was found in relation to STAXI trait anger where 42% of the sample reached the recovery range.

Applying the more stringent Jacobson–Truax, which includes recovery aligned to a *functional* population, "recovery" was found to a limited degree and primarily in relation to behavioral displays of anger (NAS subscale) and trait anger (STAXI subscale). "Improvement" accounting for this method was indicated more, particularly in relation to NAS anger total and the subscale for provocation, and for state anger and anger expression in (STAXI subscales), with around a quarter to a third of the sample showing improvement with this method in relation to AQ total (and the subscales physical, verbal, and anger), ECQ rumination and benign control, NAS arousal subscale, BIS motor impulsivity, SPSI negative problem orientation, STAXI anger control subscales (in and out), with over half falling into the improvement level on the STAXI trait anger subscale. There were other improvements but these were the highest frequencies. There was also very limited deterioration across the measures using the Jacobson–Truax method.

Discussion

The systematic review demonstrated a limited application of treatment intervention to forensic patient populations detained in raised conditions of security, with an evidenced focus on group effects as opposed to individual impacts, with a range of designs applied. Accounting for the diversity in approach indicated, six themes associated with the concept of treatment effectiveness were identified: 1.) Evidenced improvements in coping and problem-solving skills; 2.) Evidenced decrease in aggressive beliefs and hostility; 3.) Improvements noted in emotion regulation; 4.) Decreased risk of violence and institutional misconduct; 5.) Mixed reconviction outcomes, and 6.) Absence of positive treatment outcome.

In attempting to further determine evidence for treatment effectiveness in a complex detained mental health population, there was evidence for group effects confirming several improvements that were consistent with the

Table 3. Table Showing Individual Change Effects

Measure		Reliable Change Criterion	Clinical Cut-Off	Jacobson–Truax Classification
	SE of Change (RC)	n (%) Reliable Improvement n (%) Reliable Deterioration	n (%) Recovered n (%) Improved n (%) Minimal Positive Response	n (%) Recovered n (%) Improved n (%) Unchanged n (%) Deteriorated
AQ Total (*n* = 19)	12.47 (24.44)	6 (31.58) 0	0 10 (52.63) 4 (21.05)	0 6 (31.58) 13 68.42) 0
AQ Physical Aggression (*n* = 19)	5.17 (10.14)	6 (31.58) 0	0 11 (57.89) 4 (21.05)	0 6 (31.58) 13 (68.42) 0
AQ Verbal Aggression (*n* = 19)	3.54 (6.94)	5 (26.32) 0	0 6 (31.58) 5 (26.32)	0 5 (26.32) 14 (73.68) 0
AQ Anger (*n* = 19)	3.94 (7.72)	5 (26.32) 0	0 10 (52.63) 4 (21.05)	0 5 (26.32) 14 (73.68) 0
AQ Hostility (*n* = 19)	6.19 (12.13)	3 (15.79) 1 (5.26)	0 5 (26.32) 6 (31.58)	0 3 (15.79) 15 (78.95) 1 (5.26)
CSQ Rational Coping (*n* = 18)	3.48 (6.81)	4 (22.22) 1 (5.56)	0 5 (27.78) 3 (16.67)	0 4 (22.22) 13 (72.22) 1 (5.56)
CSQ Detached Coping (*n* = 18)	2.59 (5.08)	2 (11.11) 5 (27.78)	0 1 (5.56) 1 (5.56)	0 2 (11.11) 11 (61.11) 5 (27.78)
CSQ Emotional Coping (*n* = 18)	4.52 (8.87)	4 (22.22) 0	1 (5.56) 8 (44.44) 3 (16.67)	0 4 (22.22) 14 (77.78) 0
CSQ Avoidant Coping (*n* = 18)	4.88 (9.56)	2 (11.11) 0	1 (5.56) 2 (11.11) 6 (33.33)	0 3 (16.67) 15 (83.33) 0
ECQ Rumination (*n* = 19)	1.83 (3.58)	5 (26.32) 1 (5.36)	1 (5.26) 8 (42.11) 2 (10.53)	0 5 (26.32) 13 (68.42) 1 (5.26)
ECQ Emotional Inhibition (*n* = 19)	1.97 (3.86)	4 (21.05) 0	0 6 (31.58) 6 (31.58)	0 4 (21.05) 15 (78.95) 0

(*Continued*)

Table 3. (Continued).

Measure		Reliable Change Criterion	Clinical Cut-Off	Jacobson–Truax Classification
ECQ Aggression Control ($n = 18$)	2.14 (4.20)	4 (22.22) 0	2 (11.11) 7 (38.89) 4 (22.22)	1 (5.56) 4 (22.22) 13 (72.22) 0
ECQ Benign Control ($n = 18$)	2.06 (4.04)	5 (27.78) 0	2 (11.11) 5 (27.78) 6 (33.33)	0 5 (27.78) 13 (72.22) 0
EXPAGG Expressive Aggression ($n = 18$)	5.39 (10.57)	5 (27.78) 0	1 (5.56) 3 (16.67) 6 (33.33)	1 (5.56) 4 (22.22) 13 (72.22) 0
EXPAGG Instrumental Aggression ($n = 18$)	5.06 (9.93)	8 (44.44) 0	0 10 (55.56) 2 (11.11)	1 (5.56) 4 (22.22) 13 (72.22) 0
NAS Total ($n = 14$)	8.22 (16.12)	5 (35.71) 0	0 7 (50.00) 4 (28.57)	0 5 (35.71) 9 (64.29) 0
NAS Cognitive ($n = 14$)	5.29 (10.37)	4 (28.57) 0	0 4 (28.57) 6 (42.86)	0 3 (21.43) 11 (78.57) 0
NAS Arousal ($n = 14$)	4.83 (9.47)	4 (28.57) 0	0 7 (50.00) 5 (35.71)	0 4 (28.57) 10 (71.43) 0
NAS Behavioural ($n = 14$)	3.30 (6.46)	7 (50.00) 0	4 (28.57) 6 (42.86) 1 (7.14)	4 (28.57) 3 (21.43) 7 (50.00) 0
PI Total ($n = 13$)	8.39 (16.44)	6 (46.15) 1 (7.69)	1 (7.69) 6 (46.15) 4 (30.77)	1 (7.69) 5 (38.46) 6 (46.15) 1 (7.69)
SPSI Total ($n = 18$)	1.89 (3.70)	3 (16.67) 0	2 (11.11) 4 (22.22) 1 (5.56)	1 (5.56) 2 (11.11) 15 (83.33) 0
SPSI Positive Problem Orientation ($n = 18$)	3.65 (7.16)	2 (11.11) 2 (11.11)	0 2 (11.11) 3 (16.67)	0 2 (11.11) 14 (77.78) 2 (11.11)
SPSI Negative Problem Orientation ($n = 18$)	3.24 (6.35)	6 (33.33) 1 (5.56)	2 (11.11) 5 (27.78) 5 (27.78)	1 (5.56) 5 (27.78) 12 (66.67) 0

(*Continued*)

Table 3. (Continued).

Measure		Reliable Change Criterion	Clinical Cut-Off	Jacobson–Truax Classification
SPSI Rational Problem Solving ($n = 18$)	3.10 (6.08)	3 (16.67) 1 (5.56)	0 2 (11.11) 3 (16.67)	0 3 (16.67) 14 (77.78) 1 (5.56)
SPSI Impulsivity/ Carelessness ($n = 18$)	3.14 (6.15)	4 (22.22) 1 (5.56)	2 (11.11) 4 (22.22) 4 (22.22)	0 3 (16.67) 15 (83.33) 0
SPSI Avoidance ($n = 18$)	3.08 (6.04)	2 (11.11) 2 (11.11)	1 (5.56) 5 (27.78) 1 (5.56)	0 2 (11.11) 15 (83.33) 1 (5.56)
STAXI State Anger ($n = 19$)	1.98 (3.88)	7 (36.84) 2 (10.53)	0 0 14 (73.68)	0 7 (36.84) 10 (52.63) 2 (10.53)
STAXI Trait Anger ($n = 19$)	4.33 (8.50)	17 (89.47) 0	8 (42.11) 11 (57.89) 0	6 (31.58) 10 (52.63) 3 (15.79) 0
STAXI Anger Expression Out ($n = 19$)	3.32 (6.50)	2 (10.53) 0	0 5 (26.32) 9 (47.37)	0 2 (10.53) 17 (89.47) 0
STAXI Anger Expression In ($n = 19$)	2.86 (5.61)	8 (42.11) 1 (5.26)	1 (5.26) 12 (63.16) 2 (10.53)	1 (5.26) 7 (36.84) 10 (52.63) 1 (5.26)
STAXI Anger Control Out ($n = 19$)	2.66 (5.22)	6 (31.58) 3 (15.79)	3 (15.79) 5 (26.32) 2 (10.53)	1 (5.26) 5 (26.32) 11 (57.89) 2 (10.53)
STAXI Anger Control In ($n = 19$)	2.49 (4.88)	5 (26.32) 3 (15.79)	0 7 (36.84) 3 (15.79)	0 5 (26.32) 11 (57.89) 3 (15.79)
BIS Attentional ($n = 19$)	3.73 (7.31)	2 (10.53) 0	1 (5.26) 4 (21.05) 6 (31.58)	0 2 (10.53) 17 (89.47) 0
BIS Motor ($n = 19$)	5.54 (10.86)	3 (15.79) 0	0 7 (36.84) 2 (10.53)	0 3 (15.79) 16 (84.21) 0
BIS Non-Planning ($n = 19$)	3.66 (7.17)	2 (10.53) 0	0 4 (21.05) 5 (26.32)	0 2 (10.53) 17 (89.47) 0

systematic review. This was also replicated with individual changes, with the latter able to demonstrate where a lack of change and/or deterioration was evidenced. Collectively, it would appear that the majority of positive change, accounting for group and individual effects, was found in the domain of emotional regulation, specifically anger (e.g. trait, arousal, response to provocation and behavioral responses), with specific changes in relation to beliefs and problem solving also demonstrated. The latter provided evidence of more nuanced changes regarding beliefs and problem solving than suggested in the systematic review.

Ultimately, the treatment evaluation study demonstrated support for the prediction that there would be improvements in coping and problem-solving skills, which was consistent with prior research (Daffern et al., 2018; Wilson et al., 2013). However, findings were localized to improvements in emotional coping and in how problems were appraised. This was further identified in the individual change analysis although a notable proportion (two-thirds for problem solving and three-quarters for coping) actually demonstrated no change when the stricter Jacobson–Truax method was applied, which would not have been identified if group effects only were considered. Thus, the prediction was supported by group analysis but not wholly by the strictest application of individual change analysis. Nevertheless, there was a clearer application of coping in relation to the effective control of anger, which is noted later when capturing emotional regulation.

There was evidence for a reduction in aggressive beliefs and hostility following participation in LMV-E, which again supported the prediction and is consistent with prior research (Holbrook, 1997; Hornsveld et al., 2008; Klein-Tuente et al., 2020; Polaschek et al., 2010; Wilson et al., 2013). There was more evidence for this when considering group effects, which is consistent with the earlier observations. At an individual level, there was simply less support when a *strict* interpretation of individual effects was applied. For example, over half showed no change and around a tenth deterioration for instrumental belief endorsement and over three-quarters showed no change and around 5% deterioration individually for hostility, when applying Jacobson–Truax. Even if the more generous application of individual change was considered using clinical cutoffs alone as opposed to comparison to a functional population, there was evidence that only around a quarter of the sample showed improvement in relation to hostility but over half in relation to instrumental aggression beliefs. This serves to also highlight a nuanced difference in beliefs, where it would suggest that if we were to consider outcomes for effectiveness to include both group *and* individual change, that positive change is actually very specific and limited primarily to instrumental beliefs.

Interestingly, the final prediction, namely that improvements in emotion regulation would be made following the aggression treatment program (LMV-E), was endorsed at both a group and individual level. Not only is the former consistent with prior research (e.g. Blacker et al., 2008; Daffern et al., 2018; Jones & Hollin, 2004; Kennedy, 1990; McGonigal et al., 2018; Taylor et al., 2005; Wilson et al., 2013), but it also supports this as a treatment effect that was highly endorsed in the systematic review and also now demonstrated in relation to both group and individual effects in a high risk detained sample. Unfortunately, the focus has been solely on anger, since this appears the most captured emotion. Application to other emotions of relevance is not yet determined, since these are not seemingly captured as part of outcome variables in evaluation studies. Nevertheless, the support for improvement in emotional regulation, defined here as the ability to control arousal and manage anger, is clearly noted. Effects were further well supported at a group and individual level in relation to trait anger, with evidence of anger-related externalizing behaviors being similarly controlled post therapy.

These results are consistent with the expectations of core models explaining aggression, such as the Integrated Social Information Processing Model (ISIP: Huesmann, 2018, 1988) and General Aggression Model (GAM: Anderson & Bushman, 2002). Both models place emphasis on a role for internal regulation and external expression of emotions in understanding aggression. Programs that are targeting these areas are clearly therefore having the desired impact. What appears less clearly, currently, are the cognitive impacts since these seem limited but also poorly captured by outcome measures. Whereas there is evidence for beliefs (e.g. instrumental) being improved and beliefs as integral to these models, the measurement of them appears limited in evaluation studies and the impacts consequently limited. What the current research does support, however, is an acceptance of individual factors in understanding aggression intervention, both consistent with the GAM and ISIP, with the current study suggesting clear value in application of analysis at an individual level.

The results also confirm the importance of adopting a multifactor approach to intervention, again in line with ISIP and GAM, with evidence from the systematic review and group and individual effects of the treatment evaluation study showing that aggression intervention with detained samples can be effective at targeting several treatment goals and produce positive change. This change is occurring internally at an individual level and also in relation to externalizing behaviors. Regarding the latter, it would appear that any positive changes in impulsivity were restricted to behavioral expression (i.e. motor). This could certainly be linked to emotional expression. Indeed, limited changes in impulsivity are not uncommon in the literature (Daffern et al., 2018; Ireland et al., 2020). Impulsivity may simply be more resistant to change than other outcomes. As posited by both the GAM and IPSIP, limited improvements in impulsivity suggest that individuals are continuing to rely

on resistant aggressive scripts to guide behavior (Anderson & Bushman, 2002). In addition, although some participants developed the skills necessary for self-control, the challenging nature of a high-secure forensic setting may make it difficult for them to implement skills to new situations (Hornsveld et al., 2008; Kennedy, 1990), where opportunities are limited and the environment challenging.

Limitations

The current research is not without limitations. The research is attempting to draw conclusions that can be applied to detained populations that draw from a relatively limited literature base, which was restricted to search engines sensitive to social sciences, although a review of reference lists was also undertaken. The interventions considered via the systematic review varied in population size, design, outcome measures, follow-up periods, treatment nature, and dosage, with a focus on group effects. Although themes for effectiveness could still be generated, these were undoubtedly limited by the available literature. The identified themes were, however, used to inform the evaluation of the ensuing study to try and capture gaps that were evidenced in the systematic review with regard to population and approach to analysis. Nevertheless, the evaluation study remained small scale, the challenges of power are noted and there was an application of individual change to off-set such accepted challenges with group data. In addition, the evaluated treatment program (LMV-E) is authored by two of the present authors (JI, CI) but they did not act as therapists for the individuals within the evaluation. Acknowledging this is important. A risk for bias in interpretation was managed by a third author completing all analyses (SH), an author who was unconnected to the therapy development and on placement in the Trust within the research center. Bias was further managed by using a combination of group and individual effects to more thoroughly replicate any positive outcome findings and by including full reporting of deterioration/no change in outcomes to ensure transparency.

Importantly, the current paper is not focusing on the effectiveness of the LMV-E program per se but rather the field of violence intervention more broadly and the challenges in how analysis of evaluations has been approached. Connected to this, it is acknowledged that the evaluation of LMV-E suffers from the absence of a control group, including use of randomization. This was common in the studies captured in the systematic review, indicating a more recurrent challenge in this area. Using such designs poses specific ethical challenges within services, where treatment cannot be withheld on the grounds of research. Equally, the focus here on individual change assists in offsetting some of these obvious and accepted criticisms, by utilizing functional population norms.

Equally, however, the notion of applying a "functional" population to a complex detained sample raises issues over the suitability of these as a comparison, since the expectations for "functional" may be set too high. Connected to this, self-report measures are susceptible to bias (Daffern et al., 2018), and no measures examining socially desirable responding were employed across studies, including the evaluation study presented here. As progression along the care pathway often depends on the successful completion of interventions, the incentive for socially desirable responding becomes raised and capturing this would therefore be beneficial.

Implications and directions for future research

What is perhaps highlighted in particular is a need to understand the mechanisms by which change *is* or *is not* occurring. There was evidence in the systematic review of mixed outcomes in relation to behavioral variables but also some studies that were characterized by a lack of treatment change. The individual level change approach adopted in the current study highlights value in using this as a means to determining specifically where the lack of change is occurring. This would allow for more nuanced identification of individuals who are presenting as outliers for treatment and a greater consideration of their characteristics. For example, the majority of indications of deterioration and/or no change using the Jacobson–Truax in the current study indicated a very small proportion of patients to be presenting with this profile. Identifying where change is not occurring and/or is moving in the opposite direction to that predicted can be an initial step in determining what mechanism(s) are causing this to occur. Indeed, the current results collectively point to value in undertaking a thorough consideration of what is meant by clinical change. This can perhaps offer a valuable direction for future research to consider to address mixed outcome results and/or the absence of clinical change results that were shown in some studies from the systematic review (e.g. Bowes et al., 2012; Gerchow, 2015; Lardén et al., 2018; O'Brien & Daffern, 2016; Robinson et al., 2021).

Equally, there is a core theme of positive changes in emotional arousal and expression, notably anger and the control of this, including via reduced behavioral expression of challenges. There was, nonetheless, a lack of attention given to other emotions, which is an area for future research to account for in evaluation measures. Furthermore, whilst it is accepted that aggression is multi-faceted and outcome studies will utilize several measures, there appears an absence of attempts to align this to the expectations of core aggression theory. Both the GAM and ISIP outline the importance of several factors, including several emotions (particularly the ISIP). Each provides a description of how these many factors are associating with one another. This essentially provides some understanding of mechanisms for change and yet these theories

were not clearly incorporated into the design of treatment evaluations. Thus, a *theory-informed evaluation approach* is likely to produce more helpful outcomes in terms of indicating effects but also in advising on potential mechanisms for change. To date, this has not been considered.

Connected to this, to date, there has been no determination of *how* positive changes occur and what is specifically promoting the change or inhibiting this. Studies clearly adopt several outcome measures, but there is no attempt at exploring which outcomes are mediating or moderating. For example, is it components of coping and/or problem solving that are driving the positive changes in emotional control and trait expression or other factors such as treatment dosage? Sample sizes are not yet large enough within the studies conducted to date, including the additional one presented here, to allow for such a consideration. Equally, the individual change analysis, supported by the group analysis, demonstrated improvement in measures that have been specifically designed to identify clinical change across time (e.g. NAS, STAXI), whereas more research-oriented tools were not performing to this level. Whereas it could be concluded that there was an absence of change, the *quality* of the measure chosen is equally a worthy consideration for future research and an issue that has been identified previously, where clinical change is potentially an artifact of measure quality (see Daffern et al., 2018; Ireland et al., 2020). Thus, it could be concluded that there are limited changes in relation to impulsivity when in reality the measure (BIS) was not designed to assess clinical change.

Indeed, whereas a quality assessment was included as a standard element of the systematic review, this is applied to study design and approach, with no attempt at capturing the quality and/or suitability of *measure quality and appropriateness*. This is a direction for future research to take when considering treatment effectiveness, both in terms of assessing the quality of outcome measures and selecting them but perhaps also in terms of developing clinically sensitive measures. This becomes particularly salient for more complex populations, where determining "recovery" using a "functional" population (i.e. Jacobson–Truax method) becomes challenging since the clinical population lacks an appropriate normative population with which to draw this functional score from.

Conclusion

Collectively, the research demonstrates the gaps in the field with regard to sophisticated evaluations and limitations in method and outcome variables. Value is shown in combining group analysis with individual effects, particularly with attention to "improvement" as opposed to a sole focus on "recovery." Recovery may mark an outcome to achieve for some populations but is

arguably based on unachievable norms for detained samples. Regardless, there is evidence for treatment impact for violence therapy intervention falling primarily in the domain of emotional regulation and control (where anger appears to have been the emotion of measured choice), with value show in specific forms of coping and improvement in specific cognitions/beliefs. Evidence for positive changes in externalizing behaviors is also indicated, although results appear more mixed in relation to impulsivity and broader behavioral indicators. Understanding the mechanisms by which change could occur, along with capturing in more detail the reasons for an absence of change and/or deterioration, appears a further area of value. This points to a need to develop outcome evaluations that are sensitive to the expectations of theories of aggression.

Disclosure statement

The authors declare that two (JI, CI) of them wrote the LMV-E programme, which is being evaluated. This is fully disclosed in the paper and the analysis completed by a non-author of that program (SH). There are no further conflicts.

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References

Allen, J. J., & Anderson, C. A. (2017). General Aggression Model. In P. Roessler, C. A. Hoffner, & L. van Zoonen (Eds.), *International encyclopaedia of media effects*. Wiley- Blackwell. https://doi.org/10.1016/j.copsyc.2017.03.034

Allen, J. J., Anderson, C. A., & Bushman, B. J. (2018). The general aggression model. *Current Opinion in Psychology*, *19*, 75–80. https://doi.org/10.1016/j.copsyc.2017.03.034

Anderson, C. A., & Bushman, B. J. (2002). Human aggression. *Annual Review of Psychology*, *53*, 27–51. https://doi.org/10.1146/annurev.psych.53.100901.135231

Armijo-Olivo, S., Stiles, C. R., Hagen, N. A., Biondo, P. D., & Cummings, G. G. (2012). Assessment of study quality for systematic reviews: A comparison of the Cochrane Collaboration Risk of Bias Tool and the Effective Public Health Practice Project quality assessment Tool: Methodological research. *Journal of Evaluation in Clinical Practice*, *18*(1), 12–18. https://doi.org/10.1111/j.1365-2753.2010.01516.x

Atkins, D. C., Bedics, J. D., Mcglinchey, J. B., & Beauchaine, T. P. (2005). Assessing clinical significance: Does it matter which method we use? *Journal of Consulting & Clinical Psychology*, *73*(5), 982–989. https://doi.org/10.1037/0022-006X.73.5.982

Baggio, S., Weber, M., Rossegger, A., Endrass, J., Heller, P., Schneeberger, A., Graf, M., & Liebrenz, M. (2020). Reducing recidivism using the reasoning and rehabilitation program: A pilot multi-site-controlled trial among prisoners in Switzerland. *International Journal of Public Health*, *65*(6), 801–810. https://doi.org/10.1007/s00038-020-01372-9

Bianchini, V., Cofini, V., Curto, M., Lagrotteria, B., Manzi, A., Navari, S., Ortenzi, R., Paoletti, G., Pompili, P. M., Silvestrini, C., & Nicolò, G. (2019). Dialectical behaviour therapy (DBT) for forensic psychiatric patients: An Italian pilot study. *Criminal Behaviour & Mental Health*, *29*(2), 122–130. https://doi.org/10.1002/cbm.2102

Blacker, J., Watson, A., & Beech, A. R. (2008). A combined drama-based and CBT approach to working with self-reported anger aggression. *Criminal Behaviour & Mental Health*, *18*(2), 129–137. https://doi.org/10.1002/cbm.686

Bowes, N., McMurran, M., Williams, B., David, S., & Zammit, I. (2012). Treating alcohol-related violence: Intermediate outcomes in a feasibility study for a randomized controlled trial in prisons. *Criminal Justice & Behavior*, *39*(3), 333–344. https://doi.org/10.1177/0093854811433759

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Buss, A. H., & Perry, M. (1992). The aggression questionnaire. *Journal of Personality & Social Psychology*, *63*(3), 452. https://doi.org/10.1037/0022-3514.63.3.452

Campbell, A., Muncer, S., McManus, I. C., & Woodhouse, D. (1999). Instrumental and expressive representations of aggression: One scale or two? *Aggressive Behavior: Official Journal of the International Society for Research on Aggression*, *25*(6), 435–444. https://doi.org/10.1002/(SICI)1098-2337(1999)25:6<435:AID-AB4>3.0.CO;2-Q

Cortoni, F. A., Nunes, K. L., & Latendresse, M. (2006). *An examination of the effectiveness of the violence prevention program*. Correctional Service Canada.

Daffern, M., Simpson, K., Ainslie, H., & Chu, S. (2018). The impact of an intensive inpatient violent offender treatment programme on intermediary treatment targets, violence risk and aggressive behaviour in a sample of mentally disordered offenders. *Journal of Forensic Psychiatry & Psychology*, *29*(2), 163–188. https://doi.org/10.1080/14789949.2017.1352014

Deeks, J. J., Dinnes, J., D'Amico, R., Sowden, A. J., Sakarovitch, C., Song, F., Petticrew, M., & Altman, D. G. (2003). Evaluating non-randomised intervention studies. *Health Technology Assessment (Winchester, England)*, *7*(27), iii–173. https://doi.org/10.3310/hta7270

DiPlacido, C., Simon, T. L., Witte, T. D., Gu, D., & Wong, S. C. (2006). Treatment of gang members can reduce recidivism and institutional misconduct. *Law and Human Behavior*, *30*(1), 93–114. https://doi.org/10.1007/s10979-006-9003-6

Driscoll, H., Campbell, A., & Muncer, S. (2005). Confirming the structure of a ten-item expagg scale using confirmatory factor analysis. *Current Research in Social Psychology*, *10*(15), 222–234.

D'Zurilla, T. J., Nezu, A. M., & Maydeu-Olivares, A. (2001). *Manual for the social problem solving inventory-revised*. Multi-Health Systems. https://doi.org/10.1037/t05068-000

Gerchow, C. (2015). *Evaluating the Impact of Two Cognitive Behavioral Therapy Programs on Recidivism in Chronic Juvenile Offenders*. [Doctoral dissertation, UC Berkeley]. ProQuest Dissertations and Theses Global.

Gilderthorp, N., Wilson, C., & Tapp, J. (2020). A psychometric evaluation of the state-trait anger expression inventory-2 for UK adult male forensic psychiatric inpatients. *International Journal of Forensic Mental Health*, *19*(1), 57–67. https://doi.org/10.1080/14999013.2019.1629552

Haddock, G., Barrowclough, C., Shaw, J. J., Dunn, G., Novaco, R. W., & Tarrier, N. (2009). Cognitive–behavioural therapy v. social activity therapy for people with psychosis and a history of violence: Randomised controlled trial. *British Journal of Psychiatry*, *194*(2), 152–157. https://doi.org/10.1192/bjp.bp.107.039859

Henwood, K. S., Chou, S., & Browne, K. D. (2015). A systematic review and meta-analysis on the effectiveness of CBT informed anger management. *Aggression & Violent Behavior*, *25*, 280–292. https://doi.org/10.1016/j.avb.2015.09.011

Holbrook, M. I. (1997). Anger management training in prison inmates. *Psychological Reports*, *81*(2), 623–626. https://doi.org/10.2466/pr0.1997.81.2.623

Horgan, H., Charteris, C., & Ambrose, D. (2019). The violence reduction programme: An exploration of posttreatment risk reduction in a specialist medium-secure unit. *Criminal Behaviour & Mental Health*, *29*(5–6), 286–295. https://doi.org/10.1002/cbm.2123

Hornsveld, R. H., Nijman, H. L., & Kraaimaat, F. W. (2008). Aggression control therapy for violent forensic psychiatric patients: First results. *Psychology Crime & Law*, *14*(1), 1–18. https://doi.org/10.1080/10683160701340569

Huesmann, L. R. (2018). An integrative theoretical understanding of aggression: A brief exposition. *Current Opinion in Psychology*, *19*, 119–124. https://doi.org/10.1016/j.copsyc.2017.04.015

Huesmann, R. L. (1988). An information processing model for the development of aggression. *Aggressive Behavior*, *14*(1), 13–24. https://doi.org/10.1002/1098-2337(1988)14:1<13:AID-AB2480140104>3.0.CO;2-J

Ireland, J. L. (2023). Violence assessment and intervention. In G. Davey (Ed.), *Applied Psychology* (2nd ed., pp. 233–257). BPS Wiley-Blackwell: UK.

Ireland, J. L., & Ireland, C. A. (2019). Therapeutic treatment approaches for violence: Some essential components. In J. L. Ireland, C. A. Ireland, & P. Birch (Eds.), *Assessment, treatment and management of violent and sexual offenders* (2nd ed., pp. 319–341). Routledge.

Ireland, J. L., Ireland, C. A., Prieto, M. A., & Lambert, K. (2020). Thinking minds-a cognitive skills intervention: A preliminary study capturing treatment effects, with forensic psychiatric patients. *Salus Journal*, *8*(2), 5–23. https://search.informit.org/doi/10.3316/informit.399062364063321

Jacobson, N. S., Roberts, L. J., Berns, S. B., & McGlinchey, J. B. (1999). Methods for defining and determining the clinical significance of treatment effects: Description, application, and alternatives. *Journal of Consulting & Clinical Psychology*, *67*(3), 300. https://doi.org/10.1037/0022-006x.67.3.300

Jones, D., & Hollin, C. R. (2004). Managing problematic anger: The development of a treatment program for personality disordered patients in high security. *International Journal of Forensic Mental Health*, *3*(2), 197–210. https://doi.org/10.1080/14999013.2004.10471207

Kennedy, S. M. (1990). *Anger management training with adult prisoners*. [Doctoral Dissertation, University of Ottawa].

Klein-Tuente, S., Bogaerts, S., Bulten, E., Keulen de Vos, M., Vos, M., Bokern, H., IJzendoorn, S., Geraets, C. N. W., Veling, M. (2020). Virtual reality aggression prevention therapy (VRAPT) versus waiting list control for forensic psychiatric inpatients: A multicenter randomized controlled trial. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3487845

Lardén, M., Nordén, E., Forsman, M., & Långström, N. (2018). Effectiveness of aggression replacement training in reducing criminal recidivism among convicted adult offenders. *Criminal Behaviour & Mental Health*, *28*(6), 476–491. https://doi.org/10.1002/cbm.2092

McGonigal, P. T., Dixon-Gordon, K. L., Bernecker, S. L., & Constantino, M. J. (2018). An open trial of an anger management treatment in a correctional facility: Preliminary effectiveness and predictors of response. *Journal of Forensic Psychiatry & Psychology*, *29*(5), 774–781. https://doi.org/10.1080/14789949.2018.1508483

Miller, S. A., & Forrest, J. L. (2001). Enhancing your practice through evidence-based decision making: PICO, learning how to ask good questions. *Journal of Evidence Based Dental Practice*, *1*(2), 136–141. https://doi.org/10.1016/S1532-3382(01)70024-3

Mills, J. F., Kroner, D. G., & Forth, A. E. (1998). Novaco anger scale: Reliability and validity within an adult criminal sample. *Assessment*, *5*(3), 237–248. https://doi.org/10.1177/107319119800500304

Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *BMJ*, *339*, b2535–b2535. https://doi.org/10.1136/bmj.b2535

Novaco, R. W., & Taylor, J. L. (2004). Assessment of anger and aggression in male offenders with developmental disabilities. *Psychological Assessment*, *16*(1), 42–50. https://doi.org/10.1037/1040-3590.16.1.42

O'Brien, K., & Daffern, M. (2016). The impact of pre-treatment responsivity and treatment participation on violent recidivism in a violent offender sample. *Psychology Crime & Law*, *22*(8), 777–797. https://doi.org/10.1080/1068316X.2016.1181177

Polaschek, D. L., Bell, R. K., Calvert, S. W., & Takarangi, M. K. (2010). Cognitive-behavioural rehabilitation of high-risk violent offenders: Investigating treatment change with explicit and implicit measures of cognition. *Applied Cognitive Psychology: The Official Journal of the Society for Applied Research in Memory & Cognition*, *24*(3), 437–449. https://doi.org/10.1002/acp.1688

Richter, M. S., O'Reilly, K., O'Sullivan, D., O'Flynn, P., Corvin, A., Donohoe, G., Coyle, C., Davoren, M., Higgins, C., Byrne, O., Nutley, T., Nulty, A., Sharma, K., O'Connell, P., & Kennedy, H. G. (2018). Prospective observational cohort study of 'treatment as usual' over four years for patients with schizophrenia in a national forensic hospital. *BMC Psychiatry*, *18*(1), 1–15. https://doi.org/10.1186/s12888-018-1862-0

Robinson, C., Sorbie, A., Huber, J., Teasdale, J., Scott, K., Purver, M., & Elliot, I. (2021). *Reoffending impact evaluation of the prison-based RESOLVE offending behaviour programme*. UK.

Roger, D., Jarvis, G., & Najarian, B. (1993). Detachment and coping: The construction and validation of a new scale for measuring coping strategies. *Personality & Individual Differences*, *15*(6), 619–626. https://doi.org/10.1016/0191-8869(93)90003-L

Roger, D., & Najarian, B. (1989). The construction and validation of a new scale for measuring emotion control. *Personality & Individual Differences*, *10*(8), 845–853. https://doi.org/10.1016/0191-8869(89)90020-2

Serin, R. C., Gobeil, R., & Preston, D. L. (2009). Evaluation of the persistently violent offender treatment program. *International Journal of Offender Therapy and Comparative Criminology*, *53*(1), 57–73. https://doi.org/10.1177/0306624X07313985

Stanford, M. S., Mathias, C. W., Dougherty, D. M., Lake, S. L., Anderson, N. E., & Patton, J. H. (2009). Fifty years of the Barratt impulsiveness scale: An update and review. *Personality & Individual Differences*, *47*(5), 385–395. https://doi.org/10.1016/j.paid.2009.04.008

Taylor, J. L., Novaco, R. W., & Brown, T. (2016). Reductions in aggression and violence following cognitive behavioural anger treatment for detained patients with intellectual disabilities. *Journal of Intellectual Disability Research*, *60*(2), 126–133. https://doi.org/10.1111/jir.12220

Taylor, J. L., Novaco, R. W., Gillmer, B. T., Robertson, A., & Thorne, I. (2005). Individual cognitive-behavioural anger treatment for people with mild-borderline intellectual disabilities and histories of aggression: A controlled trial. *British Journal of Clinical Psychology*, *44*(3), 367–382. https://doi.org/10.1348/014466505X29990

Thomas, B. H., Ciliska, D., Dobbins, M., & Micucci, S. (2004). A process for systematically reviewing the literature: Providing the research evidence for public health nursing interventions. *Worldviews on Evidence-Based Nursing*, *1*(3), 176–184. https://doi.org/10.1111/j.1524-475X.2004.04006.x

Travers, R., Wakeling, H. C., Mann, R. E., & Hollin, C. R. (2013). Reconviction following a cognitive skills intervention: An alternative quasi-experimental methodology. *Legal and Criminological Psychology*, *18*(1), 48–65. https://doi.org/10.1111/j.2044-8333.2011.02026.x

Valliant, P. M., & Raven, L. M. (1994). Management of anger and its effect on incarcerated assaultive and non-assaultive offenders. *Psychological Reports*, *75*(1), 275–278. https://doi.org/10.2466/pr0.1994.75.1.275

Wakeling, H. C. (2007). The psychometric validation of the social problem-solving inventory—revised with UK incarcerated sexual offenders. *Sexual Abuse: A Journal of Research and Treatment*, *19*(3), 217–236. https://doi.org/10.1177/107906320701900304

Wang, E. W., Owens, R. M., Long, S. A., Diamond, P. M., & Smith, J. L. (2000). The effectiveness of rehabilitation with persistently violent male prisoners. *International Journal of Offender Therapy and Comparative Criminology*, *44*(4), 505–514. https://doi.org/10.1177/0306624X00444008

Watt, B. D., & Howells, K. (1999). Skills training for aggression control: Evaluation of an anger management programme for violent offenders. *Legal and Criminological Psychology*, *4*(2), 285–300. https://doi.org/10.1348/135532599167914

Wilson, C., Gandolfi, S., Dudley, A., Thomas, B., Tapp, J., & Moore, E. (2013). Evaluation of anger management groups in a high-security hospital. *Criminal Behaviour & Mental Health*, *23*(5), 356–371. https://doi.org/10.1002/cbm.1873