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Psychopathy and Aggression: The Role of Emotion Dysregulation

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Abstract

The importance of psychopathy in the forensic and criminal justice domains is largely due to its robust associations with aggression and violent behavior. Hence, investigators have increasingly been interested in elucidating potential mechanisms linking psychopathy and aggression. Recent research highlighted previously overlooked associations between psychopathy and difficulties in emotion regulation, the process responsible for monitoring, evaluating, and managing one's emotional experience, as well as for guiding behavior under intense emotional arousal. Yet, it remains unclear whether emotion dysregulation may be helpful to explain well-documented associations between psychopathy and aggression. The present study examined whether emotion dysregulation mediated associations (i.e., explained a significant portion of the shared variance) between psychopathy and aggression across community ($N = 521$) and offender ($N = 268$) samples. Participants completed self-report measures of psychopathy, emotion dysregulation, trait aggressiveness (i.e., anger, hostility, physical and verbal aggression), as well as reactive and proactive aggression. Across both samples, psychopathy had significant indirect effect on all indices of aggression through emotion dysregulation, with the exception of verbal aggression. These findings support the relevance of emotion regulation for the construct of psychopathy and its

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maladaptive correlates and highlight the potential relevance of focusing on emotion regulation as a possible target for interventions aimed at reducing aggression among individuals with psychopathic traits.

Keywords

psychopathic traits, reactive aggression, proactive aggression, emotion regulation, offenders

Psychopathy is a personality disorder characterized by callous affect, interpersonal exploitativeness, an impulsive and irresponsible lifestyle, as well as a pattern of early, chronic, and versatile antisocial tendencies (Hare & Neumann, 2008). The present study relied on Hare's (2003) conceptualization of this disorder. In particular, for the purpose of the present study, we focused on the super-ordinate construct of psychopathic personality, that is, the coalescence of the four lower-order trait domains capturing affective, interpersonal, lifestyle, and antisocial traits, respectively (C. S. Neumann et al., 2007). Although research on the lower-order domains that make up the psychopathic syndrome has flourished in the last decades, strong evidence supports the value of studying the overall construct of psychopathy as none of the lower-order domains taken individually are sufficient to represent psychopathic personality (e.g., Andershed et al., 2018; Frogner et al., 2018; Somma et al., 2018). The super-ordinate construct of psychopathy has great relevance for public health and the criminal justice system, in part, due to its robust associations with aggression and violent behavior in offenders and in the general population (C. S. Neumann et al., 2007, 2015; Olver et al., 2018; Porter et al., 2018; Reidy et al., 2015). Hence, research has sought to clarify the nature of these associations. One way to pursue this important avenue of research is to examine potential factors that may help explain (i.e., mediate) some of these associations, as these factors may reflect important targets for prevention and treatment (e.g., Harenski & Kiehl, 2010).

For example, the only available clinical guidelines for the treatment of psychopathy suggest to focus on social information processing deficits to reduce aggression in psychopathic offenders, stating that focusing on emotion regulation (ER)—a well-established risk factor for aggression—would prove ineffective in reducing the aggression displayed by psychopathic individuals in particular (Wong & Hare, 2005). At the time of this recommendation, there was little if any empirical evidence that ER could help explicate the link between psychopathy and aggression. We contend, however, that this assumption has rarely, if ever, received comprehensive empirical scrutiny

and propose that emotion dysregulation may account, in part, for the association between psychopathy and aggression.

In the present study, we first briefly describe different models of aggression and their relations to psychopathy. In particular, we focused on Buss and Perry's (1992) trait-perspective of aggression that describes cognitive, affective, and behavioral aggressive tendencies, as well as on the reactive–proactive aggression distinction, often studied in relation to psychopathy (e.g., Blais et al., 2014; Wong & Hare, 2005). Next, we provide a concise review of emerging empirical evidence linking emotion dysregulation to both psychopathy and aggression, and make the case that emotion dysregulation may provide a parsimonious, albeit partial, explanation for the association between psychopathy and different forms of aggression. In this context, we focused on Gratz and Roemer's (2004) conceptualization of emotion dysregulation, which has gained traction in the last decade in large part for its clinical relevance. Finally, we tested whether there was evidence for an indirect effect of psychopathy on aggression through emotion dysregulation in two independent samples of violent offenders and community participants. That is, we examined whether emotion dysregulation would statistically mediate the associations between psychopathic traits and increased levels of aggression.

Aggression: Different Models and Links to Psychopathy

The study of aggression has a long-standing tradition in psychological research (Bushman & Anderson, 2001). One model that has been highly influential in personality research on aggression was developed by Buss and Perry (1992). From this perspective, trait aggression was conceptualized as a relatively stable trait-like disposition underpinned by four dimensions: physical aggression, verbal aggression, anger, and hostility. Specifically, physical and verbal aggression represented the behavioral components of aggression, whereas anger and hostility represented its affective (e.g., reactions to external triggers) and cognitive (e.g., negative view of others and the world as menacing and untrustworthy) components, respectively. The development of the Aggression Questionnaire (AQ; Buss & Perry, 1992), based on this model, has foreshadowed most of the personality literature on aggression until recently (for a brief review of this model, see Garofalo, 2017). Recent research investigating links between psychopathy and the AQ has revealed strong positive associations between psychopathic traits and physical aggression, moderate positive associations between psychopathic traits and anger, and small-to-moderate positive associations between psychopathic traits and both verbal aggression and hostility (Fanti et al., 2016; Sellbom et al., 2018).¹

Another widely used model focuses on different forms of aggression based on distinct motivational factors. In particular, it distinguishes reactive from proactive forms of aggression (Dodge & Coie, 1987). Reactive aggression entails hostile and anger-laden responses to triggers that may occur in the form of provocation, frustration, or threat and is motivated by a willingness to defend the self from a perceived attack. In contrast, proactive aggression is characterized by deliberate behavior enacted with the motivation to hurt others or to achieve secondary goals or personal benefit (Dodge & Coie, 1987; Raine et al., 2006).

It is important to emphasize that the reactive–proactive dichotomy is inherently arbitrary and it is more likely that there are mixed motives that underlie most instances of aggression and that there are shared characteristics between reactive and proactive aggression (Bushman & Anderson, 2001). First, reactive and proactive aggression are highly correlated, suggesting that the individual propensity to show one form of aggression goes hand in hand with the propensity to show also the other form of aggression. Second, at the person-centered level, studies have documented subgroups of individuals showing low levels of both reactive and proactive aggression, or individuals showing selected elevations on only reactive aggression; however, the most severe aggression subgroups typically show comparably elevated levels of both reactive and proactive aggression (Brugman et al., 2017; Thomson & Centifanti, 2018). Of importance, one strong predictor of both forms of aggression, as well as of their co-occurrence, is psychopathy. Indeed, the preponderance of empirical evidence suggests that overall levels of psychopathy have moderate-to-strong associations with both reactive and proactive aggression (Blais et al., 2014), although a few studies have suggested that psychopathy might have a stronger association with proactive rather than reactive aggression (Long et al., 2014; Reidy et al., 2011).

Taken together, the findings consistently demonstrate that psychopathy is intimately connected to aggressive tendencies and behaviors across different components (i.e., anger, hostility, physical and verbal aggression) and forms (i.e., reactive and proactive aggression). Because of the differences between components and between forms of aggression, researchers have been interested in identifying different factors that may explain the links between psychopathy and each of these aspects of aggression. While this is certainly an intriguing endeavor, it is arguably as important to identify factors that may help explain more of the overlap between psychopathy and diverse aspects of aggression, as this may provide a more parsimonious conceptual understanding of the psychopathy–aggression link as well as a potentially crucial target for prevention and treatment efforts (Wong & Hare, 2005). Here, we argue that one such mediating factor involves difficulties in ER.

Emotion Dysregulation: Associations With Psychopathy and Aggression

The present study adopts a contemporary, comprehensive definition of ER as encompassing a broad set of inter-connected skills, namely, emotional awareness, clarity, and awareness; the ability to pursue goal-directed behavior and refrain from impulsive responses when distressed; and the ability to rely on adaptive ER strategies to feel better (Gratz & Roemer, 2004). According to this model, impairments in each of these domains are considered as evidence of emotion dysregulation. Importantly, emotion dysregulation in this context should be considered dimensionally (i.e., along a continuum that goes from none to high emotion dysregulation) rather than as a dichotomous construct (Gratz & Roemer, 2004; John & Eng, 2014).

The study of ER in relation to psychopathy has gained traction only recently (for a review, see Garofalo & Neumann, 2018). Yet, using Gratz and Roemer's (2004) measure of emotion dysregulation—which assesses difficulties in the ER skills listed above—accumulating evidence has linked over-all levels of psychopathic traits with emotion dysregulation across ER domains (Donahue et al., 2014; Garofalo & Neumann, 2018; Garofalo, Neumann, et al., 2018; Long et al., 2014). Using a sophisticated combination of both variable-centered and person-centered approaches, psychopathic traits have been shown to have significant and positive associations with problems in each and every one of the ER domains considered in the present study (Garofalo & Neumann, 2018). Notably, these relations have been found to consistently hold across community, clinical, and forensic samples (Donahue et al., 2014; Garofalo, Neumann, et al., 2018; Long et al., 2014).² A critical gap in current knowledge on the relevance of ER for psychopathy concerns the limited research on whether emotion dysregulation may account for (i.e., mediate), at least in part, the associations between psychopathy and its maladaptive correlates.

The possibility that emotion dysregulation may account for some of the shared variance between psychopathy and aggression is supported by burgeoning evidence that, in addition to being related to psychopathy, ER shows robust links with aggressive tendencies and behavior as well (Garofalo et al., 2016; Garofalo & Velotti, 2016; Garofalo, Velotti, et al., 2018; Robertson et al., 2014, 2015; Rogier et al., 2019; Shorey et al., 2011; Velotti et al., 2017). In short, recent studies have reported consistent and uniform associations between impairments in the ER domains and different components (e.g., anger, hostility) and forms (e.g., reactive, proactive) of aggression in community and offender samples.

The link between anger or reactive aggression and ER is intuitively clear; however, it is also reasonable to propose associations between emotion dysregulation, hostility, and proactive aggression. First, while some aspects of emotion dysregulation (e.g., ability to control impulsive behavior under negative emotional arousal) can give rise to episodes of reactive aggression, other aspects of emotion dysregulation (e.g., poor emotional awareness) can lead to episodes of proactive aggression (e.g., through affective callousing or suppression; Garofalo & Neumann, 2018). Second, at the trait level, a limited propensity to be aware of, understand, and accept one's emotions, as well as a limited capacity to deal with one's own distress, can be associated with a tendency to hold an hostile view of others and the world (Garofalo et al., 2019), which may be linked to a greater propensity (or less constraint) for engaging in acts of proactive aggression. In the present study, we empirically examine these possibilities further.

To date, only two studies that we are aware of have examined the potential (correlational) mediating role of emotion dysregulation in the association between psychopathy and impulsive (or reactive) and proactive (or premeditated) aggression. Both of these studies used the Psychopathic Personality Inventory–Revised (Lilienfeld & Widows, 2005) method of operationalization to assess psychopathic traits. In a sample of 81 (mostly male) inpatients receiving treatments for substance abuse, Long et al. (2014) reported significant indirect effects of the self-centered impulsivity traits of psychopathy (akin to the behavioral traits in Hare, 2003, conceptualization of psychopathy used in the present study) on impulsive, but not premeditated, aggression. Surprisingly, there was no significant association between the callous-affective traits of psychopathy and either form of aggression, perhaps due to a relatively small sample size, or limitations of the psychopathy measure employed (C. S. Neumann et al., 2013). More recently, Preston and Anestis (2019) reported similar findings in a sample of 368 (mostly female) undergraduate students. Specifically, emotion dysregulation mediated the association between self-centered impulsivity traits of psychopathy and reactive, but not proactive, aggression. Also in this study, however, callous-affective traits of psychopathy had null bivariate associations with either form of aggression, and a negative indirect association with reactive aggression. These studies have provided some initial evidence of the potential mediating role of emotion dysregulation in some of the associations between psychopathy and aggression. However, more research is required that employs samples with higher levels of psychopathic traits and aggression (such as offender samples), as well studies involving different methods of operationalization of psychopathy and aggression, to evaluate the robustness and generalizability of the findings.

The Present Study

The literatures on psychopathy and aggression, psychopathy and ER, and aggression and ER have grown largely along separate tracks until recently. This has led to two main gaps in the literature, discussed above and summarized here for the sake of clarity. First, given the established association between psychopathy and aggression, it is critical to identify potential factors that may help account for (i.e., mediate) this association. Second, emerging evidence has highlighted the relevance of disturbances in ER for psychopathy, but it remains unclear whether emotion dysregulation can help explain some of the maladaptive correlates of psychopathy, such as aggression. To address these gaps, the present study examined indirect effects of psychopathy on aggression through emotion dysregulation in two samples. Because we relied on cross-sectional data, we do not use the term mediation to imply any temporal or causal ordering among these constructs. Rather, we tested for the presence of a-temporal mediation (Winer et al., 2016) based on an a-priori conceptual model. More concretely, we investigated whether emotion dysregulation could explain a significant portion of the variance shared by psychopathy and aggression. To be comprehensive, we examined whether these effects generalized across community and offender sample, as well as across different components (physical aggression, verbal aggression, anger, and hostility) and different forms (reactive and proactive) of aggression. The multi-sample, multi-measure design was chosen for replication and extension purposes rather than for comparative purposes. That is, we did not mean to conduct comparative analyses between the two samples. Rather, we aimed to examine the replicability of our findings in two independent samples, and we wanted to extend our findings to different models of aggression. In the community sample, however, we did conduct additional comparative analyses to examine the generalizability of our findings across sex.

Method

Participants and Procedures

Sample 1. The offender sample comprised 268 incarcerated men serving sentence in one of seven prisons in two Northern Italian regions ($M_{\text{age}} = 37.36$, $SD = 11.82$). At the time of the offense, all participants were residing in Italy. The majority of them were Italian (46%) or born in another European country (20%); the other participants were born in an African (23%) or South American country (11%). Inclusion criteria included being fluent in Italian and having been convicted of a violent crime (i.e., offenses involving physical violence toward others). Participants in this sample reported their level of

annual income as follows: no earnings, $n = 95$ (35%); less than €20,000, $n = 112$ (42%); between €20,000 and €36,000, $n = 13$ (5%); more than €36,000, $n = 13$ (5%); and 35 participants (13%) did not disclose this information. In terms of marital status, 99 of the inmate participants were single (37%), 43 were married (16%), 56 were in a romantic relationship (21%), 51 were divorced (51%), and 3 were widowed (1%); and 16 participants (6%) did not disclose this information.

Potential participants were approached by graduate clinical psychology students. Participants were first briefed both orally and in writing about the study aims. Then, they could choose to provide their written informed consent by signing the consent form and returning it to the researcher. The first and last authors developed this procedure and instructed the graduate students who helped with the data collection to ensure the consistency of the recruitment process across sites and for all participants. Participants were assured that their decision to partake in the study or refuse would not affect in any way their detention status. Data were collected anonymously and prison staff did not have access to individual scores. Participants were also informed that they had the right to withdraw from the study at any time. Participation was not compensated. Participants completed the questionnaires individually or in small-group sessions that took place in a quiet room where prison educators usually meet with the inmates (small-group sessions were preferred when possible to limit the burden on prison staff members). Two researchers were present in the room to assist participants in case of doubts and to ensure that they would complete the questionnaires independently. The study protocol was formally approved by the Ethics Review Boards of the Department of Dynamic and Clinical Psychology, Sapienza University of Rome (protocol no. 10/2014), and by the Italian Ministry of Justice.

Sample 2. A total of 521 community-dwelling individuals (209 males, 40.1%) were recruited from the general Dutch population for the second sample. They had an average age of 35.27 ($SD = 15.99$) years. Potential participants were approached through convenience sampling by a total of 20 bachelor's or master's level psychology students (each recruiting approximately 25 participants). The only inclusion criteria were to be at least 18 years old and have sufficient command of the Dutch language. Participants received an information letter and provided written informed consent to take part in the study without remuneration. They could decide to fill out the questionnaires either in paper-and-pencil format or using an online survey. To ensure anonymity, participants who completed the questionnaires in paper version were instructed to return them to the principal investigators in a sealed envelope after completion. Participants were informed that they could withdraw from the study at any time without explanations needed.

Students were instructed to follow a stratified sampling procedure, to the extent possible, that is, balancing recruitment across key demographic characteristics (i.e., age, sex, occupation, and educational level). However, this was an indication rather than a strict guideline, and it was meant to broaden the range of sociodemographic characteristics in the community samples. Thus, keeping in mind these efforts, the sampling procedure should be more cautiously considered one of convenience. Because of a technical glitch, most participants who filled out the questionnaires online did not complete the demographic information section in its entirety, resulting in a high proportion of missing data on some demographics (up to 48% of participants for information on one of the following: civil status, source of income, and nationality). However, these missing data did not include any of the key study variables, and there were no significant differences in any of the key variables between participants with and without missing data on one of those sociodemographic variables. Among those with available information, participants' civil status was distributed as follows (percentages refer to valid responses): single ($N = 75$, 27.3%); married/cohabiting ($N = 120$, 43.6%); in a romantic relationship ($N = 62$, 22.5%); divorced ($N = 8$, 2.9%); widowed ($N = 5$, 1.8%); and "other" ($N = 2$, 0.7%). Most participants were of Dutch nationality ($N = 259$, 93.8%). The other participants were either from the Dutch Antilles ($N = 3$, 1.1%), Morocco ($N = 1$, 0.4%), Suriname ($N = 1$, 0.4%), or "other" ($N = 8$, 2.9%) countries. In this sample, educational level was distributed as follows: elementary school, $N = 8$ (1.6%); high school, $N = 88$ (17.3%); vocational training, $N = 84$ (16.5%); applied university, $N = 150$ (29.5%); research university, $N = 166$ (32.6%); or "other," $N = 13$ (2.6%). Participants reported their main source of income to be the following: a paid employment, $N = 169$ (62.4%); student loan, $N = 49$ (18.1%); parental contribution, $N = 16$ (5.9%); social assistance, $N = 7$ (2.6%); unemployment allowance, $N = 4$ (1.5%); pension, $N = 3$ (1.1%); or other forms of social support, $N = 14$ (5.2%).

Measures

Self-Report Psychopathy–Short Form. In both samples, psychopathic traits were assessed using the Self-Report Psychopathy–Short Form (SRP-SF), a 29-item self-report instrument rated on a 5-point Likert-type scale (Paulhus et al., 2016). The SRP-SF includes four subscales (Interpersonal, Affective, Lifestyle, and Antisocial). The SRP-SF subscales and total scores have accumulated evidence of good reliability and construct validity across different cultural populations (Gordts et al., 2015; Neal & Sellbom, 2012; C. S. Neumann et al., 2015; Seara-Cardoso et al., 2019). In Sample 1, the SRP-SF was translated into Italian for the purpose of the present data collection study (see

Garofalo, Neumann, et al., 2018, for the translation procedures used). In Sample 2, the Dutch translation of the SRP-SF validated by Gordts et al. (2015) was employed. For the purpose of the present study, only the total score of the SRP-SF was used (α s = .86 and .89 in Samples 1 and 2, respectively).³

Difficulties in Emotion Regulation Scale. In both samples, emotion dysregulation was assessed using the Difficulties in Emotion Regulation Scale (DERS), in two different versions (Gratz & Roemer, 2004). In Sample 1, the original, 36-item version was used (Gratz & Roemer, 2004) in its Italian validation (Giromini et al., 2012). In Sample 2, only the 16 items included in the short-form version developed by Bjureberg et al. (2016) were used in their validated Dutch translation (A. Neumann et al., 2010). This short version was developed as an alternative for use in the presence of time constraints, and previous studies have shown that it retained the good psychometric properties of the original version. Indeed, both versions have demonstrated evidence of excellent internal consistency, good test–retest reliability, and good convergent and discriminant validity. Importantly, the original and short versions used in the present study correlate very highly (.80) and show only negligible differences in their convergent and discriminant validity (Bjureberg et al., 2016). The DERS items are rated on a 5-point Likert-type scale, with higher scores indicating greater difficulties in ER. The DERS items were developed to assess difficulties in different components of ER, namely, non-acceptance of emotional responses; difficulties engaging in goal-directed behavior and refraining from impulsive behavior when upset; poor awareness and clarity of emotions; and limited access to effective ER strategies. Prior studies suggest that the DERS total score represents a reliable global index of overall ER difficulties in light of its relations with physiological and neural indices of ER (Gratz et al., 2006; John & Eng, 2014). Given the purpose of the present investigation, as well as in light of limited discriminant validity evidence of the different DERS subscales (Garofalo & Neumann, 2018; John & Eng, 2014), only the DERS total score was used in the present study (α s = .88 and .93 in Samples 1 and 2, respectively).

Aggression Questionnaire. In Sample 1, the Italian version (Fossati et al., 2003) of the AQ was employed to assess individual differences in trait aggression (Buss & Perry, 1992). The AQ is a widely used self-report questionnaire with 29 items rated on a 5-point Likert-type scale. The AQ produces scores on four aggression dimensions: Physical Aggression (α = .82), Verbal Aggression (α = .52), Anger (α = .69), and Hostility (α = .63). Despite the relatively low internal consistency coefficients of some of the AQ subscales, the construct validity of the AQ

and its subscales has received extensive support in previous studies (Buss & Perry, 1992; Fossati et al., 2003; Hornsveld et al., 2009).

Reactive–Proactive Aggression Questionnaire. In Sample 2, aggression was also measured using the Dutch translation (Cima et al., 2013) of the Reactive–Proactive Aggression Questionnaire (RPQ), a 23-item self-report questionnaire with items rated on a 3-point Likert-type scale (Raine et al., 2006). All items include the same stem (“How often have you . . .”) and include 11 items inquiring about instances of reactive aggression and 12 items inquiring about instances of proactive aggression. The RPQ has shown adequate levels of reliability and validity in both its original version and the Dutch translation used in the present study (Cima et al., 2013). In the present study, the two RPQ scales had adequate internal consistency coefficients, α s = .82 and .83, for reactive and proactive aggression, respectively.

Data Analytic Plan

All analyses were conducted using SPSS version 24. First, descriptive statistics and zero-order correlations were calculated for all study variables. Then, main hypothesis testing was conducted using the SPSS PROCESS Macro (Hayes, 2013). Specifically, we examined the proposed mediation models testing the significance of indirect effects of the SRP-SF total scores on aggression scores (i.e., AQ and RPQ subscale scores) through the DERS total score. We employed a bootstrapping approach (Hayes, 2009; MacKinnon et al., 2007), which involved 5,000 resampling with replacement of the original dataset. The 5,000 bootstrapping samples were used to compute 95% bias-corrected confidence intervals (CIs) for the indirect effect under examination. Evidence of a significant indirect effect is provided by 95% CIs that do not include zero. The completely standardized indirect effect (Preacher & Kelley, 2011) was employed as an index of effect size for the indirect effect (.01 = small effect, .09 = medium effect, .25 = large effect). In supplemental analyses conducted in Sample 2, we re-examined the indirect effect analyses in multi-group structural equation modeling analyses to test the consistency of the results across sex.

Results

Descriptive statistics and zero-order correlations for all study variables in both samples are displayed in Table 1. All variables were significantly and positively correlated with each other in both samples, with the exception of the relation between emotion dysregulation and verbal aggression

Table 1. Means, Standard Deviations, and Zero-Order Correlation Coefficients for All Study Variables in the Offender (Sample 1) and Community (Sample 2) Samples.

Sample 1 (N = 268)								
	M	SD	1.	2.	3.	4.	5.	6.
1. SRP-SF	2.55	0.63		.337***	.677***	.389***	.587***	.352***
2. DERS	81.54	20.04			.344***	.082	.414***	.367***
3. AQ Physical Aggression	25.24	8.12				.525***	.742***	.451***
4. AQ Verbal Aggression	15.91	3.60					.478***	.449***
5. AQ Anger	19.84	5.53						.550***
6. AQ Hostility	24.37	5.75						
Sample 2 (N = 521)								
	M	SD	1.	2.	3.	4.		
1. SRP-SF	1.66	0.47		.251***	.469***	.614***		
2. DERS	33.42	11.47			.371***	.250***		
3. RPQ Reactive Aggression	0.61	0.33				.592***		
4. RPQ Proactive Aggression	0.12	0.19						

Note. SRP-SF = Self-Report Psychopathy–Short Form; DERS = Difficulties in Emotion Regulation Scale (the original 36-item and the 16-item short form of the DERS were used in Samples 1 and 2, respectively; see the “Measures” section); AQ = Aggression Questionnaire; RPQ = Reactive–Proactive Aggression Questionnaire. Following the scoring instructions of each measure, the SRP-SF and RPQ scores were calculated averaging item scores; the DERS and AQ scores were calculated by summing the item scores.

*** $p < .001$.

(Sample 1). In the Italian offender sample (Sample 1), psychopathy had strong positive relationships with physical aggression and anger, and moderate positive associations with emotion dysregulation, verbal aggression, and hostility. In turn, emotion dysregulation had moderate positive associations with physical aggression, anger, and hostility. The different aggression dimensions had moderate-to-strong associations with each other. In the Dutch community sample (Sample 2), psychopathy had strong positive relationships with proactive aggression, and moderate positive associations with emotion dysregulation and reactive aggression. In turn, emotion dysregulation had moderate positive associations with both

Table 2. Summary of Indirect Effect Analyses in the Offenders (Sample 1) and Community (Sample 2) Samples (5,000 Bootstraps).

IV	M	DV	c Path	b Path	c' Path	ab Path	95% CI	ab_{cs}	R^2
Sample 1 (N = 268)									
SRP-SF	DERs	AQ Physical Aggression	8.67***	0.06**	8.08***	0.59	[0.116, 1.128]	0.05	.47***
SRP-SF	DERs	AQ Verbal Aggression	2.16***	-.01	2.26***	-.10	[-.377, 0.163]	0.02	.15***
SRP-SF	DERs	AQ Anger	5.13***	0.07***	4.40***	0.73	[0.375, 1.149]	0.08	.40***
SRP-SF	DERs	AQ Hostility	3.22***	0.08***	2.37***	0.85	[0.399, 1.388]	0.09	.20***
Sample 2 (N = 521)									
SRP-SF	DERs	RPQ Reactive Aggression	0.33***	0.01***	0.29***	0.04	[0.026, 0.074]	0.07	.29***
SRP-SF	DERs	RPQ Proactive Aggression	0.25***	0.002**	0.24***	0.01	[0.001, 0.024]	0.03	.39***

Note. IV = independent variable; M = mediator; DV = dependent variable; SRP-SF = Self-Report Psychopathy–Short Form; DERs = Difficulties in Emotion Regulation Scale (the original 36-item and the 16-item short form of the DERs were used in Samples 1 and 2, respectively; see the “Measures” section); AQ = Aggression Questionnaire; RPQ = Reactive–Proactive Aggression Questionnaire; c path = total effect of IV on DV; b path = effect of M on DV (controlling for IV); c' path = direct effect of IV on DV (controlling for M); ab path = indirect effect; CI = bias-corrected confidence interval for the indirect effect ab (95% CIs that do not include zero are indicative of a significant indirect effect); ab_{cs} = completely standardized indirect effect (index of effect size; .01 = small effect, .09 = medium effect, .25 = large effect; Preacher & Kelley, 2011); R^2 = R-squared for the final model (i.e., proportion of variance in the DV explained by the IV and M). All coefficients reported (except ab_{cs}) are unstandardized, which explains the relative difference in magnitude depending on the variables involved (SRP-SF and RPQ scores were calculated averaging item scores; DERs and AQ scores were calculated by summing the item scores; see Table 1 note). In Sample 1, a path (i.e., effect of the IV on M) ranged between 10.46 and 10.52 ($ps < .001$) due to rounding. In Sample 2, a path ranged between 6.15 and 6.16 ($ps < .001$) due to rounding. Significant indirect effects are reported in bold typeface for ease of readability.

** $p < .01$. *** $p < .001$.

reactive and proactive aggression. Finally, reactive and proactive aggression were strongly associated with each other.

A summary of the indirect effect analyses is reported in Table 2. In both samples, significant indirect effect of psychopathic traits on aggression through emotion dysregulation occurred, with the exception of verbal aggression (Sample 1). Specifically, in the Italian offender sample (Sample 1), emotion dysregulation significantly explained a portion of the shared variance between psychopathy and physical aggression, anger, and hostility. The overall models explained roughly 47%, 40%, and 20% of the variance in physical aggression, anger, and hostility, respectively. In contrast, psychopathy only had a significant direct effect on verbal aggression, explaining roughly 15% of the variance. In the Dutch community sample (Sample 2), emotion dysregulation significantly explained a portion of the shared variance between

psychopathy and both reactive and proactive aggression. The overall models explained roughly 29% and 39% of the variance in reactive and proactive aggression, respectively. Across both samples, indirect effects ranged from small-to-moderate effect sizes (see completely standardized indirect effects in Table 2). In the online supplemental materials (in particular, Supplemental Figure 2), we include the analyses conducted in Sample 2 that provided evidence for the consistency of this pattern of results across sex.

Discussion

The present study sought to extend current knowledge on the potential role of emotion dysregulation in accounting for part of the well-established associations between psychopathy and aggression. Employing Hare's (2003) conceptualization of psychopathy and Gratz and Roemer's (2004) conceptualization of emotion dysregulation, we examined indirect effects of psychopathy through emotion dysregulation on different components of trait aggressiveness (anger, hostility, physical and verbal aggression), as well as on different forms of aggressive behavior (reactive and proactive aggression). In both the community and the offender samples, a very straightforward pattern of results emerged. Indeed, emotion dysregulation significantly accounted for (i.e., mediated) part of the association between psychopathic traits and aggression. Notably, these indirect effects were not limited to physical aggression, the anger dimension of trait aggression, or the reactive form of aggression. Rather, they generalized to associations between psychopathy and hostility, as well as between psychopathy and proactive aggression, providing evidence that emotion dysregulation can play a role in the associations across the different components and forms of aggression. However, the effect sizes were generally small, although still statistically significant and clinically meaningful. Furthermore, as one would expect, the effect size for the indirect effect on reactive aggression was more than twice as strong as the indirect effect on proactive aggression. Taken together, these results indicate that emotion dysregulation plays an important, yet not exclusive, role in explaining links between psychopathy and aggression. In line with previous studies (e.g., Garofalo et al., 2016), verbal aggression was the only exception: although psychopathic traits were associated with increased levels of verbal aggression in the offender sample, this association could not be explained by emotion dysregulation, suggesting that other mechanisms may play a role in this association.

Two aspects of the present findings provide notable support for the robustness of this pattern of results. First, it is worth emphasizing the consistency of findings across two samples drawn from two different populations (i.e., incarcerated men and community-dwelling individuals) from two different

countries and using two different measures of aggression. Indeed, the relevance of ER for the psychopathy–aggression link was replicated in both samples and extended to different forms of aggression. Second, the supplemental analyses conducted in the community sample provided convincing evidence that the pattern of results described generalizes across sex. Therefore, ER appears to be important for understanding the link between psychopathy and aggression *per se*, rather than representing sex-specific patterns.

Given the relative novelty of perspectives linking emotion dysregulation and psychopathy, as well as emotion dysregulation and hostility or proactive aggression, more elaboration on their conceptual inter-relations seems warranted. Indeed, on one hand, the association between emotion dysregulation and some traits of psychopathy (e.g., disinhibition) and some components or forms of aggression (e.g., anger, physical aggression, reactive aggression) makes intuitive sense. For example, it makes sense that if an individual has elevated levels of disinhibition, and has difficulties controlling behavior when experiencing strong emotions like anger, it will be more likely that the same individual will also have greater propensity for reactive, anger-laden forms of (physical) aggression. On the other hand, little conceptual attention has been paid to the potential role of emotion dysregulation for other traits of psychopathy and other components of aggression, which may have less intuitive overlap with the layperson understanding of ER as the ability to resist from urges when upset (Elison et al., 2014; Robertson et al., 2012).

Conceptually, we contend that links between emotion dysregulation and “cold-blooded” correlates, such as the cognitive component of trait aggression (hostility), proactive forms of aggression, or psychopathic traits encompassing callousness and lack of empathy, make theoretical sense and have been attracting increasing empirical support. First, the relevance of emotion dysregulation for hostility and proactive aggression becomes clearer when it is emphasized that emotion dysregulation entails not only a difficulty in refraining from impulsive behaviors under strong emotional arousal (i.e., emotional under-control) but also a limited awareness, acceptance, and understanding of emotion (which may stem from emotional over-control or emotional suppression). From this perspective, it is likely that individuals with callous-affective dispositions may have limited awareness and understanding of their own emotions, which may in turn enable them to engage in what appear to be cold, predatory forms of aggression (Garofalo & Neumann, 2018). Second, this argument should be considered in light of a trait-perspective to aggression and emotion dysregulation. Indeed, it may be accurate to speculate that some aspects of emotion dysregulation (e.g., inability to control impulsive behavior when angry) are uniquely connected to some forms of aggression (e.g., reactive aggression) at the episode level. Yet, at the person level, both difficulties

in ER across domains (e.g., Garofalo & Neumann, 2018) and forms of aggression (e.g., Thomson & Centifanti, 2018) tend to co-occur. Thus, at the person level, it is plausible that individuals with broad difficulties in ER also show greater aggressive propensities (here, anger but also hostility) and are more likely to engage in different forms of aggressive behavior (here, reactive and proactive aggression).

Importantly, these conceptual arguments have received increasing empirical evidence in support in recent years. Indeed, positive bivariate associations have been reported between indices of emotion dysregulation (broadly defined as in the present investigation) and (a) psychopathic traits (including callous-affective traits; Garofalo & Neumann, 2018); (b) different components of aggression (especially physical aggression, anger, and hostility; Garofalo, Neumann, et al., 2018; for a review, see Robertson et al., 2012); and (c) different forms of aggression (i.e., both reactive and proactive aggression; Babcock et al., 2014; Bobadilla et al., 2012; Hubbard et al., 2010; Miller & Lynam, 2006; Thomson & Centifanti, 2018, for a review, see Ireland, 2018). Of note, although the residual variance in proactive aggression (i.e., controlling for the shared variance with reactive aggression) tends to be only minimally related or unrelated to indices of emotion dysregulation, it should be emphasized that interpreting such residual correlations does not come without perils. First, because reactive and proactive aggression share a large amount of variance (with r s in the range of .54–.77). Second, because this shared variance likely reflects substantive content in both reactive and proactive aggression, arguably reflecting something that is central to aggression. Thus, interpreting associations between emotion dysregulation and residual scores that do not include this shared variance poses evident interpretive challenges (Lynam et al., 2006; Miller & Lynam, 2006).

If replicated in future studies, the present findings may have relevant implications for prevention and treatment programs aimed at reducing aggression in offenders and in the general community. Contrary to common thinking that psychopathic individuals are generally devoid of emotions, it is clear that such individuals up-regulate emotional processing if asked to do so (Shane & Groat, 2018). Thus, based on these findings in conjunction with the current results, it appears that targeting emotion dysregulation in its different aspects may prove effective in tackling several different components and forms of aggression, including among individuals with psychopathic traits. Specifically, interventions aimed at improving emotional awareness, clarity, and acceptance, as well as behavioral control under negative emotional arousal, and ER strategies, may be relevant for a wide array of psychopathic traits (including callous affect) as well as for a wide array of aggression components (including hostility) and aggressive forms

(including proactive aggression). However, this is not to advocate that ER broadly construed should be the exclusive focus of attention. Although we propose that it is an efficient, parsimonious one, it is certainly likely that any such intervention would be even more effective by taking into account additional important risk factors for aggression, including empathy and cognitive skills (Preston & Anestis, 2019; Tunkte et al., 2019).

The present study had some limitations, which also represent directions for future research in this area. First, the exclusive reliance on self-report measures calls for the need of replications and extensions that employ a multi-method assessment. Second, reliance on one single measure of psychopathy and emotion dysregulation may have increased risks associated with mono-operation bias. Third, we used different measures of aggression in the two samples. While this choice had the advantage of broadening content coverage and allowed to test different hypotheses, the replicability of the effects could not be examined in the present study. Fourth, the convenience sampling procedure does not allow to speak confidently about the generalizability of the present results to the broader populations under examination. Finally, the focus of the present study was exclusively on emotion dysregulation. Future studies are warranted to examine the combined role of emotion dysregulation together with other potential mediating factors in the association between psychopathy and aggression. An additional note that is worth mentioning is that the current study could only partially address issues related to diversity broadly construed. Although we were able to recruit two independent samples from two different European countries and from two different populations, we were not able to address the generalizability of our findings across cultures and minority groups. In particular, although we replicated findings across two countries, our choice of those countries was one of convenience and was not based on cultural considerations, nor did we include measures of cultural aspects that may play a role in the psychopathy–ER–aggression links. Yet, culture certainly plays a role in each of these factors and may, therefore, play a role in their associations as well. Future studies adopting cross-cultural designs are needed to provide further elaboration in this area.

These limitations notwithstanding, the present study offered a novel theoretical perspective on the role of emotion dysregulation in the well-established connections between psychopathy and aggression and provided consistent support for this perspective across two samples of male offenders and community participants. In doing so, the present study furthers research in this area, suggesting that the relevance of emotion dysregulation for psychopathy and aggression may be more pronounced than traditionally considered. In short, our findings replicate recent evidence that emotion dysregulation

is relevant for the constructs of psychopathy and aggression. Advancing current knowledge, the present findings further suggest that it may also play a crucial role in explaining why individuals with psychopathic traits are more likely to have aggressive disposition and problems with the experience and expression of anger, to be hostile and physically aggressive, and to engage in both reactive and proactive aggression.

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Notes

1. Both of these studies have adopted a different conceptualization of psychopathy compared with the present study, which also included a subscale measuring boldness/fearless dominance traits. Because we did not include assessment of these traits, we refrain from discussing these previous findings in the interest of conceptual clarity.
2. An exception to this pattern concerned the boldness/fearless dominance traits that are included in some conceptualization and measure of psychopathy (see also Footnote 1). Indeed, these traits tend to be associated with better—rather than poorer—ER skills. Here and below, we did not review this evidence in detail as it is not directly relevant to the scope of the present investigation because (a) the operationalization of psychopathy used in the present study does not include the positive adjustment features indexed by boldness/fearless dominance traits and (b) boldness/fearless dominance traits do not seem relevant for the externalizing correlates of psychopathy, such as aggression (Weiss et al., 2019).
3. The four facets of psychopathy included in this model have shown differential patterns of associations with some external correlates, especially when assessed with clinical measures such as the Psychopathy Checklist–Revised (Hare, 2003). Thus, we conducted exploratory facet-level analyses using the four SRP-SF subscales.

Across both samples, the inter-correlations among SRP-SF subscales ranged between .355 and .678. Notably, the pattern of correlations with the other measures was remarkably similar across the four facets (see Supplemental Table 1). Therefore, we continued with the original plan to focus on total scores of psychopathy to avoid unnecessary complexity in reporting a larger number of tests (i.e., facet-level analyses would have required 24 tests of indirect effects).

Supplemental Material

Supplemental material for this article is available online.

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