

**Emotion regulation, mindfulness, and alexithymia:**

**Specific or general impairments in sexual, violent, and homicide offenders?**

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## Abstract

**Purpose:** Problems in emotional functioning have been identified as a risk factor for both sexual and violent offending, yet the precise pattern of impairment in emotional functioning that is experienced by sexual and violent offenders remains unclear. **Methods:** In this study, we examined self-reported difficulties in emotion regulation, the use of different strategies for regulating emotions, levels of trait alexithymia, and dispositional mindfulness in men with a history of sexual offending, non-sexual violent offending, homicide, and community controls. **Results:** A comparison between these groups showed that while sexual offenders had some circumscribed difficulties in emotional nonacceptance, violent offenders showed more generalized problems in emotional nonacceptance, alexithymia, and mindfulness. In contrast, homicide offenders reported few difficulties compared with other offender groups. **Conclusions:** Our results have implications for the allocation of individuals to treatment modules aimed at improving emotion regulation to reduce negative affect and offending behavior.

**Keywords:** *negative affect; emotion regulation; aggression; mindfulness; alexithymia; sexual abuse*

## Emotion regulation, mindfulness, and alexithymia:

### Specific or general impairments in sexual, violent, and homicide offenders?

Sexual offenders are often characterised by negative affective states and emotion dysregulation (Gillespie, Mitchell, Fisher, & Beech, 2012). As a result, strategies for improving emotion regulation have been recommended for inclusion in intervention programs aimed at improving social and affective functioning and reducing sexual offense recidivism (see Carter & Mann, 2016; Gillespie et al., 2012; Gillespie & Beech, 2016). However, negative affective states are not specific to men with a history of sexual offending, and emotion dysregulation is a precipitator of violent and antisocial behaviour more generally (Davidson, Putnam, & Larson, 2000). In particular, negative affect was central in Agnew's (1992) general strain theory, one of the most influential theories at the intersection of psychology and criminology. Another mainstream criminological framework – the general theory of crime (Gottfredson & Hirschi, 1990) – posited that low self-control (which arguably subsumes emotion regulation) was the main cause of antisocial behaviour. Advancing these traditional perspectives, DeLisi and Vaughn (2014) have recently proffered a sophisticated integration of conceptual and empirical knowledge on antisocial behaviour in their temperament-based theory. In this framework, the interaction of negative affect and poor effortful control, that is, a developmental antecedent of emotion regulation, are considered to represent the main ingredients of antisocial behaviour and criminal justice involvement at the individual level.

Existing research on aggression has focussed on the experience of predominantly negative emotions, including anger and shame (Davey, Day, & Howells, 2005; Novaco, 2011; Velotti, Elison, & Garofalo, 2014), and the capacity to regulate these emotions and control behaviour when distressed (Elison, Garofalo, & Velotti, 2014; Garofalo, Holden, Zeigler-Hill, & Velotti, 2016). However, the extent to which sexual offenders and non-sexual violent offenders experience similar negative emotions, use different strategies for regulating these emotions, or are more or less successful in these regulatory efforts, remains unclear. It is also unclear how these groups compare on traits including mindfulness and alexithymia that can affect one's capacity for emotion regulation. Understanding

these differences has implications for the design of offender behaviour programs and the allocation of service users.

### **1.1. Emotion regulation as a treatment target for sexual offenders**

Risk factors for sexual offense recidivism include deviant sexual interests, distorted attitudes (e.g., around children and sex, or males' entitlement to sex with women), self-management and socio-affective functioning (Hanson & Harris, 2000, 2001; Thornton, 2002). While some of these risk factors may be specific to sexual offenders, other risk factors, including self-management and socio-affective functioning, may be shared with violent/general offenders. In many countries, the assumption that sexual and violent offenders can be distinguished in terms of criminogenic needs provides a logic for allocating individuals with different index offense types to different treatment programs. That is, it has been considered that sexual and violent offenders have relatively distinct sets of needs that, when treated, will be associated with a reduced risk of sexual and violent reoffending, respectively (see Andrews & Bonta, 2010; Carter & Mann, 2016; Mann, Hanson, & Thornton, 2010). The potential benefits of such an approach are that clinical and forensic professionals can tailor treatment modules to the needs of specific types of offender. However, research on emotion regulation in forensic samples has often collapsed across sexual and violent offenders, clouding any judgments about actual differences. If such differences do not exist, at least in some domains, then placing individuals on the same program may have financial and logistic benefits (e.g., in reducing difficulties associated with monitoring various interventions delivered to relatively small groups of individuals). In a recent redesign of treatment programs available to high risk and moderate risk offenders, the prison and probation service for England and Wales has taken a more streamlined approach to program delivery. As part of this redesign, core modules are provided for needs that are transversal across groups, while more specialized modules (e.g., healthy sexual functioning programs) are offered to those with needs that are more specific (Walton, Ramsay, Cunningham, & Henfrey, 2017).

Researchers and clinicians alike are consistent in the opinion that men who have sexually abused are characterized by negative affective states (Gillespie et al., 2012; Gillespie & Beech, 2016; Langton & Marshall, 2000; Marshall, Cripps, Anderson, & Cortoni, 1999; Smallbone & Dadds, 2000;

Ward & Beech, 2016; Ward & Hudson, 2000; Ward, Hudson, Johnston, & Marshall, 1997). Specific negative affective states experienced by sexual offenders have been reviewed in detail by Gillespie et al. (2012), and include anger and social anxiety. Negative affect also appears to be associated with aggression and violence more generally, with particular attention paid to the emotions of anger and shame (Davey et al., 2005; Novaco, 2011). For example, the results of a meta-analysis confirmed that anger and hostility are both moderately elevated among intimate partner violent (IPV) men, particularly those who fall within more severe IPV subtypes (Norlander & Eckhardt, 2005). However, the experience of positive affect, and efforts to upregulate or maintain positive emotions, may also contribute to both sexual and violent offending (Day, 2009; Ward, Hudson, & Keenan, 1998). This point is highlighted by Hudson, Ward, and McCormack (1999), who found that almost as many sexual offenders reported positive affect (37%) as reported negative affect (44%) in the offense process for their most recent or typical offense. Examples of positive affect in the offense process have been highlighted for impulsive or serial rapists who experience a post-offense increase in positive emotions, and for offenders who plan their offenses carefully with the explicit aim of increasing or maintaining a level of generally positive affect (Ward et al., 1998). Finally, negative emotional states do not necessarily precede, and do not trigger, those offenses that are more instrumental in nature (i.e., premeditated and driven by an external goal) (Woodworth & Porter, 2002).

### **1.2. A framework for understanding emotion regulation**

Drawing on research in the fields of emotion and emotion-regulation, forensic psychology, and cognitive neuroscience, Gillespie and colleagues propose a model for understanding difficulties in emotion regulation in relation to sexual offending, aggression, and antisocial behavior (Gillespie et al., 2012; Gillespie, Brzozowski, & Mitchell, 2018; Gillespie & Beech, 2016, 2018). These authors highlight that, according to a simplified neurobiological framework, the process of emotion regulation is largely dependent on cognitive control over lower level brain circuits involved in emotion response and emotion generation. As such, disturbances in this circuitry can lead to difficulties in emotion regulation, and increases in negative affective states. However, there are functional overlaps between emotion regulation and other related constructs, with individual differences in mindfulness processing

and alexithymia consistently linked with emotion regulation abilities. Mindfulness refers to an attitude of non-judgemental moment-to-moment awareness and acceptance of current experience (Kabat-Zinn, 1990), and is associated with a greater capacity for emotion regulation. Alexithymia refers to an impaired ability to identify, describe, and distinguish between different emotions (Nemiah Freyberger, & Sifneos, 1976; Bagby, Parker, & Taylor, 1994). In contrast to mindfulness, alexithymia is associated with difficulties in emotion regulation. Drawing on this framework, in the current paper we focussed on negative affective states, difficulties in emotion regulation, and levels of trait mindfulness and alexithymia as possible needs that may differentiate offenders from non-offenders, and that may differentiate between groups of offenders based on offense type.

Broadly defined, emotion regulation refers to the process by which individuals use a range of strategies to exert control over which emotions they experience, and when they experience them (Gross & John, 2003). Emotion regulation also includes the ability to engage in goal-directed behaviour and refrain from impulsive actions when distressed (Gratz & Roemer, 2004). Importantly, emotions can be either up-regulated (i.e., experienced more strongly or intensely), or down-regulated (i.e., experienced less strongly or intensely) (Gross, 1998a), and different strategies for regulating emotions have been identified (Gross, 1998b). Dependent on the particular strategy being used, these will typically have greatest impact either before an emotional response has been generated (antecedent focussed), or following emotional response generation (response focussed). The most commonly cited strategies for emotion regulation refer to *cognitive reappraisal*, and *expressive suppression* (Webb, Miles, & Sheeran, 2012). Reappraisal refers to an antecedent focussed strategy whereby cognitive resources are required to construct an emotion eliciting situation in such a way that the emotional impact of the situation is altered. Expressive suppression on the other hand refers to a response focussed strategy whereby an individual inhibits ongoing emotionally-expressive behaviour (Gross, 1998b). When used in the correct context, both of these strategies can be used to successfully regulate emotions (Webb et al., 2012). However, a chronic and inflexible use of expressive suppression has been linked with a host of negative outcomes, including violent behaviour (Norstrom & Pape, 2010; Robertson, Daffern, & Bucks, 2012). The extent to which there are links between expressive suppression and sexual offending remains unknown.

### **1.3. Emotion regulation in sexual and violent offenders**

It has been numerously suggested that difficulties in emotion regulation represent causal factors in pathways to sexual offending (Hudson, Ward, & McCormack, 1999; Polaschek, Hudson, Ward, & Siegert, 2001; Polaschek & Ward, 2002). However, emotion dysregulation could be a characteristic shared among violent offenders more generally. For example, a greater number of offenders in the community tend to be characterized by maladaptive (showing reduced awareness of emotional responses, or difficulties engaging in goal directed behaviours and controlling impulsive behaviours when distressed) rather than adaptive (good awareness of emotional responses and/or few difficulties engaging in goal directed behaviours and controlling impulsive behaviours when distressed) emotion regulation styles (Robertson, Daffern, & Bucks, 2014). In addition, more maladaptive styles also tend to be linked with more extensive histories of aggression (Robertson et al., 2014). A link between aggression and emotion dysregulation is further supported by the finding that, when modelled simultaneously, state anger, trait anger, and chronic anger expression were each found to be associated with emotion dysregulation, both among incarcerated offenders, and among offenders living on parole in the community (Velotti, Garofalo, Callea, Bucks, Robertson, & Daffern, 2017). These findings may be interpreted in light of both direct (Donahue, Goranson, McClure, & Van Male, 2014; Garofalo & Velotti, 2017) and indirect (Garofalo, Holden, Zeigler-Hill, & Velotti, 2016) evidence that emotion dysregulation mediates the relationship of negative affect and aggression. Taken together, these findings strengthen the rationale for targeting emotion dysregulation in offending behaviour programs.

Despite commonalities in the experience of negative affective states and emotion dysregulation among sexual and violent offenders (Gillespie et al., 2012; Robertson et al., 2014; Velotti et al., 2017), few studies have directly compared these groups in terms of socio-affective functioning. Some areas of etiological similarity have nonetheless been identified, and both groups show difficulty in identifying the emotional expressions of others (Gery, Miljkovitch, Berthoz, Soussignan, 2009; Gillespie, Rotshtein, Satherley, Beech, & Mitchell, 2015; Chapman, Gillespie, & Mitchell, 2017). However, the extent to which these groups are distinguishable in terms of negative affective states and difficulties in regulating them has not been investigated. Moreover, identification

of specific relationships between emotion regulation and different types of offending is complicated by the presence of disorders or traits that overlap, to some extent, with emotion regulation, including alexithymia, and trait mindfulness (Garofalo & Wright, 2017; Nigg, 2017). Features of alexithymia and levels of trait mindfulness may be prevalent to differing degrees among sexual and violent offenders, and could contribute to the pattern of emotion regulatory function that is typical of these groups.

#### **1.4. Alexithymia**

Alexithymia is characterized by difficulties in identifying and describing emotions, problems in distinguishing emotions from physiological sensations, and externally oriented thinking (Nemiah et al., 1976; Bagby et al., 1994). Although levels of alexithymia in offender samples remain largely unknown, a recent study found that violent offenders scored higher than community participants did in terms of difficulties identifying feelings (Garofalo et al., 2017). However, this study did not distinguish between non-sexual and sexually violent offenders. Nonetheless, a link with sexual aggression is supported by the finding that a proportion of sexual offenders assessed for inclusion in psychoeducational group therapy exceeded the cut-off score for moderate alexithymia (Byrne, Bogue, Egan, & Lonergan, 2016). Several studies have also shown that alexithymia is related to aggression in both psychiatric inpatient (Velotti, Garofalo, Petrocchi, Cavallo, Popolo, & Dimaggio, 2016) and incarcerated offender samples (Garofalo, Velotti, & Zavattini 2017). Thus, alexithymia appears to represent a risk factor for engaging in violence and sexually motivated aggression.

#### **1.5. Mindfulness**

As well as alexithymia, levels of trait mindfulness are also associated with emotion regulation. Kabat-Zinn (1990) defines mindfulness as a process of sustained attention to moment-by-moment experience. A more recent, operational definition emphasizes the ability to focus attention for sustained periods, and to maintain a curious attitude of openness and acceptance toward thoughts, feelings and sensations (Bishop et al., 2004). In relation to violence and antisocial behavior, mindfulness appears to play a role in regulating angry affect and verbal aggression (Borders, Earleywine, & Jajodia, 2010), and is negatively associated with antisocial personality pathology and aggression (Velotti, Garofalo, D'Aguanno et al., 2016). It has been proposed that dispositional



mindfulness includes various components with a focus on enhanced attention control, and altered self-awareness, and that these components interact closely to constitute a process of enhanced self-regulation (Hölzel et al., 2011; Tang, Hölzel, & Posner, 2015). The precise mechanisms underlying the effects of mindfulness appear to differ with meditative experience. For example, among participants without extensive mindfulness meditation experience, the actions of mindfulness appear to reflect more effortful cognitive control compared with more experienced meditators (Tang et al., 2011; Chiesa, Calati, Serretti, 2011). In support of this idea, greater dispositional mindfulness in non-expert meditators is associated with more effective cognitive control of negative emotion (Modinos, Ormel, & Aleman, 2010), and cognitive control has been identified as a common process observed during mindfulness-based emotion regulation and cognitive reappraisal (Opiella et al., 2014). Thus, despite little available evidence on the effects of dispositional mindfulness in forensic samples, current evidence appears to support the hypothesis that mindfulness may represent a protective factor for engaging in aggressive and antisocial behavior.

Notably, developmental, clinical, and neuroimaging studies suggest that negative affect, emotion regulation, alexithymia, and mindfulness represent distinct constructs, despite sharing substantial conceptual overlap (Bridgett, Oddi, Laake, Murdock, & Bachmann, 2013; Dixon, Thiruchselvam, Todd, & Christoff, 2017; Nigg, 2017; Wheeler, Arnkoff, & Glass, 2017). Thus, although it is possible that components of emotion and emotion regulation, alexithymia, and mindfulness are dissociable and may be selectively impaired, the forensic literature on each has grown largely separately. A comprehensive examination of these constructs may advance the field by identifying unique profiles of socio-affective functioning across different offender groups.

## **1.6. The present study**

In the present study, we aimed to examine differences in the experience and expression of negative affective states (i.e., anger, shame), the use of particular emotion regulation strategies (i.e., cognitive reappraisal, expressive suppression), difficulties in emotion regulation, and levels of dispositional mindfulness and alexithymia, in samples of violent offenders with a history of sexual offending, non-sexual violent offenders, and community controls. In particular, we focused on general emotion regulation abilities, as well as on specific skills to regulate the experience and expression of

anger and shame. These abilities are all theoretically, and empirically, linked to violent and sexual offending (Elison et al., 2014; Gillespie et al., 2012; Novaco, 2011). We further separated the sample of non-sexual violent offenders based on offense severity, with homicide offenders forming a distinct group from non-homicide violent offenders. This strategy allowed us to examine the association of emotion dysregulation with violence severity.

Consistent with earlier research with forensic samples, we predicted heightened levels of negative affect, as well as greater use of maladaptive strategies to regulate anger and shame, among offender groups compared with community controls. However, due to the absence of prior studies, we could not make specific predictions based on offense type. With regard to strategies for emotion regulation, we predicted that all offender groups would report reduced use of cognitive reappraisal compared with controls, and increased use of expressive suppression. We also predicted that offender groups would show increased difficulties in emotion regulation compared with controls. In particular, earlier research suggests that emotional non-acceptance and negative urgency, that is, difficulties inhibiting impulsive behaviours while distressed, are associated with increased physical aggression (Garofalo, Velotti et al., 2017). As such, we predicted an increase in emotional non-acceptance and negative urgency with increasing severity of violence, with homicide offenders predicted to show the highest levels. Until now, the relationships of emotional non-acceptance and negative urgency with sexual aggression remains untested.

Finally, we also anticipated that levels of alexithymia would be increased among sexual offenders, and violent and homicide offenders alike, compared with community controls. By contrast, we predicted that all offender groups would show reduced levels of dispositional mindfulness. This prediction is consistent with previously reported negative relations of trait mindfulness with antisocial personality pathology, and positive relations with successful emotion regulation (Modinos et al., 2010; Opialla et al., 2014; Velotti, Garofalo, D'Aguanno et al., 2016). Again, specific predictions could not be framed for comparisons between sexual offenders and violent offenders (both homicide and non-homicide), as both theory and research have failed to provide clear indications in this respect.

## **2. Method**

### **2.1. Participants and Procedures**

The study received formal approval from the ethics review board of the local university and from the Italian Ministry of Justice. The study population for the offender sample comprised male offenders admitted to 15 jails across Northern and Central Italy, ranging from medium to large size facilities. Potential participants were randomly recruited from the prison lists in the period of March 2013 through July 2015. Potential participants were excluded if they had received psychotropic medications in the past 3 months, and if they were not fluent in the Italian language. After receiving written informed consent to take part in the study, assessments took place in a quiet room where offenders usually meet with prison educators. Participants completed the questionnaires in individual or small-group assessment sessions. When possible, small group sessions were preferred to limit the burden on prison staff, and a researcher was always present in the room to make sure that participants filled out the questionnaire independently. For some participants, the assessment required more than one session to complete all measures.

In total, data were available from 397 offenders. For the purpose of this study, offenders were assigned to the following subgroups based on their index offense: homicide offenders ( $N = 86$ ; 21.7%); violent offenders ( $N = 159$ ; 40.1%); sexual offenders ( $N = 68$ ; 17.1%). Participants who had committed a sexual offense were allocated to the sexual offenses group, whether or not they also had concurrent or historical convictions for violence or homicide, as we were interested in distinguishing those participants who had an offense with a sexual component or motivation. We did not have access to information about sexual offenders' victims' age. Therefore, we could not differentiate between or select sex offenders with adult victims versus child victims. Importantly, participants in the violent and homicide offender groups had never committed a sexual offense. Although participants in the violent group had never committed a homicide offense, participants in the homicide group may have had other convictions for violence. For the remaining 84 offenders (21.2%), information on the index offense was not available, and were therefore excluded from the analyses, leaving a sample of 313 offenders for the main analyses. The violent offender subgroup contained 98 (24.7%) offenders who had a non-violent crime as index offense, but presented also a past history of violent offenses. Therefore, we opted for merging them into the violent offender group in the interest of parsimony. However, the results remained virtually unchanged when the violent group was separated in to violent

and non-violent subgroups, or when the subgroup with a non-violent index offense was excluded from multiple comparisons. Demographic information (age, educational level, and socioeconomic status) divided across offender subgroups are displayed in Table 1.

To add a control group of non-offenders, a community sample was recruited from two metropolitan areas in Northern and Central Italy through convenience sampling. Undergraduate psychology students were asked to recruit participants from their acquaintances, further asking these participants to provide the contact of other potential participants, as part of their research internship or dissertation work. Participation was voluntary and participants provided written informed consent to partake in the study. Participants filled out the questionnaires individually and returned them in a sealed envelope. The control group included 324 Italian male participants, whose demographic information are reported in Table 1.

## **2.2. Measures<sup>1</sup>**

**2.2.1. Emotion Dysregulation.** The Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) was used to assess trait emotion dysregulation. The DERS is a 36-item self-report scale. For each item, participants were asked to indicate how often a particular statement applied to them on a 5-point Likert scale (ranging from 1 = *almost never* to 5 = *almost always*). The DERS items assess emotion dysregulation across six domains: nonacceptance of emotional responses (Nonacceptance,  $\alpha = .83$ ); difficulties engaging in goal-directed behavior when distressed (Goals,  $\alpha = .79$ ); difficulties controlling impulsive behavior under negative emotional arousal (Impulse,  $\alpha = .82$ ); poor emotional awareness (Awareness,  $\alpha = .66$ ); limited access to effective emotion regulation strategies (Strategies,  $\alpha = .86$ ); and poor emotional clarity (Clarity,  $\alpha = .78$ ). For each scale, higher scores indicate greater emotion dysregulation. Previous research has found the DERS – and the Italian translation used in this study (Giromini, Velotti, de Campora, Bonalume, & Zavattini, 2012) – to have good psychometric properties and construct validity (Gratz, Rosenthal, Tull, Lejuez, & Gunderson, 2006).

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<sup>1</sup> Throughout all measures, the internal consistency alpha coefficients reported in parentheses next to each scale refer to the present study.

**2.2.2. Emotion Regulation Strategies.** Individual differences in the use of emotion regulation strategies were assessed with the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003). The ERQ is a widely used self-report questionnaire that comprises 10 items rated on a 7-point Likert scale. Based on Gross' process model of emotion regulation, the ERQ items were developed to assess two of the most commonly used strategies to regulate emotions: Cognitive Reappraisal ( $\alpha = .84$ ) and Emotional Suppression ( $\alpha = .68$ ). Both the original version and the Italian translation (Balzarotti et al.; 2010) of the ERQ have demonstrated good psychometric properties in terms of reliability and validity.

**2.2.3. Alexithymia.** The Toronto Alexithymia Scale-20 (TAS-20; Bagby et al., 1994) is a 20-item self-report questionnaire used to measure individual differences in levels of alexithymia. The TAS-20 contains 20 items, and respondents had to rate to what extent they agreed with each item on a 5-point Likert scale (1 = *strongly disagree*, 5 = *strongly agree*). The TAS-20 measures alexithymia through three interrelated dimensions: difficulty identifying feelings (DIF,  $\alpha = .83$ ), difficulty describing feelings (DDF,  $\alpha = .68$ ), and external oriented thinking (EOT,  $\alpha = .46$ ). For each scale, higher scores indicate greater alexithymia. The TAS-20 has demonstrated adequate reliability and validity in both its original version and in the Italian adaptation (Bressi et al., 1996) that was used in the present study.

**2.2.4. Mindfulness.** Mindfulness was measured using the Five Facet Mindfulness Questionnaire (FFMQ; Baer, Smith, Hopkins, Krimemeyer, & Toney, 2006), a self-report scale that consists of 39 items rated on a 5-point Likert scale (ranging from 1 = *never true* to 5 = *always true*). The FFMQ assesses the individual tendency to be mindful in daily life, across five domains: tendency to attend to internal and external stimuli and related cognitions and emotions (Observe;  $\alpha = .79$ ); ability to describe own emotional experience (Describe;  $\alpha = .79$ ); tendency to pay ongoing attention to present activities while being aware of personal motives (Act with Awareness;  $\alpha = .87$ ); tendency to adopt a non-evaluative stance (as opposed to a critical stance) towards one's own thoughts and feelings, when focusing on inner experiences (Non-judgement;  $\alpha = .82$ ); and ability to perceive one's own emotions and thoughts without feeling overwhelmed or compelled to react to them (Nonreact;  $\alpha = .72$ ). On each scale, higher scores correspond to greater mindfulness abilities. In its Italian translation (Giovannini et al. 2014), the FFMQ confirmed the adequate reliability and validity reported for the original version, as well as its factor structure.

**2.2.5. Shame Regulation.** The Compass of Shame Scale (CoSS; Elison, Lennon, & Pulos, 2006; Elison, Pulos, & Lennon, 2006) was used to assess shame coping styles. The CoSS consists of 58 items rated on a 5-point Likert scale. The CoSS presents participants with hypothetical scenarios, asking to rate the extent to which they would react in different ways. It includes four scales measuring maladaptive ways of coping with shame feelings: attack the self ( $\alpha = .88$ ), which entails an awareness of shame that is inwardly directed to the self; attack others ( $\alpha = .88$ ), which entails an awareness of shame, accompanied by the externalization of blame on others; avoidance ( $\alpha = .78$ ), referring to attempts to bar shame feelings from conscious awareness; and withdrawal ( $\alpha = .87$ ); which entails awareness of shame and removal from the shame-eliciting situation. In addition, it includes one scale capturing an adaptive coping style to shame feelings ( $\alpha = .86$ ), such as considering shame functional to improve one's behavior. The CoSS items were translated into Italian for the purpose of the present study. First, the CoSS items were independently translated by two Italian psychology researchers fluent in English. After a consensus on the initial translation was reached, a third psychologist fluent in both English and Italian and blind to the original version of the scale performed a back-translation into English, and all three individuals involved discussed to resolve any inconsistency. After a final consensus was reached, both the translated and back-translated versions were approved by the original author of the CoSS.

**2.2.6. Anger Experience and Expression.** The experience and expression of anger was measured with the State-Trait Anger Expression Inventory-2 (STAXI-2; Spielberger, 1999). The STAXI-2 contains 57 items rated on a 4-point Likert-type scale. Specifically, the STAXI-2 items measure the experience, expression and control of anger across six scales: state anger ( $\alpha = .95$ ); trait-anger ( $\alpha = .89$ ); anger expression out (i.e., outward expression of anger;  $\alpha = .79$ ); anger expression in (i.e., inward suppression of anger;  $\alpha = .78$ ); anger control out (i.e., ability to control anger by relying on external support;  $\alpha = .82$ ); and anger control in (i.e., ability to control anger by relying on internal resources;  $\alpha = .85$ ). The STAXI-2 showed good internal consistency and construct validity in both the original version and its Italian translation (Spielberger, 1999).

### 3. Results

Table 1 summarizes socio-demographic information across (sub)groups and group comparisons on those variables. The only significant difference in age was between homicide offenders and community participants, with the former group being older than the latter on average. As would be expected, the distribution of education level and socioeconomic status differed significantly across groups. For ease of presentation, main results are presented in two separate tables. Table 2 shows results concerning general emotion regulation and related scales (i.e., DERS, TAS-20, FFMQ, ERQ), whereas Table 3 includes results for the emotion-specific emotion regulation scales (i.e., COSS and STAXI-2). Both tables contain descriptive statistics for the whole sample and broken down by subgroups, as well as group comparisons on all study variables. A series of six multivariate analyses of variance (MANOVAs) were conducted to examine group differences on the combined dependent variables, that is, the subscales of each measure entered simultaneously for each measure, but separately across measures. Pillai's Trace ( $V$ ) was chosen as test statistics as it is more robust to violations of assumptions (Tabachnick & Fidell, 2001), and partial Eta-squared ( $\eta_p^2$ ) was used as index of effect size. Post-hoc pairwise comparisons were probed using Tukey's honest significant difference (HSD) test. Participants that had more than 20% of missing items from a given measure were not included in the model for the corresponding measures. Because of the group differences in age, all main analyses were repeated holding constant the effect of age in MANCOVA designs with Bonferroni-adjusted pairwise comparisons, and only minor changes were noted (these are detailed below in the description of the results).

MANOVA results showed that the multivariate effect of group on the combined DERS variables was significant, Pillai's  $V = .10$ ,  $F(18, 1812) = 3.30$ ,  $p < .001$ ,  $\eta_p^2 = .03$ . As displayed in Table 2, subsequent ANOVAs and follow-up post-hoc pairwise comparisons revealed that violent and sex offenders had greater scores on the DERS Nonacceptance scale compared to the community sample, whereas homicide offenders did not show significant difference for neither other group. Follow-up analyses controlling for age yielded unchanged results. Next, the multivariate effect of group on the combined TAS-20 variables was significant, Pillai's  $V = .07$ ,  $F(9, 1848) = 4.52$ ,  $p < .001$ ,  $\eta_p^2 = .02$ . Inspection of Table 2 reveals that the only significant difference occurred on the TAS-20

Difficulty in Identifying Feelings scale, on which violent offenders scored significantly higher than community participants. When analyses were repeated controlling for age, a minimal difference occurred, in that both sex and violent offenders scored significantly higher than community participants on the TAS-20 Difficulty in Identifying Feelings scale. However, the coefficient for the pairwise comparison between sex offenders and the control group changed only minimally (from  $M_{\text{difference}} = -1.98, SE = .79, p = .059, 95\% CI 4.02, .049$ , to  $M_{\text{difference}} = -2.13, SE = .79, p = .044, 95\% CI -4.22, -.036$ ), and the significance of this difference should therefore be interpreted cautiously.

The multivariate effect of group on the combined FFMQ variables was also significant, Pillai's  $V = .11, F(15, 1785) = 4.54, p < .001, \eta_p^2 = .04$ . Several differences emerged at the bivariate level and from pairwise comparisons. First, violent offenders had greater scores on the Observe subscale compared to community participants. Of note, the overall ANCOVA for the group differences on the Observe subscale dropped to non-significance when controlling for age (from  $F = 2.97, p = .031, \eta_p^2 = .015$ , to  $F = 2.62, p = .050, \eta_p^2 = .013$ ), although the pairwise difference between violent offenders and community participants remained significant. Second, sex offenders had greater scores on the Act with Awareness subscale compared to both community sample and violent offender subsamples (which did not differ significantly from each other). When controlling for age, the difference between sex offenders and community participants dropped to non-significance (from  $p = .044$  to  $p = .822$ ), and the only significant difference remained between sex offenders (scoring higher) and violent offenders (scoring lower). Third, violent offenders scored significantly lower than community participants and homicide offenders on the Non-judgement subscale. When controlling for age, the difference between violent and homicide offenders dropped to non-significance (from  $p = .035$  to  $p = .069$ ), and the only significant difference remained between sex offenders (scoring higher) and violent offenders (scoring lower).

The multivariate effects of group on the combined ERQ variables and on the combined COSS variables were not significant, Pillai's  $V = .01, F(6, 1200) = 1.29, p > .26, \eta_p^2 = .01$ ; and Pillai's  $V = .04, F(15, 1779) = 1.39, p > .14, \eta_p^2 = .01$ , respectively. Exploratory follow-up analyses revealed no significant differences on any ERQ variables between groups (see Table 2). In contrast, sex offenders



reported significantly lower scores on the Attack Others subscale of the COSS compared to community participants (see Table 3), which should nevertheless be interpreted with caution in light of the non-significance of the overall MANOVA model. Results concerning the ERQ and COSS subscales were unaltered when analyses were repeated controlling for age.

Finally, the multivariate effect of group on the combined STAXI-2 variables was significant, Pillai's  $V = .14$ ,  $F(18, 1743) = 4.56$ ,  $p < .001$ ,  $\eta_p^2 = .05$ . Inspection of Table 3 showed significant differences across group on the State Anger, Trait Anger, Anger Expression Out, and Anger Expression In subscales of the STAXI-2. Pairwise comparisons revealed a more complex pattern of significant differences compared to other measures. First, violent offenders reported greater levels of State Anger than community participants. Second, violent offenders reported greater levels of Trait Anger than both homicide and sex offenders, but no significant differences emerged comparing violent offenders and community participants. Further, levels of Trait Anger were not significantly different between homicide and sex offenders. In addition, sex offenders (but not homicide offenders) scored significantly lower than community participants on Trait Anger. Of note, this difference between sex offenders and community participants dropped to non-significance when controlling for age (from  $p = .033$  to  $p = .069$ ). Third, both violent offenders and community participants had significantly greater levels of Anger Expression Out than both homicide and sex offenders, with no significant differences between violent offenders and community participants, or between homicide and sex offenders. Fourth, both violent offenders and community participants reported greater levels of Anger Expression In compared to homicide offenders, with no significant differences between violent offenders and community participants, whereas levels of Anger Expression In in sex offenders were not significantly different from any other group. Results concerning the Anger Expression Out and Anger Expression In were virtually unchanged when analyses were repeated controlling for age.

In short, the changes in significance level that occurred when controlling for age mostly concerned differences that were significant at  $.05 > p > .01$  level, and did not qualify the overall pattern of multivariate and univariate ANOVA results. The only exception concerned the FFMQ Observe scale, on which the univariate ANOVA was not significant after controlling for age, though the change in effect size was only trivial.

#### 4. Discussion

In this study, we examined differences in the experience of anger, strategies for regulating emotions, difficulties in emotion regulation, and levels of trait alexithymia and dispositional mindfulness, between homicide offenders, violent offenders, sexual offenders, and community controls. Overall, violent offenders showed the greatest difficulties in emotion regulation, and an increased experience of negative affective states compared with the community sample. In contrast, sexual offenders and homicide offenders did not tend to differ from either the violent sample or the community sample, and even showed some advantages in terms of reduced experience of angry states, and relatively higher levels of mindfulness.

When considering difficulties in emotion regulation, sexual and violent offenders showed more problematic scores compared to the community sample in emotional nonacceptance, suggesting that a difficulty in accepting one's emotional responses, and a tendency to react with secondary emotions (e.g., feeling angry as a reaction to feeling sad), may be associated with both violent offending, and sexually violent offending. These findings are consistent with earlier results showing that emotional nonacceptance was positively associated with aggression scores in community and psychiatric samples (Velotti, Garofalo, Petrocchi et al., 2016). Similarly, greater levels of emotional nonacceptance, difficulties identifying feelings, and increased physical aggression and hostility, have also been observed in a sample of adult offenders compared with a community sample (Garofalo, Velotti, & Zavattini, 2017). Although homicide offenders scored similar to violent and sexual offenders, there was no significant difference between homicide offenders and the community sample. This pattern of results may appear to be somewhat surprising, and suggests that homicide offenders report fewer difficulties in the acceptance of emotional states.

No significant differences between any of the groups were observed for the remaining scales of the DERS, suggesting that while sexual and violent offenders are characterised by difficulties in emotional nonacceptance, other areas of emotion regulation are less problematic. For example, difficulties engaging in goal directed behaviour and controlling impulsive behaviour, levels of emotional awareness, and access to regulatory strategies do not appear to represent areas of need for either sexual or violent offenders, or homicide offenders. These results are in line with previous

studies that found evidence for a link between aggression and more selective impairments in the acceptance of emotional responses, rather than more generalized emotion regulatory difficulties (Garofalo, Velotti, & Zavattini, 2017; Robertson, Daffern, & Bucks, 2015; Scott, DiLillo, Maldonado, & Watkins, 2015). In contrast, broad difficulties in emotion regulation are typically found in psychiatric samples compared to community samples (Velotti, Garofalo, Petrocchi et al., 2016), and in specific sub-populations of violent offenders reporting high levels of psychopathic traits (Garofalo, Neumann, & Kosson, 2017; Megias, Gómez-Leal, Gutiérrez-Cobo, Cabello, & Fernández-Berrocal, 2017).

Violent offenders, but not sexual offenders or homicide offenders, were also distinguishable from the community sample on dimensions of alexithymia and mindfulness. In terms of alexithymia, violent offenders reported more difficulties in identifying feelings, but not describing feelings or thinking externally, compared with the community sample. Although limited research on alexithymia in offender samples has been undertaken, our results are consistent with those of Garofalo et al. (2017) who also reported higher levels of trait alexithymia in offender samples compared to community controls. It has also been shown that alexithymia is associated with inwardly directed anger in a sample of offenders (Velotti et al., 2017), and with aggression in both psychiatric inpatient (Velotti, Garofalo, Petrocchi et al., 2016) and incarcerated offender samples (Garofalo et al., 2017). Other factors besides alexithymia could influence one's ability to identify, describe, and label emotions. For example, low verbal IQ may restrict the range of emotion labelling words available, and is also related to impairments on tasks that require participants to label the emotional and mental states of others (Baker, Peterson, Pulos, & Kirkland, 2014; Gillespie, Kongerslev, Sharp, Bo, & Abu-Akel, 2018). Nonetheless, although cause and effect remains unclear, our results support a relationship of features of alexithymia, in particular a difficulty in identifying feelings, with an increased propensity for violence. Importantly, the capacity to monitor, label, and describe feelings is central in several treatment approaches, and these abilities are thought to lay the basis for emotion regulation, impulse control, and the building of healthy interpersonal relationships (e.g., in mentalization- or metacognition-based treatments; Dimaggio & Lysaker, 2015).

Our findings suggest that features of alexithymia may not be as prevalent among sexual offenders as has previously been reported. For example, in a sample of sexual offenders screened for inclusion on a treatment program, a substantial proportion of these (62 out of 99 men screened) scored above the cut-off for alexithymia on the TAS-20 (Byrne et al., 2016). However, it is unclear if the sexual offenders included by Byrne et al. had a history of other types of offending, or had been convicted of murder with a sexual component. Other indirect evidence from emotional face labelling tasks also supports a link between sexual offending and alexithymia (Chapman et al., 2017; Gillespie et al., 2015; Gery et al., 2009). Nonetheless, few studies have directly examined levels of alexithymia broken down by type of offender, and future research should seek to clarify the relationship with aggression, and the severity of violent offending.

In terms of mindfulness, we found significant differences between groups on the observe, act with awareness, and non-judgement facets of mindfulness. Surprisingly, violent offenders scored higher than community controls on the observe facet, indicative of a greater tendency to focus on sensory stimuli derived from external or bodily sources. Although the direction of this result may be surprising, earlier research suggest that the observe subscale is related to maladaptive correlates including dissociative symptoms (Baer et al., 2006; Giovannini et al., 2014), and we would therefore urge some degree of caution with interpretation. A possible explanation for this counterintuitive pattern of results is that the observe facet is particularly sensitive to changes with meditative experience, and that other mindfulness based skills (e.g., acceptance, nonjudgement) are required to derive the benefits of being observing of external or bodily sensations (Baer et al., 2006, 2008). Consistent with this explanation, results from a sample of experienced meditators and nonmeditators suggest that a tendency to focus on perceptual experiences may be adaptive among experienced meditators, but is not necessarily adaptive in people with little experience of meditation (Baer et al. 2008). Another possible explanation relates to criticisms of the observe facet on the grounds that many of the items refer to external or bodily sensations, with the absence of any items that index awareness of emotions (Baer et al., 2006). It is notable that other measures of observing that do enquire about awareness of emotions tend to perform in ways that are more consistent with other mindfulness facets (Rudkin, Medvedev, & Siegert, 2018). Thus, elevated scores on the observe facet

may be most noteworthy because they are indicative of a more negative pattern of emotional and psychological functioning, especially when observing in the absence of an accepting, nonjudging, and nonreactive stance that is nurtured during mindfulness practice. In light of these conclusions, it is notable that the violent offender sample scored lower than community participants did on the non-judgement facet of the FFMQ.

On the act with awareness facet of the FFMQ, violent offenders were indistinguishable from the community sample, but sexual offenders scored higher than both the violent sample and the community sample. The only facet on which violent offenders appeared to show difficulties was on the non-judgment facet, with both the community sample and the homicide sample showing significantly higher scores. To summarise, violent offenders may be better able to observe their emotions, but show problems in non-judgement, while sexual offenders show superior scores for acting with awareness. Problems in the non-judgement facet of mindfulness reported by violent offenders are consistent with the difficulties in emotional acceptance described above. Indeed, both emotional acceptance and mindful non-judgment entail attending to one's internal states with a non-evaluative stance, while allowing thoughts and feeling to unfold naturally. These findings appear to contrast with those of a recent study, which found that the non-judgment facet of mindfulness was positively related to criminogenic cognitions, leading the authors to speculate that some degree of criticism of one's own thoughts and actions may actually be beneficial for offenders (Tangney, Dobbins, Stuewig, & Schrader, 2017). However, these findings are unexpected, and replication studies using alternative measures of mindfulness in different forensic samples are necessary before drawing strong conclusions.

Previous work has highlighted the potential benefits of mindfulness based interventions for sexual and violent offenders (Fix & Fix, 2013; Gillespie et al., 2012; Gillespie & Beech, 2016), and early results have shown some promise for the benefits of meditative practices in forensic settings (Bilderbeck, Farias, Brazil, Jakobowitz, & Wikholm, 2013; Gillespie & Beech, 2018; Samuelon, Carmody, Kabat-zinn, & Bratt, 2007; Shonin, Van Gordon, Slade, & Griffiths, 2013). However, while mindfulness practice is likely to be beneficial for some service users, the allocation of participants to these interventions should be carried out with care. In particular, we would urge professionals to

consider the principles of Risk, Need, and Responsivity (Andrews, Bonta, & Hoge, 1990; Andrews & Bonta, 2010) in allocating participants to these interventions, such that mindfulness should be delivered to those with particular difficulties in mindfulness or emotion regulation, and to those who are likely to respond positively to meditative interventions. Interventions that target particular aspects of mindfulness may be of particular use given the complex pattern of results observed here. Importantly, the findings reported here do not support the delivery of mindfulness interventions to participants simply on the basis of offence type.

As well as looking at difficulties in emotion regulation and factors associated with this, the current study also investigated differences in the experience and regulation of specific negative affective states between different groups of offenders. Previous work indicates that sexual and violent offenders frequently experience negative affective states (Gillespie et al., 2012; Gillespie & Beech, 2016; Robertson et al., 2012, 2014), yet little research has been undertaken to examine if such states can discriminate between different types of offender. Findings for strategies used to cope with shame (COSS) revealed similar scores between the various groups across all subscales, suggesting that problems in coping with shame do not represent a characteristic feature for a particular group of offenders. In contrast, results for anger (STAXI-2) showed a complex pattern of results. Violent offenders showed increased levels of state anger, but similar levels of trait anger, compared to the community sample. However, violent offenders showed higher trait anger compared with homicide offenders, and both violent offenders and the community sample showed higher trait anger compared with sex offenders. The pattern of results for trait anger was consistent with responding on the anger out subscale, where sexual offenders showed lower scores compared with both violent offenders and the community sample, suggesting that sexual offenders express their angry feelings outwardly to a lesser degree. A relative lack of angry experience appeared to discriminate homicide offenders in particular from the community sample, with significantly lower scores found for both the anger in subscale and the anger out subscale.

Similarities in trait anger scores between violent offenders and community participants are at odds with research and theory on the experience of high anger, and the expression of anger in antisocial ways, among violent offenders (Davey, Day, & Howells, 2005). However, it is worth noting

that not all violent offenders show an increased experience of anger, and a subgroup of men who commit extremely violent acts have been identified who are characterized by unexpressed anger and emotional over-control (Davey et al., 2005). Without extensive review of offense details, including levels of trait anger and anger expression both historically and in the period preceding the offense, it is difficult to capture such heterogeneity in offender samples. As such, our sample may have contained men who frequently express high anger impulsively, as well as those men who rarely or never experience anger, or who deny or inhibit the experience of anger. As noted by others, over-controlled or inhibited offenders may be unsuitable for traditional anger management programs, and there is a danger that such programs may lead to some strategies (e.g., inhibition, suppression) being over used or becoming entrenched, especially where these strategies are already being used and are producing negative outcomes (Davey et al., 2005). Future research with forensic samples should therefore take in to account heterogeneity in the experience of anger, and use person centred methods (e.g., latent profile analysis) to identify specific subgroups of offender based on angry experience, inhibition, and the use of particular emotion regulation strategies.

Overall, the findings for sexual offenders reported in this study are in contrast to models of sexual offending that emphasise the experience of anger as a motivating factor for sexual offenses. Further, our results suggest that, on average, sexual offenders are not characterized by impaired regulation of emotional states, or differences in the use of particular strategies (i.e., cognitive reappraisal, expressive suppression). These findings are in contrast to results that highlight the importance of self-regulation and negative affective states among sexual offenders. For example, in their seminal meta-analysis, Hanson and Morton-Bourgon (2005) identified general self-regulation problems as dynamic risk factors that should be targeted in sex offender treatment. Similarly, Mann et al. (2010) identified general self-regulation problems as a *psychologically meaningful risk factor* for sexual recidivism. However, Thornton (2002) notes that *stable* levels of angry affect do not appear to predict sexual offense recidivism. It is also argued by Thornton (2002) that how sexual offenders handle periods of intense anger, for example, through the use of sex related coping strategies and deviant sexual fantasies (Thornton, 2002), may be most important for sexual offense recidivism. Thus, rather than being a characteristic of all, or most, sexual offenders, emotion dysregulation might

represent one potential factor that increases risk for aggression/violence (including sexual violence) across individuals with a history of aggressive and antisocial behaviour. In order to inform interventions and risk management, we would suggest that future research should seek to establish the extent to which difficulties in emotion regulation in particular, rather than difficulties in self-regulation more generally, are predictive of sexual, violent, and any recidivism.

Although our findings are informative in distinguishing between different groups of offenders, they are nonetheless subject to certain methodological limitations. First, the measures reported here were administered in a prison setting after the participants' offense/s had taken place. Although participants were instructed to provide their responses based on their typical experience, that is, considering their whole life and not only the post-incarceration period (being them measures of trait dispositions), it is not possible to discern with certainty if negative affect and emotion dysregulation are the cause or effect of their offending behavior and incarceration. Second, the victim age for the sample of sexual offenders was unknown, and it is likely that the sample consisted of those with only adult victims, those with only child victims, and those with both adult and child victims. Victim age represents an important point of heterogeneity between sexual offenders, and should be investigated as a potential moderator of the relationship of emotion dysregulation with sexual offending. Third, the extent to which the differences observed here are moderated by the motivation for offending is also unclear. For example, participants whose motivations were more instrumental (e.g., extortion) may differ from participants whose motivations were more reactive (e.g., assaults). These differences in motivation could be related to rather different emotion regulatory processes, and a failure to account for these differences may account for the apparent lack of emotion regulatory difficulties among homicide offenders. However, it is not always possible to delineate instrumental and reactive types of aggression, and offenses are often motivated by elements of both (Bushman & Anderson, 2001).

Other limitations include a reliance on self-report measures of emotion regulation, with such measures open to obvious concerns around impression management and response bias. Further, of the three subscales that make up the TAS-20 measure of alexithymia, two of these had questionable internal consistency ( $\alpha < .7$ ): the difficulty describing feelings subscale and the externally oriented



thinking subscale. Reliability for the externally oriented thinking subscale in particular was questionable, and results for this scale should be interpreted with considerable caution. Future research may therefore benefit from using interview based measures (e.g., the Toronto Structured Interview for Alexitymia; Bagby, Taylor, Parker, & Dickens, 2006). Other more reliable measures of emotion regulation that are less open to desirable responding include methods that require participants to regulate their emotional response either up or down, or using a particular strategy (e.g., cognitive reappraisal, expressive suppression) while recording behavioural and neural/psychophysiological responses. Such methods have previously been used with some success to examine emotion regulation in different clinical populations, including offenders with psychopathic tendencies (Casey, Rogers, Burns, Yiend, 2012), and may also be used to investigate the success of interventions that aim to improve emotion regulation abilities (Gillespie & Beech, 2016; Gillespie, Brzozowski, & Mitchell, 2017). It is also important to note that the results reported here are based on cross-sectional samples of offending and community participants, and the presence of group differences is not explanatory about the causes of offending. We would recommend that future research should use longitudinal methods (see Cole & Maxwell, 2003) to test the causal relationships between negative affective states, socio-affective functioning, and different types of offending.

In conclusion, our findings highlight that while sexual offenders and homicide offenders, on average, do not appear to be characterized by difficulties in emotion regulation or the experience of negative affect, violent offenders show significantly increased levels of state anger, as well as problems in emotional non-acceptance, difficulty identifying feelings, and lower levels of non-judgement of emotional experience. On several measures, including subscales of the DERS, measures of shame, and the use of strategies for emotion regulation, no significant differences were detected among groups of offenders or in comparison to the community sample. Our findings suggest that participants should not be allocated to interventions aimed at improving emotion regulation on the basis of offense type alone. Instead, we would suggest that more specialised emotion regulation modules should be provided to individuals who would benefit the most from techniques that aim to reduce negative affect and increase emotion regulation. Based on our findings, it appears that violent offenders could benefit from treatments aimed at improving their capacity to identify emotions and

accept them, rather than having a critical attitude toward their internal states. Sexual offenders on the other hand may benefit from interventions with a particular focus on improving emotional acceptance. Our findings highlight the importance of measuring negative affective states and difficulties in emotion regulation among different groups of offenders, and the importance of using these measures to inform treatment allocation decisions. Finally, the complex pattern of results reported for mindfulness emphasizes the need for a better understanding of mindfulness in forensic contexts. Future research should focus on identifying the benefits of mindfulness interventions in forensic settings, for example in improving emotion regulation and reducing violence, and in identifying those who are most likely to respond to such interventions.

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Table 1

Age and sociodemographic information (educational level and socioeconomic status) across groups.

	Community sample (N = 324)		Homicide offenders (N = 86)		Sex offenders (N = 68)		Violent offenders (N = 159)		F	$\eta_p^2$
	M	SD	M	SD	M	SD	M	SD		
<b>Age</b>	37.86 <sup>a</sup>	11.90	42.88 <sup>b</sup>	12.28	41.21 <sup>ab</sup>	12.93	39.31 <sup>ab</sup>	11.30	4.67**	.02
	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	<i>N</i>	<i>%</i>	$\chi^2$	<i>p</i>
<b>Education</b>									167.43	<.001
No education	0	0	0	0	1	1.5	2	1.3		
Primary or middle school	52	16.6	45	52.3	38	55.9	88	55.3		
High school	159	51.0	31	36	20	29.4	60	37.7		
Bachelor's level	34	10.9	5	5.8	2	2.9	1	0.6		
Master's level	54	17.3	1	1.2	5	7.4	2	1.3		
Post-graduate level	12	3.8	0	0	0	0	0	0		
Missing	1	0.3	4	4.7	2	2.9	6	3.8		
<b>Socioeconomic Status</b>									109.04	<.001
< 36.000 €/year	232	74.4	63	73.3	52	76.5	97	61.0		
Between 36.000 and 70.000 €/year	61	19.6	0	0	2	2.9	6	3.8		
More than 70.000€/year	6	1.8	2	2.4	0	0	3	1.9		
Did not declare	13	4.2	21	24.4	14	20.6	53	33.3		

Note. .  $\eta_p^2$  = Partial Eta Squared, index of effect size (small effect = .01; medium effect = .06; large effect = .14). Different superscripts indicate significant difference at  $p < .05$  in pairwise comparisons.  $\chi^2$  = Chi-Square statistics.

\*\*  $p < .01$ .

Table 2

Mean, standard deviation (SD), and group comparison for emotion dysregulation, alexithymia, mindfulness, and emotion regulation strategies.

	Community sample (N = 324)		Homicide offenders (N = 86)		Sex offenders (N = 68)		Violent offenders (N = 159)		Total sample (N = 637)		F	$\eta_p^2$
	M	SD	M	SD	M	SD	M	SD	M	SD		
<i>DERS</i>												
Nonacceptance	<b>11.93<sup>a</sup></b>	4.89	13.33 <sup>ab</sup>	5.09	<b>13.99<sup>b</sup></b>	6.33	<b>14.25<sup>b</sup></b>	5.32	12.92	5.29	8.17***	.04
Goals	12.46	4.48	11.83	4.54	11.26	4.3	12.31	4.36	12.21	4.44	1.57	.01
Impulse	11.08	4.43	10.75	3.95	10.43	4.1	11.79	5.09	11.14	4.52	1.83	.01
Awareness	14.54	4.22	14.05	4.13	13.48	4.56	14.54	4.00	14.36	4.19	1.39	.01
Strategies	14.68	5.92	14.38	5.39	14.72	5.61	15.91	6.41	14.95	5.96	1.83	.01
Clarity	9.50	3.91	8.56	3.24	9.04	3.26	9.78	4.04	9.39	3.81	2.13	.01
<i>TAS-20</i>												
DIF	<b>12.06<sup>a</sup></b>	5.14	13.38 <sup>ab</sup>	6.09	14.04 <sup>ab</sup>	6.44	<b>15.09<sup>b</sup></b>	6.87	13.22	6.02	9.67***	.05
DDF	12.42	4.48	11.98	4.94	12.3	4.79	15.56	4.29	12.38	4.53	0.32	.00
EOT	19.83	4.89	20.72	4.53	20.5	4.96	20.63	5.36	20.23	4.95	1.35	.01
<i>FFMQ</i>												
Observe	<b>21.29<sup>a</sup></b>	6.26	22.04 <sup>ab</sup>	5.92	22.04 <sup>ab</sup>	6.4	<b>23.19<sup>b</sup></b>	6.71	21.93	6.37	2.97*	.02
Describe	27.19	5.68	27.72	5.57	28.98	5.44	27.02	5.56	27.42	5.63	2.21	.01
Act Awareness	<b>31.11<sup>a</sup></b>	5.88	32.67 <sup>ab</sup>	6.11	<b>33.27<sup>b</sup></b>	6.07	<b>30.62<sup>a</sup></b>	6.50	31.44	6.14	4.30**	.02
Non Judge	<b>30.67<sup>a</sup></b>	5.61	<b>30.06<sup>a</sup></b>	5.59	28.85 <sup>ab</sup>	6.39	<b>27.86<sup>b</sup></b>	6.38	29.70	6.00	8.09***	.04
Non React	20.13	4.67	19.73	4.85	21.06	5.68	19.73	4.64	20.08	4.81	1.33	.01
<i>ERQ</i>												
Reappraisal	4.84	1.16	4.87	1.16	5.13	1.18	4.85	1.28	4.88	1.19	1.09	.01
Suppression	3.82	1.16	4.05	1.21	40.8	1.55	4.03	1.34	3.93	1.26	1.69	.01

Note. DERS = Difficulties in Emotion Regulation Scale. TAS-20 = Toronto Alexithymia Scale-20 items. FFMQ = Five Facet Mindfulness Questionnaire. ERQ = Emotion Regulation Questionnaire. DIF = Difficulty Identifying Feelings. DDF = Difficulty Describing Feelings. EOT = Externally Oriented Thinking. For the DERS and TAS-20, higher scores indicate greater problems in the corresponding domain. For the FFMQ and ERQ, higher scores indicate greater mindfulness skills and greater use of emotion regulation strategies, respectively.  $\eta_p^2$  = Partial Eta Squared, index of effect size (small effect = .01; medium effect = .06; large effect = .14). Different superscripts indicate significant difference at  $p < .05$  in pairwise comparisons. Coefficients that differ significantly from one another are reported in boldface for ease of readability.

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Table 3

Mean, standard deviation (SD), and group comparison for shame coping and anger regulation scales.

	Community sample (N = 324)		Homicide offenders (N = 86)		Sex offenders (N = 68)		Violent offenders (N = 159)		Total sample (N = 637)		F	$\eta_p^2$
	M	SD	M	SD	M	SD	M	SD	M	SD		
<i>COSS</i>												
Avoidance	32.06	7.71	29.92	7.94	29.90	7.91	31.17	8.33	31.31	7.95	2.45	.01
Attack Self	26.46	9.15	24.43	8.24	25.25	9.60	27.13	8.87	26.22	9.03	1.88	.01
Withdrawal	25.16	8.99	23.52	9.25	24.42	8.97	25.78	9.39	25.01	9.13	1.18	.01
Attack Others	21.83 <sup>a</sup>	8.04	19.61 <sup>ab</sup>	6.21	18.95 <sup>b</sup>	7.41	21.80 <sup>ab</sup>	8.62	21.21	7.96	3.82*	.02
Adaptive	34.18	7.35	34.03	7.65	34.09	7.95	33.25	7.99	33.92	7.61	0.51	.01
<i>STAXI-2</i>												
State anger	<b>18.65<sup>a</sup></b>	7.40	20.35 <sup>ab</sup>	7.76	20.48 <sup>ab</sup>	6.99	<b>23.44<sup>b</sup></b>	11.56	20.19	8.75	9.96***	.05
Trait anger	<b>18.44<sup>ab</sup></b>	5.94	<b>16.54<sup>ac</sup></b>	5.47	<b>16.12<sup>c</sup></b>	5.40	<b>19.32<sup>b</sup></b>	7.19	18.14	6.22	6.02***	.03
Anger Out	<b>15.78<sup>a</sup></b>	4.34	<b>13.74<sup>b</sup></b>	3.94	<b>13.80<sup>b</sup></b>	3.66	<b>15.88<sup>a</sup></b>	5.31	15.31	4.54	7.63***	.04
Anger In	<b>17.58<sup>ab</sup></b>	4.81	<b>15.62<sup>c</sup></b>	4.64	16.37 <sup>abc</sup>	4.31	<b>18.23<sup>ab</sup></b>	5.24	17.33	4.90	6.03***	.03
Control Out	23.49	4.95	14.50	5.29	25.15	4.75	24.14	5.03	26.96	5.02	2.47	.01
Control In	22.74	5.17	22.58	6.24	24.14	5.73	23.05	5.20	22.94	5.40	1.32	.01

Note. COSS = Compass of Shame Scale. STAXI-2 = State Trait Anger Expression Inventory-2.  $\eta_p^2$  = Partial Eta Squared, index of effect size (small effect = .01; medium effect = .06; large effect = .14). Different superscripts indicate significant difference at  $p < .05$  in pairwise comparisons. Coefficients that differ significantly from one another are reported in boldface for ease of readability (the coefficients for the Attack Others scale of the COSS are not reported in boldface because the multivariate effect of group on the combined COSS scales was not statistically significant, see Results section).

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .