

Attitudes to Violence and Difficulties in Emotion Regulation as Dynamic Risk Factors for
Physical Aggression and Violence Risk Among Violent Offenders

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Abstract

A key characteristic of successful offender rehabilitation programs is their ability to meet the criminogenic needs of their participants. The identification and assessment of these needs in the form of modifiable risk factors associated with criminal violence is therefore an important part of correctional research. Although many such risk factors have been identified, two emerging constructs which have received preliminary evidence are attitudes to violence and difficulties in emotion regulation. However, there remains much scope to assess the role of these constructs in diverse violence-related outcomes. This study investigated the characteristics, and predictive value of these emerging risk factors in both self-reported physical aggression and clinician-rated violence risk. This study used archival data of 275 incarcerated Australian adult males who have completed a violence prevention program in South Australian correctional facilities. Data included pre and post measures of attitudes to violence, difficulties in emotion regulation, physical aggression, and violence risk. Results show that attitudes to violence and difficulties in emotion regulation were predictors of physical aggression, but an interaction effect between them was not supported. Attitudes to violence, but not difficulties in emotion regulation, predicted violence risk. Pro-social within-treatment change was observed for each variable, and changes in each risk factor predicted changes in physical aggression and violence risk. Findings demonstrate the value of further research on attitudes to violence and difficulties in emotion regulation as dynamic risk factors for physical aggression and violence risk among violent offenders, and largely support their inclusion in violence prevention programs.

Keywords: Attitudes to violence, emotion regulation, aggression, violence risk

Declaration

This thesis contains no material which has been accepted for the award of any other degree or diploma in any University, and, to the best of my knowledge, this thesis contains no material previously published except where due reference is made. I give permission for the digital version of this thesis to be made available on the web, via the university of Adelaide's digital thesis repository, the Library Search and through web search engines, unless permission has been granted by the School to restrict access for a period of time.

Signature:

27 September 2021

Contribution Statement

In writing this thesis, my primary and secondary supervisors and I collaborated to generate research questions of interest and to design an appropriate methodology. The dataset was compiled and provided by my secondary supervisor and their colleagues. I conducted the literature search and completed the ethics application. My primary supervisor and I developed the statistical analysis plan, and Dr Matthew Dry confirmed our standardised residual change scores procedure. I was responsible for data analysis and thesis write-up.

The views expressed in this report are not necessarily those of the Department for Correctional Services.

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Finally, I would like to acknowledge that this document was conceived on Kurna country, and largely completed on Peramangk country. I acknowledge the spiritual connection to country and recognise Kurna people, and Peramangk people, as the custodians of the regions where it was completed. I recognise the continuing importance of language, land, culture, and spiritual beliefs to all Aboriginal people. I also pay respect to Aboriginal people from all other regions of Australia, particularly those who helped contribute to the development of this paper and who will be involved in, or impacted by, the achievement of its actions.

Attitudes to Violence and Difficulties in Emotion Regulation as Dynamic Risk Factors for Physical Aggression and Violence Risk Among Violent Offenders

Interpersonal violence is a pervasive phenomenon that affects every country and community across the globe (World Health Organization, 2002). Understanding why people commit interpersonal violence has been an important scientific endeavor for centuries (Ferguson 2010). Contemporary correctional psychology is concerned with the identification, assessment, and treatment of modifiable correlates associated with violent behaviour (Andrews & Bonta, 2010).

Definitions

Before defining violence, it is helpful to define the conceptually similar construct of aggression. By positioning violence as a subtype of aggression, researchers and clinicians can gain valuable insight from the well-developed aggression literature (Howells et al., 2008). An influential definition of aggression offered by Baron and Richardson (1994) states that aggression is any behaviour directed toward another individual which is intended to cause harm and which the recipient is motivated to avoid. Thus, aggression can include intentionally harmful non-physical behaviours including verbal aggression.

Violence, on the other hand, is aggression that has extreme physical harm as its intended goal (Anderson & Bushman, 2002). The distinction is therefore generally considered to depend on the magnitude of physical harm intended and inflicted (Howells et al., 2008), but the two constructs have considerable overlap. Accordingly, all violence is aggression but not all aggression is violence. Criminal violence is violence that is prohibited by law, and violence risk is the potential for an individual to engage in future violence and is a focus of the current paper.

Offender Rehabilitation

An influential framework in offender rehabilitation is Andrews and Bonta's (2010) Risk-Need-Responsivity (RNR) model. The RNR model is an evidence-based paradigm which states that effective offender rehabilitation must address three core principles: risk, need, and responsivity (Andrews & Bonta, 2010). The risk principle dictates that service provision should match an individual's level of risk, with higher risk offenders receiving greater services. The needs principle directs *what* to treat and is represented by modifiable correlates of crime called dynamic risk factors or criminogenic needs. This principle is a primary focus of the current paper. The responsivity principle states that rehabilitation programs must be responsive to the needs and characteristics of those being treated. This includes being responsive to social position, gender, and cultural identities (Andrews & Bonta, 2010).

Overview

Informed by the RNR model, the current paper investigated the associations, characteristics, and interaction of two emerging potential dynamic risk factors for aggression and violence risk: attitudes to violence (Polaschek et al., 2004), and difficulties in emotion regulation (Gratz & Roemer, 2004). The current research went beyond previous work by investigating the role of these emerging risk factors in a clinician-rated measure of violence risk among a large sample of incarcerated offenders having attended violence prevention programs.

The following literature review first addresses attitudes to violence, then difficulties in emotion regulation, and finally their interaction. Each section introduces and defines the construct, elucidates their theoretical role in aggression and violence using Anderson and Bushman's (2002) General Aggression Model, before reviewing extant published literature on their relationships with physical aggression and violence.

Criminal Attitudes and Attitudes to Violence

Criminal and anti-social attitudes have long been considered an important predictor of criminality (Andrews & Bonta, 2010; Walters, 2006). In their seminal theory of criminal psychology, the Psychology of Criminal Conduct (PCC), Andrews and Bonta (2010, p. 234) describe attitudes as “evaluative cognitions and feelings that organize the actor’s decision to act and behavior toward a person, thing, or action”. These evaluative cognitions have variously been labelled beliefs, feelings, thoughts, antisocial attitudes (Andrews & Bonta, 2010), sentiments (Simourd, 1997), criminal thinking (Walters, 2006), and criminal attitudes (Mills et al., 2002). Despite semantic variability, there is consensus that the underlying construct represents an important correlate of criminality (Andrews & Bonta, 2010) and are among the most addressed construct in contemporary offender rehabilitation programs (Polaschek et al., 2010). Although conceptually similar, the domain specific construct of attitudes to violence has yet to receive equivalency of empirical evidence.

Because of the influence of criminal attitudes on criminal behaviour, violence-supportive attitudes seem a sensible focus in the investigation of risk factors associated with aggression and violence risk. Several psychometric instruments seek to measure the violence-supportive attitudes of offending adults. Among the most popular are the violence subscale of the Measures of Criminal Attitudes and Associates (MCAA-violence; Mills et al., 2002), the Criminal Attitudes to Violence Scale (CAVS; Polaschek et al., 2004), the Justifications for Violence Scale (JFV; Kelty et al., 2011), and the Maudsley Violence Questionnaire (MVQ; Walker, 2005).

Although ostensibly measuring a similar construct (Nunes et al., 2015), some of these instruments employ the term attitudes, while others have referred to this construct using terms such as justifications (Kelty et al., 2011), normative world views (Robertson et al., 2014),

rationalisations, and neutralisations (Nunes et al., 2015). The term attitudes to violence, or violence-supportive attitudes, are used throughout this paper when referring to this latent construct of violence supportive cognitions. To understand how attitudes to violence might influence violent behaviour, it is helpful to locate violence within the aggression literature using the General Aggression Model (GAM; Anderson & Bushman, 2002).

Attitudes to Violence in Theory

Social cognition theories have emerged as the dominant explanatory framework to understand aggression and violence (Anderson & Huesmann, 2003; Gilbert et al., 2013). Through integrating several influential social cognition theories, the GAM provides a flexible framework for understanding human aggression and violence. In its simplest form, the GAM proposes that the unique characteristics a person brings to a social situation interact with features of that situation to influence aggression through the internal states that are created (Anderson & Bushman, 2002). These person characteristics include any variable that characterise a person, such as gender, personality, goals, beliefs, values, and attitudes. These person characteristics then interact with situation features, such as provocation, frustration, violence-related imagery, intoxicants, feuds, or incentives to influence the likelihood of aggression through the cognitive states, affective states, and the arousal these interactions create.

To illustrate a pathway for attitudes to violence to influence violent behaviour through the cognitive route: when an individual is met with a frustrating situation, such as a traffic jam, a network of associated concepts in memory are activated. These networks of associated concepts in memory, called scripts (Huesmann, 1998), are used to define the situation, the individual's role within it, and to guide action tendencies (Huesmann, 1998). Which scripts become accessible is partially dependant on the extent to which they have been rehearsed (Huesmann, 1998). When

entrenched attitudes supportive of violence are held, then it is plausible that the most accessible scripts call for a violent response. If this script is implicitly or explicitly chosen, then subsequent behaviour may be violent.

Importantly, the GAM can be used to understand planned violence as well as the aforementioned unplanned violence. For instance, an individual's premeditated goal (person factor) to settle a dispute (situation factor) and a belief in the efficacy of violence as a solution (person factor) could prepare them to aggress through deliberately aroused internal states or deliberate rumination of hostile thoughts.

Although the current paper does not explicate the specific cognitive underpinnings of the GAM, as others have (Gilbert et al., 2013), the framework provides helpful insight with which to theoretically conceptualise the focal risk factors as inputs in an equation of violence.

Attitudes to Violence in Research

Previous research has generally found consistent evidence that attitudes to violence may represent an important risk factor for aggression and violence.

Attitudes to Violence and Aggression and Violence. In an Italian-speaking sample of 100 incarcerated violent offenders, Stefanile et al. (2021) found a positive relationship between the Acceptance of Violence subscale of the MVQ (MVQ-aov) and a seven-item self-report measure of aggression. Among two independent samples of incarcerated New Zealand males with most having historical violent convictions, Polaschek and colleagues (2004) report a strong relationship between the CAVS and the physical aggression subscale of the Aggression Questionnaire (AQ-physical; Buss & Perry, 1992). Gilbert et al. (2013) found a strong relationship between the five-item Aggression subscale of the Life History of Aggression Assessment (LHA-aggression; Coccaro et al., 1997) and the MCAA-violence among 87 forensic

mental health service users with a majority previously convicted of violent crimes. Likewise, Robertson et al. (2014) found that the MCAA-violence predicted the LHA-aggression in a sample ($N = 64$) recruited from Community Corrections Offices. Walker and Bowes (2013) found a moderate to strong relationship between the MVQ-aov and a nine-item violence measure adapted from the Self-Report Delinquency Scale (Mak, 1993). To the authors knowledge, only Polaschek et al. (2010) have investigated the relationship between attitudes to violence and a dynamic clinician-rated measure of violence risk, but did not report statistical significance.

Together, these findings provide support that attitudes to violence may represent a risk factor in aggression and violence in offending populations. However, several notable issues justify further research. Only Polaschek et al. (2010) and Walker and Bowes (2013) used outcome measures of violence, but very small sample sizes, 30 and 35 respectively, raise questions about statistical power and the generalisability of their results. Both Gilbert et al.'s (2013) and Robertson et al.'s (2014) samples were not incarcerated. Although employing a larger sample, Stefanile et al.'s (2021) outcome measure included verbal aggression and humiliation, thus did not strictly measure physical aggression or violence. Polaschek et al.'s (2004) use of the AQ-physical and their appropriately sized and incarcerated sample represents the most robust study presented. However, these findings could be enhanced by investigating these relationships in a large independent sample of violent offenders and by using a more specific measure of violence risk that does not rely solely on self-report.

Attitudes to Violence and Offending Outcomes. When investigating the relationship between attitudes to violence and offending outcomes, Mills et al. (2004) found a weak association with post-release violence. Juarez and Howard (2018) found that the relationship between the MCAA-violence and reoffending was dependent on when attitudes were measured

in relation to multiple treatment programs. In a sample ($N = 1,858$) of general offenders, Howard and van Doorn (2018) did not find a significant relationship between the MCAA-violence and hazard of reoffending based on conviction records, although the authors note a predominance of non-violent offenders in their sample. Finally, attitudes to violence has been shown to accurately differentiate between offender and community samples (Kelty et al., 2011), and between violent and non-violent offenders (Polaschek et al., 2004). In summary, although findings concerning recidivism are mixed, there seems value and insight to be gained by further investigating attitudes to violence as a potential dynamic risk factor in aggression and violence-related outcomes.

Difficulties in Emotion Regulation

Emotion regulation as a construct has received exponentially increasing attention since the 1990s (Gross, 2013). The psychological literature on emotion regulation encompasses at least two broad divisions: that which investigates the process of regulating emotion and individual styles of emotion regulation (Gross, 1998), and that which focuses on difficulties in emotion regulation (Gratz & Roemer, 2004). The current paper is concerned with the latter.

The most influential operationalisation of difficulties in emotion regulation is Gratz and Roemer's (2004) multi-dimensional model. This model provides a framework to conceptualise and measure clinically relevant difficulties in emotion regulation. With foundations in theoretical and empirical emotion research and psychopathology (Gratz & Roemer, 2004), this model is considered a response-focused, competency model of emotion regulation (Zelkowitz & Cole, 2016). Here, emotion regulation is understood as a series of abilities that are enacted in response to emotion. Difficulties in these abilities is considered maladaptive. According to Gratz & Roemer (2004), adaptive emotion regulation involves the:

(a) awareness and understanding of emotions, (b) acceptance of emotions, (c) ability to control impulsive behaviors and behave in accordance with desired goals when experiencing negative emotions, and (d) ability to use situationally appropriate emotion regulation strategies flexibly to modulate emotional responses as desired in order to meet individual goals and situational demands. (pp. 42-43)

Difficulties in emotion regulation and its dimensions are widely considered to underlie multiple forms of psychopathology and clinically relevant behaviours. These include emotional disorders (Hallion et al., 2016), anxiety disorders (Campbell-Sills et al., 2014), borderline personality disorder (Linehan, 1993), substance use disorder (Kober, 2014), posttraumatic stress disorder (Tull et al., 2007), deliberate self-harm (Gratz & Roemer, 2008), disordered eating (Lavender et al., 2014), intimate partner violence (Tager et al., 2010; Shorey et al., 2015; Berke et al., 2019), and interpersonal aggression (Robertson et al., 2012).

Difficulties in Emotion Regulation in Theory

From a GAM perspective, difficulties in emotion regulation represent an individual characteristic that a person brings to a social situation. These difficulties interact with features of the situation to influence aggression and violence through either or each of the three routes: cognition, affect, and arousal (Anderson & Bushman 2002). When a person with difficulties in emotion regulation inevitably meets an upsetting situation, unregulated negative emotion may prepare them to aggress. This may happen through physiological arousal, the inability to refrain from impulsive behaviour when upset, or the (mis)labelling of an emotion as anger increasing the accessibility of aggressive and violent concepts in memory. Conversely, an individual competent in emotion regulation may avoid this arousal, refrain from impulse, or prevent the activation of aggression-related concepts by effectively regulating their emotional response.

Another theorised link between difficulties in emotion regulation and aggression and violence is aggression and violence *as* emotion regulation. Such a consideration has been explored in regard to deliberate self-harm (Gratz & Roemer, 2008), and intimate partner violence (Jakupcak et al., 2002; Shorey et al., 2015). The general principle here is that in the absence of situationally appropriate emotion regulation abilities an individual may attempt to feel better by using aggression or violence.

Calls to integrate emotion regulation training into offender rehabilitation programs (Day, 2009; Robertson et al., 2012) and theoretical links between difficulties in emotion regulation and aggression and violence necessitate the empirical investigation of this relationship.

Difficulties in Emotion Regulation in Research

Because of the focus on Gratz and Roemer's (2004) unique operationalisation of difficulties in emotion regulation, the following research involves only that which uses the associated Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004).

DERS and Aggression in Non-Offending Populations. Moderate positive relationships have been found between the DERS and aggression among undergraduate students (Donahue et al., 2014), Italian community members (Garofalo et al., 2020; Stefanile et al., 2021), and residents of a substance abuse treatment clinic (Long et al., 2014).

DERS and Aggression in Offending Populations. To the author's knowledge, only a few studies have investigated the relationship between difficulties in emotion regulation and aggression in adult male offenders. In a series of studies involving Italian violent offenders (Garofalo & Velotti, 2017; Garofalo et al., 2015; 2018; 2020) with likely overlapping samples, Garofalo and colleagues found moderate to strong correlations between the DERS and the AQ-physical. Throughout these studies, the inability to refrain from impulse was identified as the

dimension of difficulties in emotion regulation with the strongest relationship to physical aggression. The unique contribution of impulse control, and a moderate relationship with aggression was also reported by Stephanile et al. (2021) in their sample of Italian offenders. Finally, Robertson et al. (2014; 2015) found a significant positive relationship between multiple facets of the DERS and the LHA-aggression among offenders, however, it is unclear the extent of violent offending engaged in by the 64 participants of these studies which also included women.

This research provides preliminary evidence that difficulties in emotion regulation may represent a risk factor for physical aggression across community, non-violent, and violent offender samples. However, of the research projects involving offenders, only Robertson et al.'s (2014; 2015) included English speaking participants but were perhaps not representative of an incarcerated violent population. The remaining research presented here involved Italian participants and used a translated version of the DERS. It would be beneficial to investigate the role that difficulties in emotion regulation play in physical aggression in a large English-speaking sample of incarcerated violent offenders. Additionally, although the LHA-aggression employs a semi-structured interview, it is important to investigate the role of difficulties in emotion regulation in violence risk using a non-self-reported outcome measure specific to violence risk.

An Interaction Effect

It is uncontroversial that aggression and violence are multiply determined. The notion that multiple variables and their interactions influence aggression, violence, and criminal offending is at the core of the GAM and the PCC. Similarly, despite the observed relationship between difficulties in emotion regulation and physical aggression, clearly this construct alone cannot account for all variance in aggression and violence and cannot reliably distinguish

between offending and non-offending populations (Garofalo et al., 2018). Therefore, the question becomes: for which individuals experiencing difficulties in emotion regulation does aggressive and violent behaviour arise? Specifically, for the purpose of correctional rehabilitation, which variables might interact with trait-level difficulties in emotion regulation to increase the risk of violent offending and therefore inform treatment decisions? One possible moderator variable in this relationship is attitudes to violence.

An Interaction Effect in Theory

The reasoning here follows as such: as an individual experiences unregulated negative emotion, their behavioural response may be partially influenced by salient attitudes. If these attitudes are largely non-violent, then their behavioural response may be more likely to be non-violent. For those who hold attitudes supportive of violence, then their behavioural response may be congruent with these attitudes.

This is compatible with the tenets of the GAM. The person inputs of difficulties in emotion regulation and attitudes to violence could interact with each other and with situation features to influence aggression and violence through each of the cognitive, affective, or arousal routes.

Via the cognitive route, an upsetting event and subsequent unregulated distressing emotion may impede an individual's ability to refrain from impulse. If an individual's more accessible scripts are supportive of violence, then their impulsive response may be aggressive or violent. If an individual's more accessible scripts call for withdrawal, then their impulsive response may be withdrawal.

Via the affective route, in the absence of flexible and adaptive emotion regulation strategies, and in the presence of attitudes supportive of violence, negative affect may be dealt

with using aggression or violence. For example, “The best thing about being violent is that it gets my anger out of my system” (Item six of the CAVS; Polaschek et al., 2004).

Via the arousal route, Anderson and Bushman (2002) note that arousal from even an irrelevant source can energise a dominant action-tendency including aggression. In the case of difficulties in differentiating emotions, physiological arousal owing to anxiety or sadness may be mislabeled as angry arousal. For those with attitudes supportive of violence, a dominant action tendency in response to anger may be violence; for an individual with non-violent attitudes, this may be withdrawal.

Importantly, the preceding examples categorise each response as belonging to a single route or pathway. There are of course a multitude of ways that these inputs can interact, and a multitude of routes aggression and violence can take to produce a multitude of behaviours (Anderson & Bushman, 2002). What is important here is that in each case the very same difficulties in emotion regulation are responded to differentially depending on ones’ attitudes to violence. This is the moderation of the relationship between difficulties in emotion regulation and violence by attitudes to violence.

An Interaction Effect in Research

Although difficulties in emotion regulation and attitudes to violence have been measured together, the author is not aware of any research that has investigated their interaction. Both Robertson et al. (2014) and Stefanile et al. (2021) have investigated these two constructs together and found that difficulties in emotion regulation predicted aggression when controlling for attitudes to violence. However, these projects had other foci to which their methodologies were directed. Finally, although measuring general criminal thinking and anger, Low and Day (2017) found that a grouping variable consisting of individuals high in criminal thinking and high in

anger were at greatest risk of violence. Despite differences in constructs, this evidence of interplay between attitudes and emotion suggests that an interaction between them may be relevant.

Current Study

Given the above, there remains much scope for research in these areas. The current study aimed to add to the literature and inform practice by investigating the influence of these emerging risk factors on a non-self-report measure specific to violence risk among a large Australian sample of incarcerated violent offenders. Through testing for an interaction effect, it aimed to advance theory and increase clarity around difficulties in emotion regulation and its relationship with physical aggression and violence risk. With the ultimate goal to reduce violent recidivism, this study sought to investigate whether the focal risk factors were changed following treatment, and whether these changes reflect changes on outcomes of interest, thereby supporting their conceptualisation as *dynamic* risk factors.

Using data collected by the South Australian Department for Correctional Services from incarcerated males who attended violence prevention programs it has three primary aims:

1. To explore relationships between measures of aggression and violence risk and the emerging risk factors of difficulties in emotion regulation and attitudes to violence.
2. To assess whether attitudes to violence and difficulties in emotion regulation predict physical aggression and violence risk, and if attitudes to violence moderates a relationship between difficulties in emotion regulation and aggression and violence.
3. To determine whether scores on measures of attitudes to violence, difficulties in emotion, physical aggression, and violence risk are changed following program participation, and

if changes in attitudes to violence and difficulties in emotion regulation predict changes in physical aggression and violence risk.

Method

Participants and Procedure

Data for this study were collected by the South Australian Department for Correctional Services (DCS) between 2014 and 2021 for the purposes of offender assessment, program evaluation, and research. Informed consent for the use of participants' data was obtained at the time of collection and is held by the DCS. An SPSS file containing deidentified data was provided to the researcher following ethics approval by the Human Research Ethics Subcommittee of the School of Psychology at the University of Adelaide (Approval No. 21/29), and approval from the DCS Research and Evaluation Management Committee.

Participants were 275 males aged between 19 and 54 ($M = 33.5$, $SD = 8.9$) incarcerated at South Australian correctional facilities who participated in either a four-and-a-half-month medium intensity Living Without Violence program (LWV; $N = 74$), or a ten-month high intensity Violence Prevention Program (VPP; $N = 201$). 30.2% of participants identified as Aboriginal or Torres Strait Islander compared to 3.3% nationally (Australian Bureau of Statistics, 2016) with 5 (1.8%) whose cultural background was not reported. 60.9% of participants had attained a year 10 education or greater with 9.3% coded as unknown. Approximately 77% of participants had previously served time in custody, with 14 (5.1%) cases missing data for this variable. Primary offenses for incarceration include robbery (24.2%), assault (23.8%), break and enter (13.2%), offences against justice procedures including parole or family violence restraining order violations (11.3%), homicide (6.6%), other offences against the person including blackmail and kidnapping (4.6%), unlawful possession of weapons (2.6%), drug related offences (2.5%),

sexual offences (1.3%), and other offences including property offences, driving offences, extortion, and fraud (9.9%).

Offenders sentenced to at least 12 months imprisonment were assessed by the Sentence Management Unit of the DCS where their risk of violent and general reoffending is determined using the Risk of Recidivism tool (Thompson & Stewart, 2016), the Level of Service/Risk, Need, Responsivity tool (Andrews et al., 2008), and current offending patterns and trends. Those who met criteria were assessed using a screener version of the Violence Risk Scale (VRS; Wong & Gordon, 2006) and were referred to the program which matches their level of violence risk.

Positions were offered based on available places in programs.

Measures

Demographic Information

Demographic information provided by the DCS include age, Aboriginal and Torres Strait Islander status, education, previous time in custody, and index offence.

Attitudes To Violence

Attitudes to violence was measured using the CAVS (Polaschek et al., 2004). The CAVS is a 20-item self-report questionnaire with each item presented as an attitudinal statement relating to violence such as “I believe that you have to use violence to get through to some people” and “Fighting between men is normal”. Participants rated their agreement with each item on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). Ratings for each item were summed with higher scores indicating greater attitudes supportive of violence. The CAVS was developed for use among violent offenders and has very high internal consistency ($\alpha = .95$; Polaschek et al., 2004).

Difficulties in Emotion Regulation

The DERS (Gratz & Roemer, 2004) was used to measure trait-level difficulties in emotion regulation. The DERS is a 36-item scale comprised of six subscales assessing difficulties across six dimensions proposed by Gratz & Roemer (2004). *Nonacceptance* of emotional response measures the tendency to have negative secondary responses to upsetting emotions (“When I’m upset, I become irritated at myself for feeling that way”; $\alpha = .85$). *Goals* assesses difficulties engaging in goal-directed behaviour when experiencing negative emotion (“When I’m upset, I have difficulty focusing on other things”; $\alpha = .89$). The *Impulse* subscale measures difficulties in refraining from impulse when experiencing negative emotion (“When I’m upset, I become out of control”; $\alpha = .86$). Lack of emotional *Awareness* items are reversed scored and measure the ability to notice and attend to emotions (“I pay attention to how I feel”; $\alpha = .80$). Limited access to emotion regulation *Strategies* assesses self-efficacy to effectively regulate negative emotion (“When I’m upset, I believe there is nothing I can do to make myself feel better”; $\alpha = .88$). Lack of emotional *Clarity* measures the extent to which an individual is clear about which emotions they are experiencing (“I have no idea how I am feeling”; $\alpha = .84$).

Participants indicated how often each statement applied to them on a 5-point Likert scale (1 = almost never, 5 = almost always). Ratings were summed to produce scores for the total scale and each subscale. Higher scores indicate greater difficulties in emotion regulation. Internal consistencies for each subscale are adequate and are high for the total scale ($\alpha = .93$; Gratz & Roemer, 2004). The DERS has been shown to have good construct validity (Gratz & Roemer, 2004) and has been used among offending populations (Garofalo et al., 2018).

Aggression

Physical aggression was measured using the Aggression Questionnaire (AQ; Buss & Perry, 1992). The AQ is a widely used measure of trait aggression and consists of four subscales: *Physical aggression*, *Verbal aggression*, *Anger*, and *Hostility*. The AQ asks respondents to rate how characteristic each statement is of them on a 5-point Likert scale (1 = extremely uncharacteristic of me, 5 = extremely characteristic of me). Only the AQ-physical was used. The AQ-physical comprises 9 items that measure the tendency to engage in physically aggressive behaviour (“Once in a while I can’t control the urge to strike another person”). Higher scores are indicative of greater trait physical aggression. Cronbach’s alpha for the AQ-Physical is .85 (Buss & Perry, 1992). The AQ and its subscales have been used extensively in offending populations.

Violence Risk

The VRS (Wong & Gordon, 2006) is a clinician-scored measure of violence risk which seeks to assess risk of violent recidivism, identify treatment targets, and to assess changes in risk following intervention (Lewis et al., 2012). Trained clinicians base scores on a semi-structured interview and file review. The VRS comprises six static items including Age and Violence Throughout Lifespan, and 20 dynamic items (VRS-dynamic), including Interpersonal Aggression and Insight into Violence. Each are rated on a 4-point Likert scale according to whether the item is deemed a risk factor for the individual. Higher scores are indicative of greater risk of violence. Total scores less than 35 indicate low risk; 35-50 indicate moderate risk; and greater than 50 indicate high risk (Wong & Gordon, 2006).

Importantly, VRS-dynamic items are measured before and after intervention. Based on the transtheoretical model of change (Prochaska & DiClemente, 2005), clinicians assess participants’ stage of change (pre-contemplation/contemplation, preparation, action, or

maintenance). Each unit of progress in stage of change results in a 0.5-point reduction of pre-treatment scores (Lewis et al., 2012). For instance, moving from pre-contemplation to the action stage on an item would signal a one unit decrease in the risk associated with that variable and thus the total score. The VRS has acceptable internal consistency for static items ($\alpha = .65$), good internal consistency for dynamic items ($\alpha = .80$), and acceptable interrater reliability for pre-treatment total (ICC = .84) and post-treatment total (ICC = .82), with change scores also correlated between two sets of raters ($r = .68$; Lewis et al., 2012). Other than correlations, only the VRS-dynamic was used for analyses.

Socially Desirable Responding

The Paulhus Deception Scales (PDS; Paulhus, 1998) were used to gain insight into the extent that responses reflect social desirability bias. The PDS is a 40-item self-report measure that asks participants to rate their agreement with each item on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). Items are coded 1 if the participant indicates total agreement in the socially desirable direction or else are coded 0. The PDS includes two subscales. *Self-Deceptive Enhancement* measures the tendency to give honest but inflated self-descriptions (“I never regret my decisions”). The *Impression Management* subscale measures the tendency to give inflated self-descriptions (“I have never dropped litter on the street”). The total score was used in this study. Significant correlation between the PDS and another scale indicates the likelihood of socially desirable responding. Cronbach’s alpha for the PDS is .85 (Paulhus, 1998).

Data Analytic Strategy

After data were cleaned, analyses were conducted using IBM SPSS Statistics (Version 26). Bias-corrected and accelerated (BCa) bootstrapping procedures were used for all analyses

each with 10,000 bootstrap samples. To address the first aim, descriptive statistics and Pearson correlation coefficients were computed for all variables. To address the second aim, multiple linear regression was used to predict physical aggression and violence risk by attitudes to violence and difficulties in emotion regulation, and to test for an interaction effect. To address the third aim, paired samples t-tests were conducted to test for statistically significant within-treatment change, and multiple linear regression using standardised residual change scores was used to assess if changes on the independent variables predicted changes on the outcome variables. With exceptions, most analyses involved pre-program scores to assess relationships at baseline. The sample size satisfied an a priori power analysis at the .80 power level using an alpha of .05. This was conducted using G*Power 3.1 (Faul et al., 2009; see Appendix A) for multiple linear regression with four predictors assuming a small to moderate effect size would be of interest.

Results

Preliminary Data Cleaning

There were limitations in the dataset concerning missing data and outliers which required consideration. Additionally, as the LWV cohort did not complete the PDS, analyses including the PDS only involved participants in the VPP.

In seven cases where an individual had missing values for a single scale item, the group mean was imputed. Additionally, five cases were removed due to many missing values or errors in data entry. Some participants had entire variables missing. In several cases, this was due to the closure of programs following Coronavirus lockdowns. In others, the participants may have chosen not to complete a particular measure or else the reason was unclear. Little's Missing Completely at Random Tests indicated that these data were missing completely at random.

Accordingly, to avoid unnecessary loss of power, missing data were excluded pairwise in all analyses.

Univariate outliers were identified using the outlier labelling rule where the interquartile range of each variable is multiplied by a factor of 1.5 and either added to the 75th quartile or subtracted from the 25th quartile. Values outside these limits were deemed outliers (Hoaglin & Iglewics, 1987). In total, 48 participants' data included an outlier in one or more scale or subscale. After careful individual inspection of these univariate outliers, it was decided to retain them for analyses. Several considerations guided this decision. First, identification as statistical outliers may be partially due to skewed distributions. In such a context, it is plausible that these values simply represented individuals high or low in the measured trait. Secondly, although the presence of outliers may skew normal distributions and necessitate the use of non-parametric alternatives (Leys et al., 2019), all analyses in this study were conducted using bootstrapping which mitigates the influence of outliers (Leys et al., 2019). Thirdly, the large number of outliers made it impractical to exclude them at risk of losing power, or to apply transformations such as Winsorization, which may sharply change the characteristics of the data. Finally, despite the large number of outliers, many of these were only outliers on subscales and the individual's scores on the parent scale were not outliers. Together, the careful inspection of identified outliers within the context of the dataset, the skewed distributions of many variables, and in the absence of justifiable theoretical or empirical reasons as to which of these outliers to exclude or transform, they were retained for analyses.

However, to ensure that regression models were not excessively influenced by unique combinations of scores and that analyses captured the trend of the sample, multivariate outliers were identified using Mahalanobis distance criteria. Data points that exceeded the criteria were

removed from the regression model for which they were considered outliers. Values were replaced for subsequent models and the process was repeated. Further, scatterplots between each predictor and outcome involved in a regression model were inspected to detect high influence leverage points and were removed. The number of removed cases are reported.

Descriptive Statistics

Descriptive statistics and sample size are provided for all study variables in Table 1. Mean pre-program score for the CAVS ($M = 42.9$, $SD = 18.0$) was considerably lower than those reported by Polaschek et al. (2004) during its development ($M = 58.8$; 53.9 , $SD = 20.6$; 20.3). Mean total score for the DERS ($M = 77.8$, $SD = 22.9$) was of a similar magnitude to those found in Garofalo et al.'s (2020) sample of violent offenders ($M = 74.4$, $SD = 19.7$). Mean score of the AQ-physical was also comparable to Garofalo et al.'s (2020) sample. Prior to program involvement, the majority (58.9%) of participants were classified by the VRS as high risk, 39.3% as medium risk, and 1.8% as low risk of violence. Cronbach's alpha was calculated at .95 for the CAVS, .84 for the DERS-total and between .69 and .87 for each subscale, .80 for the VRS-total and .79 for the VRS-dynamic. Internal consistencies were not available for the AQ-physical or the PDS.

Zero Order Correlations

To address the first aim of this study which sought to determine relationships between variables, Pearson correlation coefficients and 95% confidence intervals were calculated and are presented in Table 2 for pre-program and Table 3 for post-program. Confidence intervals were based on 10,000 bootstrap samples and were used to mitigate the influence of skewed distributions and outliers. All other assumptions of Pearson's correlation were met.

Table 1*Descriptive Statistics for Study Variables*

Variable	Range	Pre-program			Post-program		
		<i>N</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>
CAVS	20-98	266	42.9	18.0	240	29.9	13.3
DERS	36-163	265	77.8	22.9	238	65.7	20.2
Nonacceptance	6-30	265	12.2	5.1	238	10.4	4.6
Goals	5-25	265	12.2	4.3	238	13.4	3.7
Impulse	6-30	265	11.9	4.8	238	9.5	3.8
Awareness	6-30	265	16.3	5.6	238	14.2	5.5
Strategies	8-40	265	14.9	5.6	238	12.5	4.4
Clarity	5-23	265	10.3	3.9	238	8.8	3.2
AQ-physical	8-40	267	18.9	7.4	224	14.0	6.1
VRS-total	24-80	275	52.1	9.6	275	47.7	9.3
VRS-dynamic	12-64	275	38.9	8.1	275	34.2	8.0
PDS	0-28	190	7.5	6.3	168	10.6	7.9

Note. CAVS = Criminal Attitudes to Violence Scale. DERS = Difficulties in Emotion Regulation Scale. AQ = Aggression Questionnaire. VRS = Violence Risk Scale. PDS = Paulhus Deception Scale.

Participant age shared a weak negative relationship with attitudes to violence ($r = -.14, p = .021$) and physical aggression ($r = -.13, p = .029$). The association between the CAVS and the AQ-physical ($r = .71, p < .001$) was almost identical to that reported by Polaschek et al. (2004) ($r = .75; .71$). The relationship between the DERS-total and the AQ-physical ($r = .50$) was slightly stronger than those provided by Garofalo et al. (2020; $r = .40$).

Table 2*Pre-Program Correlation Coefficients Below the Diagonal and 95% Confidence Intervals Above*

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. CAVS		[.40, .59]	[.20, .45]	[.23, .46]	[.45, .63]	[.22, .45]	[.31, .53]	[.22, .43]	[.64, .77]	[.07, .32]	[.07, .32]	[-.38, .10]
2. DERS	.50**		[.68, .80]	[.72, .83]	[.85, .91]	[.52, .68]	[.85, .91]	[.75, .85]	[.43, .63]	[.03, .29]	[-.01, .27]	[-.40, .09]
3. Nonacceptance	.33**	.75**		[.38, .59]	[.51, .69]	[.02, .28]	[.65, .79]	[.39, .59]	[.28, .51]	[-.06, .21]	[-.08, .19]	[-.30, .02]
4. Goals	.35**	.78*	.49**		[.59, .76]	[.22, .42]	[.62, .76]	[.42, .61]	[.31, .53]	[-.01, .24]	[-.02, .23]	[-.43, .15]
5. Impulse	.55**	.88**	.61**	.68**		[.32, .53]	[.72, .84]	[.53, .70]	[.50, .68]	[.04, .31]	[.01, .30]	[-.31, .00]
6. Awareness	.34**	.61**	.16*	.32**	.43**		[.18, .42]	[.49, .67]	[.15, .38]	[-.02, .25]	[-.06, .21]	[-.35, .09]
7. Strategies	.43**	.88**	.73**	.69**	.79**	.30**		[.51, .68]	[.36, .58]	[-.00, .25]	[-.02, .25]	[-.32, .00]
8. Clarity	.33**	.80**	.50**	.52**	.62**	.59**	.60**		[.25, .47]	[.02, .28]	[-.02, .26]	[-.33, .02]
9. AQ-physical	.71**	.54**	.40**	.42**	.59**	.27**	.48**	.36**		[.15, .39]	[.14, .39]	[-.38, .11]
10. VRS	.19**	.16**	.07	.12	.18**	.12	.13*	.16*	.27**		[.94, .96]	[-.15, .16]
11. VRS-dynamic	.19**	.13*	.06	.10	.16*	.07	.12	.13*	.27**	.95**		[-.12, .16]
12. PDS	-.24**	-.25**	-.16*	-.30**	-.16*	-.22**	-.16*	-.18*	-.25**	.01	.02	

Note. Confidence intervals based on 10,000 (BCa) bootstrap samples. CAVS = Criminal Attitudes to Violence Scale.

DERS = Difficulties in Emotion Regulation Scale. AQ = Aggression Questionnaire. VRS = Violence Risk Scale. PDS = Paulhus

Deception Scale.

* $p < .05$. ** $p < .01$.

Table 3*Post-Program Correlation Coefficients Below the Diagonal and 95% Confidence Intervals Above*

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. CAVS		[.34, .60]	[.18, .44]	[.15, .45]	[.36, .63]	[.25, .51]	[.29, .57]	[.20, .47]	[.55, .76]	[.18, .40]	[.17, .39]	[-.50, -.23]
2. DERS	.48**		[.66, .81]	[.73, .85]	[.82, .89]	[.64, .78]	[.85, .92]	[.78, .87]	[.33, .61]	[.14, .37]	[.11, .37]	[-.59, -.40]
3. Nonacceptance	.31**	.74**		[.41, .64]	[.43, .66]	[.19, .40]	[.56, .77]	[.41, .63]	[.19, .45]	[.03, .28]	[.05, .31]	[-.39, -.13]
4. Goals	.30**	.80**	.54**		[.62, .77]	[.28, .50]	[.69, .81]	[.39, .64]	[.19, .48]	[-.02, .22]	[-.00, .24]	[-.52, -.27]
5. Impulse	.50**	.86**	.56**	.70**		[.41, .60]	[.74, .85]	[.52, .73]	[.40, .67]	.13, .42]	[.06, .34]	[-.50, -.28]
6. Awareness	.39**	.71**	.29**	.39**	.51**		[.35, .53]	[.61, .75]	[.16, .48]	[.02, .33]	[-.06, .28]	[-.51, -.25]
7. Strategies	.43**	.89**	.68**	.76**	.80**	.44**		[.52, .73]	[.28, .56]	[.05, .33]	[.04, .35]	[-.58, -.41]
8. Clarity	.34**	.83**	.52**	.52**	.63**	.68**	.63**		[.22, .51]	[.03, .34]	[.01, .31]	[-.57, -.37]
9. AQ-physical	.67**	.48**	.32**	.34**	.55**	.32**	.42**	.37**		[.13, .37]	[.07, .34]	[-.45, -.18]
10. VRS	.29**	.26**	.16*	.10	.28**	.18*	.19*	.19*	.25**		[.83, .91]	[-.29, -.01]
11. VRS-dynamic	.28**	.24**	.18**	.12	.23**	.13	.19*	.17**	.21**	.87**		[-.28, .03]
12. PDS	-.37**	-.50**	-.26**	-.40**	-.39**	-.39**	-.49**	-.47**	-.31**	-.15	-.12	

Note. Confidence intervals based on 10,000 (BCa) bootstrap samples. CAVS = Criminal Attitudes to Violence Scale.

DERS = Difficulties in Emotion Regulation Scale. AQ = Aggression Questionnaire. VRS = Violence Risk Scale. PDS = Paulhus

Deception Scale.

* $p < .05$. ** $p < .01$.

Consistent with the literature, DERS-impulse emerged as the subscale with the strongest relationship to physical aggression. Both the CAVS and the DERS showed significant but modest positive correlations with the VRS-dynamic.

Regression Analyses and Interaction Effect

To address the second aim of the study, which was to investigate the prediction of aggression and violence risk by the two focal risk factors, and to investigate an interaction effect between them, multiple linear regression was conducted. All assumptions of linear regression including collinearity, were tested and met with the exception of normality which was addressed using bootstrapping.

As shown in Table 4, the first regression model was conducted to predict the AQ-physical by the CAVS and the DERS with age as a covariate. Six cases were removed since they violated Mahalanobis distance criteria. The overall model was significant ($F(3, 254) = 85.70, p < .001, R^2 = .50$) with the three variables accounting for 50% of the variance in the AQ-physical. Both the CAVS ($t(254) = 11.45, p < .001$), and the DERS ($t(254) = 4.33, p < .001$) were significant predictors.

To investigate an interaction effect, the product of the CAVS and the DERS was included in block two of the regression model. The inclusion of an interaction did not explain additional variance in the model and was non-significant ($t(254) = -.803, p = .447$). The model shows that the relationship between the DERS and the AQ-physical was not moderated by the CAVS but that both measures independently predicted physical aggression in this sample.

A second regression model shown in Table 5 was conducted to predict the VRS-dynamic by the CAVS and the DERS. A single case was removed as a multivariate outlier and four cases were removed following inspection of scatterplots.

Table 4*Multiple Regression Model Predicting Physical Aggression*

Predictor	<i>B</i>	<i>SE B</i>	<i>B</i>	Sig.	95% CIs		<i>Adjusted R</i> ²
					Lower	Upper	
Block 1							
Age	-.033	.038	-.041	.385	-.106	.046	.497
CAVS	.238	.022	.575	<.001	.194	.281	
DERS	.072	.017	.216	<.001	.039	.107	
Block 2							
Age	-.032	.037	-.041	.385	-.105	.045	.496
CAVS	.299	.084	.720	.001	.130	.475	
DERS	.103	.040	.308	.011	.024	.186	
Interaction	-.001	.001	-.207	.447	-.003	.001	

Note. Confidence intervals based on 10,000 (BCa) bootstrap samples. CI = Confidence interval.

CAVS = Criminal Attitudes to Violence Scale. DERS = Difficulties in Emotion Regulation Scale.

The overall model was significant ($F(3, 255) = 5.69, p < .001, R^2 = .05$), with the three predictors explaining 5% of the variance in the VRS-dynamic. In this model only the CAVS predicted violence risk ($t(255) = 2.65, p = .013$). Because the DERS was not a significant predictor of violence risk, an interaction effect was not tested.

Change in Variables Post Program

To achieve the third aim of the study, paired samples t-tests were conducted to determine if scores are changed with statistical significance following program participation. Results are presented in Table 6 and show that program participation reduces scores in the desired direction.

Table 5*Multiple Regression Model Predicting Violence Risk*

Predictor	<i>B</i>	<i>SE B</i>	β	Sig.	95% CIs		<i>Adjusted R²</i>
					Lower	Upper	
Age	.053	.053	.062	.317	-.047	.156	.052
CAVS	.079	.031	.183	.013	.016	.142	
DERS	.038	.026	.107	.136	-.011	.087	

Note. Confidence intervals based on 10,000 (BCa) bootstrap samples. CI = Confidence interval.

CAVS = Criminal Attitudes to Violence Scale. DERS = Difficulties in Emotion Regulation Scale.

Multiple linear regression was then used to assess if changes in the independent variables predict changes in the outcome variables. Because raw change scores may be influenced by floor/ceiling effects or regression to the mean, where higher scores see the most improvement because they have the greatest scope for improvement (Daffern, et al., 2019), standardised residual change scores (RCZ) were used. RCZs control for pre-treatment scores such that change is assessed as if everyone started out equal (Daffern et al., 2019) and were calculated following the method outlined in Beggs and Grace (2011).

Raw change scores were initially regressed onto the pre-program scores. As measured by R^2 , pre-treatment scores accounted for 51.5% of the change in the CAVS, 32.7% of the change in the DERS, 42.6% of the change in the AQ-physical, and 8.6% of the change in the VRS-dynamic. This variance was then removed by calculating the residuals from these regressions (i.e., observed change scores – predicted change scores) and then standardised (Beggs & Grace, 2011).

Table 6*Paired-Samples T-Tests Assessing Change Following Program Participation*

	<i>M</i> Change [95% CI]	(<i>SD</i>)	Std. Error	<i>t</i>	<i>Df</i>	Sig.	<i>d</i> [95% CI]
CAVS	- 13.3 [- 11.1, - 15.5]	(17.0)	1.10	12.02	235	< .001	.78 [.64, .93]
DERS	- 12.2 [- 9.6, - 15.0]	(21.2)	1.39	8.82	233	< .001	.58 [.44, .72]
AQ-physical	- 4.8 [- 3.9, - 5.8]	(7.1)	0.48	10.13	220	< .001	.68 [.54, .83]
VRS-dynamic	- 4.7 [- 4.2, - 5.2]	(4.1)	0.24	19.16	274	< .001	1.2 [1.0, 1.3]

Note. Confidence intervals based on 10,000 (BCa) bootstrap samples. CI = Confidence interval.

CAVS = Criminal Attitudes to Violence Scale. DERS = Difficulties in Emotion Regulation Scale. AQ = Aggression Questionnaire. VRS = Violence Risk Scale.

These standardised residuals were then used to predict change in aggression and violence risk by change in attitudes to violence and difficulties in emotion regulation. Three cases were removed as multivariate outliers and five cases were removed following inspection of scatter plots.

Results are presented in Table 7. When controlling for pre-program scores, changes in the CAVS and the DERS predicted changes in physical aggression ($F(2, 206) = 67.7, p < .001, R^2 = .39$).

The same process was repeated for violence risk. Three cases violated multivariate criteria and were removed, and five cases were removed due to their high leverage on the regression line.

Table 8 shows that changes in both independent variables predicted changes in violence risk ($F(2, 222) = 8.73, p < .001, R^2 = .07$).

Table 7*Multiple Regression Model Predicting Standardised Residual Change in Physical Aggression*

Predictor	<i>B</i>	<i>SE B</i>	β	Sig.	95% CIs		<i>Adjusted R</i> ²
					Lower	Upper	
Change in CAVS	.553	.068	.507	< .001	.399	.671	.391
Change in DERS	.216	.064	.225	.001	.086	.344	

Note. BCa confidence intervals based on 10,000 bootstrapped samples. CI = Confidence interval.

CAVS = Criminal Attitudes to Violence Scale. DERS = Difficulties in Emotion Regulation Scale.

Table 8*Multiple Regression Model Predicting Standardised Residual Change in Violence Risk*

Predictor	<i>B</i>	<i>SE B</i>	β	Sig.	95% CIs		<i>Adjusted R</i> ²
					Lower	Upper	
Change in CAVS	.157	.059	.184	.002	.059	.258	.065
Change in DERS	.122	.060	.141	.026	.012	.230	

Note. BCa confidence intervals based on 10,000 bootstrapped samples. CI = Confidence interval.

CAVS = Criminal Attitudes to Violence Scale. DERS = Difficulties in Emotion Regulation Scale.

Discussion

This study highlights the value and importance of using diverse violence-related outcome measures, and diverse research methodologies, in the identification and assessment of dynamic risk factors associated with aggression and violence. To begin, findings support the

conceptualisation of attitudes to violence and difficulties in emotion regulation as dynamic risk factors in self-reported physical aggression. However, despite only attitudes to violence predicting clinician-rated violence risk, changes in both risk factors predicted changes in violence risk. These results demonstrate a clear need to further investigate the role of difficulties in emotion regulation in violence risk and violence risk assessment. However, results support the position of attitudes to violence as a dynamic risk factor in violence risk and warrants the inclusion of this construct in offender rehabilitation programs. Finally, evidence of a theoretically plausible interaction effect between the two risk factors was not observed in this current sample. Possible theoretical and methodological explanations are discussed.

Associations Between Variables

As shown in the results section, positive correlations between the focal risk factors and physical aggression were largely consistent with previous research. Pre-program, both attitudes to violence and difficulties in emotion regulation showed weak but significant correlations with violence risk. However, bootstrapped confidence intervals suggest that the true population parameter may vary from these estimates, especially in the case of the DERS and the VRS-dynamic in which the 95% confidence interval crosses zero. At baseline, only DERS-impulse and DERS-clarity were significantly correlated with the VRS-dynamic. The correlation between attitudes to violence and the VRS was not found by Polaschek et al. (2010), perhaps due to a larger sample in this current study resulting in increased power to detect smaller effects. This was the first study to the authors knowledge that investigated the relationship between the DERS and the VRS.

The Prediction of Physical Aggression and Violence Risk

To investigate these relationships further, attitudes to violence and difficulties in emotion regulation were assigned as predictor variables and physical aggression and violence risk as outcome variables. Both attitudes to violence and difficulties in emotion regulation predicted self-reported physical aggression. However, only attitudes to violence predicted violence risk. Notably, the predictors explained 50% of the variance in self-reported physical aggression, but only 5% in violence risk. To avoid drawing premature conclusions, the main effects of the two focal variables on aggression and violence risk will be discussed later when discussing within-treatment change. First, the large discrepancy between effect sizes for self-report and clinician-rated measures will be discussed.

The AQ-physical and VRS-dynamic as Outcome Variables

Despite considerable overlap in the constructs of physical aggression and violence (Howells et al., 2007), the instruments used to measure these constructs likely explain some observed difference in effect sizes. For instance, VRS-dynamic items assess purported risk factors associated with violence including stability of relationships and release to high-risk situations. Although attitudes to violence may indirectly influence relationship stability, there are several direct similarities between CAVS items and AQ-physical items by design (Polaschek et al., 2004). Such similarities also exist between the DERS and the AQ-physical, although to a lesser extent. These similarities work to increase relationships between the two focal risk factors and the AQ-physical.

However, the VRS-dynamic also contains items that likewise map closely onto the constructs measured by the predictors which may limit this explanation. Explicating the precise

proportion of similarities that belong to the instruments and those which belong to the constructs is beyond the current study.

While this explanation goes some distance to explain differences in effect size estimates, it remains that both the AQ-physical and the VRS-dynamic are intended to be effective in predicting the potential for physically aggressive behaviour. Therefore, it is useful to discuss a distinction between self-report and clinician-rated instruments. Namely, the concern of socially desirable responding (SDR) which may influence the discrepancy in effect sizes and limit the inferences that can be made from the data.

Socially Desirable Responding

The issue of SDR, where an individual is motivated to complete self-report scales in ways they believe to be desirable by societal norms or by evaluators, is a mainstay of psychometric discussion (Paulhus, 2002). This so called *faking good* (Zickar & Robie, 1999) is of concern when measures are intended or perceived to inform important parole decisions. However, some have argued that SDR does not invalidate self-report measures among offenders (Mills et al., 2003; Power & Ritchie, 2014). Regardless, in acknowledgment of clear incentives, such a consideration must be discussed.

Notably, when completing the CAVS post-program 27.6% of participants disagreed with every item compared to just 7.3% pre-program. This represents a 20.3% increase in participants indicating post-program that they no longer held any attitudes supportive of violence. In comparison, only 1.1% of participants indicated post-program that they no longer experienced any difficulties in emotion regulation. For the AQ-physical, 12.4% reported a total reduction in trait-aggression. Such a result is clearly promising for the efficacy of offender rehabilitation. However, at least some portion of this reduction may be owing to SDR.

The implication here is that scales which measure constructs with obvious links to parole-jeopardising traits, such as attitudes to violence and physical aggression, may be too transparent to ascertain valid reports due to SDR (Polaschek et al., 2010). Conversely, it is conceivable that the DERS is less transparent in its relationship to parole decisions and may even be construed by participants as an excuse for violence. One might then expect SDR to correlate more strongly with the transparent scales as they are easier to fake good.

Interestingly, results do not conclusively support this claim. Specifically, the negative correlation between the PDS and the CAVS increased in strength following treatment, which is expected if participants intended to show they have progressed through treatment. However, a more pronounced increase was observed in pre-post correlations between the PDS and the DERS. In other words, despite the proportion difference in total reduction of scores following treatment, correlations with the PDS suggest that it was the DERS that was more prone to SDR than the ostensibly transparent CAVS.

Further, Mills et al. (2003) note that an alternative interpretation reads that an increase in SDR could indicate an increase in the awareness and use of socially desirable interpersonal skills and behaviour. An increase in pro-social knowledge, skills, and behaviour is precisely the desired result of violence prevention programs.

Together, based on clear incentives for SDR and correlations between self-report measures and the PDS, it is likely that some SDR occurred in this sample and contributed to the observed differences in effect sizes. However, a more nuanced picture is seen when taking to account the discrepancies in transparency between the CAVS, AQ-physical, and the DERS, their respective relationships with the PDS, and the suggestion that perhaps faking good indicates a

positive treatment outcome. Accordingly, it may be erroneous to conclude that these results are entirely dismissible due to SDR.

In summary, the difference in effect sizes between outcomes are likely to be some combination of the similarities and differences between the various instruments, and the influence of a self-reported outcome variable with transparent links to undesirable traits. These findings demonstrate the importance of conducting research with a variety of violence-related outcome measures.

Interaction effect

A primary aim of this study seeking to advance theory was to investigate an interaction effect where attitudes to violence moderated a relationship between difficulties in emotion regulation and aggression and violence risk. However, no such interaction effect was observed. Two classes of explanations can be applied to this finding: those which relate to theoretical plausibility, and those belonging to methodological limitations to detect such an effect if one does exist.

Theoretical Explanation

Simply stated, it is plausible that an interaction effect was not observed because no such interaction effect occurs. Possible interrelated explanations concern inter-individual differences and intra-individual differences in antecedents of physical aggression.

First, results show that attitudes to violence and difficulties in emotion regulation independently predicted physical aggression in this sample. However, which of these two constructs predict physical aggression may vary from person to person. That is, there may be inter-individual differences in antecedents of physical aggression. For some individuals it may be their attitudes to violence that are most closely linked to physical aggression. For others, it may

be their difficulties in emotion regulation. This notion is captured in the scoring system for the VRS where risk factors are rated according to whether the construct is assessed as a risk factor for the individual. Accordingly, it is the sum of these risk factors which would increase the likelihood of aggression and not their product.

Secondly, congruent with the GAM which considers aggression as occurring at the episodic level influenced by proximal situation features, there may be intra-individual differences in antecedents of physical aggression. (Anderson & Bushman, 2002). That is, for the same individual, one such episode of aggression may arise through maladaptive emotion regulation, and another may arise through attitudes supportive of aggression. This can be broadly understood in terms of a hostile-instrumental dichotomy of aggression. However, this dichotomy has been challenged in favour of the conceptualisation of aggression as a fluid process involving mixed motives (Bushman & Anderson, 2001). Whether through a hostile-instrumental dichotomy, or a situation-dependent mixed motives account of aggression, both create a situation where the theorised interaction effect may not generalise to trait-level reporting. In such a case, there exists a mismatch between episodic state-level causal pathways and the trait level reporting used in this study.

Methodological Explanation

Given the above, perhaps such an interaction effect does occur, but was not observed due to the mismatch between where the interaction takes place and where it is measured.

Implicit in self-report instruments is the measurement of perceived tendencies and averages of behaviour, attitudes, or competencies. Therefore, no matter how great or how few difficulties in emotion regulation or attitudes to violence one believes or reports to experience, in an episode of aggression, situational factors may take primacy over these estimates.

A parallel can be drawn to purported dual-process models of social cognition (Evans, 2008). Here, cognitive processing can either be resource-intensive, conscious, and slow – that which is captured by self-report measures – or fast, automatic, and effortless – which is more relevant to state-based aggressive episodes. Simply, any resort to entrenched attitudes during emotional distress is not well captured by trait-based measures.

Whether due to inter-personal or intra-personal differences in causal pathways, or a mismatch in levels of analyses, future theory and research may address which individuals experiencing difficulties in emotion regulation then proceed to participate in aggressive behaviours and how.

Change Scores

Findings show that program participation was effective in creating pro-social change. Most notably, clinician rated VRS-dynamic scores were significantly reduced with comparable magnitude to previous research (Klepfisz et al., 2014). This important finding demonstrates that offender rehabilitation provided in South Australia is designed and implemented effectively for creating observable change in violent offenders.

The efficacy of the high intensity VPP to reduce violent recidivism has been shown by Mercer et al. (2021) in their review of the program. Although the VRS is only a prediction of violent offending, the results are broadly consistent. Of note, Juarez and Howard (2018) found that attitudes to violence experienced a rebound effect following treatment. Future research might look at the stability of the observed change on measures over time.

Dynamic Risk Factors for Physical Aggression

For a risk factor to be considered dynamic and robust, it should at least 1) correlate with the outcome variable, 2) predict the outcome variable, and 3) changes in the risk factor should

predict changes in the outcome variable. Acknowledging the limitations of the measures used and the limitations of cross-sectional research to assess causal predictions, in meeting these criteria, this study supports the conceptualisation of attitudes to violence and difficulties in emotion regulation as dynamic risk factors for physical aggression. Accordingly, further research on the role of these constructs in physical aggression is warranted and their inclusion in interventions to reduce physical aggression is supported.

Dynamic Risk Factors for Violence Risk

A major finding in this study is that attitudes to violence, as measured by the CAVS, met all three criteria offered above. This triangulation supports the conceptualisation of attitudes to violence as a dynamic risk factor in violence risk. Importantly, relatively low effect sizes, and mixed findings when predicting violent recidivism (Juarez & Howard., 2018; Howard & van Doorn, 2018) warrant caution in interpretation. However, based on these results, further research on this construct is justified and its inclusion in programs seeking to reduce the risk of violence in offending populations is supported.

Difficulties in emotion regulation, however, showed mixed results. Specifically, changes in the DERS predicted changes in the VRS-dynamic, but no main effect between pre-program scores was found. Therefore, the construct did not meet the criteria of a dynamic and robust risk factor. However, clearly it plays some role in violence risk. More research is required to determine the role of this construct in the assessment of violence risk. Given the well theorised link between the regulation of emotion and interpersonal violence (Robertson et al., 2012; Day, 2009), two possible methodological explanations are provided. These relate to issues with the VRS as an outcome and the DERS as a predictor.

As discussed, the VRS-dynamic measures a wide variety of correlates of violence. Accordingly, the proportion of items that would theoretically be associated with DERS items may not be sufficient to explain significant variance in the VRS-dynamic. Conversely, because of how the VRS-dynamic is scored, improved competency in emotion regulation may influence the way an individual interacts with the clinician administering the VRS. If this reduces perceived risk across one or more domains, it may explain why changes in the DERS predict changes in the VRS-dynamic.

A second possible explanation concerns the DERS as an independent variable. Although it has been used among offending populations, it is possible that it is not well suited to measure the types of difficulties experienced by this population. In support of this idea are Garofalo et al.'s (2018) findings that the DERS cannot reliably distinguish community from offending samples. Accordingly, perhaps the DERS items are more sensitive to assess difficulties in community life and do not capture the realities of incarcerated daily life. A more tailored measure of difficulties in emotion regulation experienced by incarcerated individuals may better predict violence risk. Similarly, as discussed, it is possible that the DERS does not predict the VRS-dynamic because difficulties in emotion regulation has a stronger relationship to violent behaviour when under emotional distress. This relationship may be masked by the temporal divide between assessment and emotional distress.

In summary, findings suggest that attitudes to violence may represent a dynamic risk factor in violence risk and warrants further research. On the other hand, mixed findings and strong theorised links between difficulties in emotion regulation and violence suggest that methodological issues may need to be addressed. Further research is required to better

understand the emotional life of incarcerated violent offenders and to better explicate the role of difficulties in emotion regulation in the assessment of violence risk.

Limitations and Future Research

Several limitations have been provided in discussing observed findings, but a few important considerations remain. To begin, correlates of violence can only truly be considered dynamic risk factors if they can reliably predict violent behaviour. This study measures only a prediction of future violent offending which may never occur. Future research should investigate these risk factors using outcome measures of violent recidivism.

Data for this study were collected primarily for purposes of program optimisation and individual evaluation. The battery of psychometrics delivered comprises 13 scales totalling 380 items. Due to practical constraints including access to offenders, all 380 items were administered in succession before and after program participation. Therefore, it is possible that responses were influenced by boredom, annoyance, or cognitive fatigue (Credé et al. 2012). The validity of future research could be improved by minimising this burden to participants through focused data collection, and where possible, using brief scales such as the DERS-16 (Bjureberg et al., 2016).

Further, to the researcher's knowledge, there has been no investigation of the test-retest reliability of the CAVS, or for the DERS among an offending population. It is therefore difficult to determine if program participation creates observed changes in scores or if the constructs change over time. Future research should seek to further validate these instruments or to use instruments which have good test-retest reliability in this population. Similarly, it may be helpful to investigate alternate scales with increased sensitivity to lower scores and are less transparent in the case of the CAVS, and adapted to this population in the case of the DERS. In investigating

these constructs, future research would do well to consider and address the disjuncture between state-based emotional distress and attitudes and trait-level reporting.

Lastly, the statistical procedures used to measure change in this study focus on changes at the group level. While group level change is of course desirable, this nomothetic approach can work to obfuscate major ideographic advancements in rehabilitation (Hammond & O'Rourke, 2007). Given the profound repercussions to individuals that interpersonal violence incurs and the economic implications of reoffending even for a single individual, meaningful individual change should not be discounted. To increase the robustness of program evaluation, future research might look to investigate these issues at the individual level perhaps using measures of clinically significant change (Daffern et al., 2019), or qualitative methodologies that give primacy to the experience of individuals.

Conclusion

This study contributes important knowledge to the literature which seeks to identify, assess, and treat modifiable correlates of aggression and violence. Through highlighting differences in predictions and effect sizes between self-report and clinician-rated measures, this study demonstrates the value of investigating the role of these constructs in a variety of violence-related outcomes beyond self-reported physical aggression. Additionally, by showing mixed results between the prediction of violence risk, and the prediction of change in violence risk, this study has demonstrated the value in using various methodologies beyond prediction at baseline. This study has also demonstrated the effectiveness of offender rehabilitation, particularly, the programs offered in South Australia, to create observable pro-social change in violent offenders. Continued research will further inform evidence-based practice in the science of offender

rehabilitation, and through working together, offender rehabilitation will inch closer to the goal of reducing the burden of interpersonal violence in the community.

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Appendix A

