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Garofalo, Carlo; Neumann, C.S.; Kosson, D.S.; Velotti, P.

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Psychopathy and emotion dysregulation: More than meets the eye

Carlo Garofalo, Craig S. Neumann, David S. Kosson, Patrizia Velotti

A B S T R A C T

Emotional dysfunctions have long been associated with psychopathy. Yet, the extent to which these dysfunctions include problems in emotion regulation (ER) has only recently become clearer. In this study, we first reviewed theoretical and empirical literature on psychopathy and ER, and then examined associations between ER and psychopathy in four diverse samples from two countries (MTurk, college, community, and offender samples from the United States and Italy; total N = 1940). We employed Structural Equation Modeling (SEM) to examine latent associations between ER and measures of psychopathy and the dark triad, respectively. Results revealed a consistent pattern of moderate associations between psychopathy and poorer ER. These patterns were replicated across samples and psychopathy assessment, and held when including Machiavellianism and narcissism in the models. Replicating and extending recent studies, these findings provide incremental evidence that the emotional dysfunctions associated with psychopathy include problems in ER. Thus, we contend that prevention efforts in the general community, as well as clinical risk assessment and treatment planning in clinical (forensic) populations should include an emphasis on ER, as it may represent an important factor explaining some of the maladaptive correlates of psychopathic personality.

1. Introduction

Psychopathy is a personality disorder characterized by a callous, antagonistic interpersonal style, and persistent behavioral deviance (Cleckley, 1941/1988; Crego and Widiger, 2016; Hare and Neumann, 2008; Patrick et al., 2009). Although the syndrome of psychopathy at clinical levels is mostly studied in criminal samples, individual differences in psychopathic traits are continuously—albeit non-normally—distributed in the general population (Edens et al., 2006; Marcus et al., 2004; Neumann et al., 2015). Importantly, the patterns of associations between psychopathic traits and external correlates are strikingly similar across different populations (e.g., community, prison, and forensic psychiatric samples), making psychopathy a serious public health concern at both clinical and nonclinical levels (Boduszek et al., 2019a; Colins et al., 2017; Hare and Neumann, 2008; Sellbom, 2011; Vachon et al., 2012; Vitacco et al., 2005). Psychopathy is one of the most intensively researched forms of personality pathology, and has long attracted the interest of clinical, personality, and forensic investigators (DeLisi, 2009; Hare, 1996; Miller et al., 2008). Emotion dysregulation is considered a transdiagnostic marker of psychopathology in general, and personality pathology in particular (Kring and Sloan, 2009). Yet, only recently has the study of emotion regulation (ER) in psychopathy gained traction (e.g., Newhill and Mulvey, 2002; for a recent review, see Garofalo and Neumann, 2018).

The present study sought to replicate and extend existing findings on the relevance of ER for psychopathy.

1.1. Theoretical perspectives on emotion in psychopathy

The contemporary concept of ER is often defined as the process that involves monitoring, evaluating, and managing experiences and expressions of emotions (e.g., Kring and Sloan, 2009). One reason for the neglect of ER research in psychopathy is investigators’ strong reliance on Cleckley’s (1941/1988) conceptualization of psychopathy (Neumann et al., 2013), and his criteria including “absence of nervousness or psychoneurotic manifestations” and “general poverty in major affective reactions.” These criteria are often interpreted as suggesting that psychopathic individuals are relatively devoid of emotion. However, recent reviews and meta-analyses have shown that the assumption that psychopathy is characterized by a complete absence of emotional experience is not corroborated by empirical evidence (Dereffino, 2015; Hoppenbrouwers et al., 2016; Kosson et al., 2016). If psychopathy does not fundamentally involve an absence of emotions, it is possible that disturbances in ER may be linked to the expression of psychopathic traits.

In addition, some investigators have pointed out that the context in which Cleckley saw his psychopathic patients may have had an influence and may explain some of his departures from other early
descriptions of psychopathy (Hare and Neumann, 2008). In addition, it is plausible that psychopathic patients appeared less neurotic (and by extension less emotionally deregulated) relative to the typical patients in the institutions where Cleckley worked (e.g., suffering from psychosis or mood disorders), rather than in absolute terms (Vize et al., 2016). Accordingly, Cleckley (1941/1988) went on to say that psychopathic individuals seemed free from psychoneurotic manifestations to the same extent as “the general run of humanity” (p. 259), in turn leaving open the possibility of individual differences in ER among psychopathic individuals. Notably, in his description of the criterion “absence of nervousness or psychoneurotic manifestations”, Cleckley (1941/1988) added that

It is true he [the psychopath] may become vexed and restless when held in jails or psychiatric hospitals. This impatience seems related to his inability to realize the need or justification for his being restrained. What tension or uneasiness of this sort he may show seems provoked entirely by external circumstances, never by feelings of guilt, remorse, or interpersonal insecurity. (p. 340)

Therefore, his reference to the absence of psychoneurosis may refer more to whether the origins of emotional tension observed in psychopathic individuals are primarily internal versus external rather than to a complete absence of emotion.

Other earlier accounts of psychopathy placed less emphasis on the purported absence of emotion (for a review, see Hoppenbrouwers et al., 2016), and some even included an explicit reference to poor ER in their definition of psychopathy. In one of the first descriptions of psychopathy (“manie sans delire” [mania without delusion]), a common characteristic of the patients described by Pinel (1806) was the presence of violent, uncontrolled emotions (Werlinder, 1978). Similarly, Karpman (1948), Arieti (1963), and McCord and McCord (1964), argued that psychopathic individuals experience simple – short circuit – emotions like tension, worry, and frustration, although these were related to current situations rather than long-term considerations. In particular, Arieti (1963) emphasized that an emotional immaturity makes psychopathic individuals “act at the spur of the moment, which relieves any tension they may experience”, suggesting behavioral acting out may serve as a (maladaptive) form of ER. Further, McCord and McCord (1964) postulated that psychopathic individuals were “prone [emphasis ours] to tension and frustration and experience intense but transitory emotions” (Hoppenbrouwers et al., 2016, p. 4), again suggesting some form of emotional instability. More recently, Penney and Kosson (2013) have proposed a novel theory of psychopathy that conceptualizes maladaptive ER as one of the main contributing factors to the development and manifestation of psychopathic traits.

1.2. Empirical findings on emotion regulation and psychopathy

Research on disturbances in ER and psychopathy have slowly been accumulating. In the development of their conceptual model and corresponding measure of ER, Gratz and Roemer (2004) highlighted that ER involves a set of skills including awareness for and attention to emotion, emotional clarity, and ability to modulate emotions and behavior when distressed. Prior studies to date have reported negative associations between abilities in these ER domains and psychopathy, providing evidence for emotion dysregulation (i.e., poorer ER). Specifically, overall levels of psychopathy have been linked to poorer self-reported and task-based indices of ER in youth and adult samples, and both in community and offender samples (Ali et al., 2009; Ermer et al., 2012; Grieve and Mahar, 2010; Heinzen et al., 2011; Lishner et al., 2011; Malterer et al., 2008; Miller et al., 2010; Visser et al., 2010; Zeigler-Hill and Vonk, 2015).

More recently, Garofalo and Neumann (2018) reviewed studies that have adopted modeling approaches to examine both person- and variable-centered connections between psychopathy and self-reported ER (e.g., Garofalo et al., 2018; Garofalo et al., 2020). This review highlighted three important findings. First, at the person-centered level, impairments in ER are broad and not limited to specific ER domains. That is, latent profile analyses (LPAs) have shown that subgroups of individuals differ in levels of self-reported ER across domains, rather than displaying patterns of selected impairments in one or more ER domains. Second, across different samples, the subgroups of participants reporting poorer ER also reported the greatest levels of psychopathic traits. Third, variable-centered associations based on structural equation modeling (SEM) were strikingly consistent with LPA findings, indicating a robust moderate association between psychopathic traits and poorer ER. Thus, emerging evidence suggests that problems in ER may be more closely linked to psychopathy than commonly assumed.

1.3. Summary and present study

Against this background, additional information is needed to expand our understanding of the relevance of ER for psychopathy. For example, it is unclear whether associations between poorer self-reported ER and psychopathic traits are merely a reflection of shared variance with other antagonistic (or “dark”) personality traits. That is, research is needed to examine whether associations between ER and psychopathy remain after controlling for near-neighbor personality constructs such as narcissism and Machiavellianism. Second, it is unclear if the association between poor ER and psychopathy is limited to specific samples (offenders vs. community) or types of assessment. Thus, further research is needed to replicate and extend previous findings in diverse samples and using different measures of psychopathy.

To supplement existing findings, the present study examined associations between ER and psychopathy employing latent variable approaches to model latent variable associations between emotion dysregulation and psychopathic traits. To provide a comprehensive replication of existing findings, we first tested variable-centered associations in two large nonclinical samples from North America (young adults and MTurk workers), using well-validated measures of psychopathy (Paulhus et al., 2016) and ER (Gratz and Roemer, 2004). Next, we conducted replications and extensions in two independent samples comprised of Italian community participants and incarcerated offenders, using a measure of the dark triad along with the same measure of ER. This approach allowed us to extend prior findings examining associations between psychopathy and ER while accounting for individual differences in Machiavellianism and narcissism, clarifying whether associations with ER were specific to psychopathy. Finally, to complement this set of findings and in line with person-centered analyses conducted in recent studies on the topic (e.g., Boduszczek et al., 2017, 2019b; Garofalo et al., 2018, 2020), we conducted LPA to examine whether variable-centered associations that emerged from the main analyses would extend to person-centered analyses. This is important as statistical associations at the variable-level may not necessarily be informative for person-level considerations. Thus, we aimed to identify person-centered profiles of individuals based on their ER skills and then validated the subgroup profiles in terms of level of psychopathic features across the four samples under investigation. In the interest of space considerations, these LPAs are reported in online Supplemental Materials.

An exception to this pattern concerned studies including the fearless dominance scales included in the Psychopathic Personality Inventory and its derivatives (Lilienfeld & Andrews, 1996). However, because these traits are not included in the measures of psychopathy adopted in the present study, we do not review these findings here for the sake of conceptual precision.
2. Method

2.1. Participants and procedures

2.1.1. Sample 1 and 2

Since the two North American samples did not show substantial differences whether analyzed separately or combined in one bigger sample, we report results on the combined sample only. The two samples included 271 participants from the general community recruited via Mturk, and 946 college students who participated for course credits (total N = 1217). In total, there were 873 female participants (71.7%) and 344 male participants (28.3%). Participants’ ages ranged between 18 and 68 years (M = 23.85, SD = 9.18). All analyses were repeated separately for the Mturk and in-person samples and by gender, with identical pattern of results.

2.1.2. Sample 3

Participants in the third sample were 559 community individuals living in a metropolitan area in Central Italy (45.8% men, N = 256, all Italians). Participants’ mean age was 36.12 (SD = 12.75, range 18-72). Graduate psychology students recruited participants through self-referrals in response to advertisements posted online and throughout the community (e.g., in public places and general practitioners’ offices). Participants filled out the questionnaires independently and returned them in sealed envelopes.

2.1.3. Sample 4

Data for this sample were obtained from male violent offenders incarcerated in seven prisons in Central Italy (M-age = 41.23, SD = 12.25, range 20-76). All inmates were fluent in Italian and had been convicted of a violent crime (i.e., offenses involving physical violence toward others). The administration of questionnaires was completed in individual or small group sessions that took place in a quiet room where inmates usually met with prison educators. Group sessions were preferred when possible to reduce the burden on prison staff, and two researchers were present in the room to make sure that participants completed questionnaires independently. For the preliminary latent variable analyses, we relied on a large sample (N = 450). However, only 164 offenders had dark triad data (Dirty Dozen, DD), and thus this subsample was used for examining links between ER and DD scores. Nevertheless, there were no differences between those with versus without DD data in terms of age [F(1,436) = 0.83, p > .05], educational level [F(1,413) = 0.25, p > .05], number of crimes [F(1,335) = 0.16, p > .05], and scores on three of the DERS scales. The only differences between those with versus without DD data were associated with trivial effect sizes (range = .01 - .03).

All participants provided written informed consent and took part in the study anonymously and voluntarily. Participants were informed that they could withdraw from the study at any time and have their responses removed from the database. Offenders were informed that their decisions to participate or not would not affect their detention status and that prison staff were not informed about individual scores. All study procedures received approval from the relevant Institutional Review Boards (i.e., one for the two American samples, and one for the two Italian samples). The study involving offenders (Sample 4) also received formal clearance also from the Italian Ministry of Justice.

2.2. Measures

2.2.1. Difficulties in Emotion Regulation Scale (DERS; Gratz and Roemer, 2004)

In all samples, ER problems were measured using the DERS, a widely used self-report measure including 36 items rated on a 5-point Likert scale. The DERS measures difficulties in six interrelated dimensions of ER: nonacceptance of emotional responses (Nonacceptance); difficulties engaging in goal-directed behavior when distressed (Goals); difficulties refraining from impulsive behavior when upset (Impulse); lack of awareness of and attention for emotions (Awareness); limited access to effective emotion regulation strategies (Strategies); and lack of emotional clarity (Clarity). Scores on the Awareness subscales have been reported to contribute minimally to a higher-order DERS factor, whereas scores on the other 5 scales typically show limited discriminant validity, likely reflecting a common emotion dysregulation factor (John and Eng, 2014). Prior studies suggest that the DERS total score represents a reliable global index of overall ER difficulties that shows meaningful associations with physiological and neural indicators of emotion regulation (John and Eng, 2014). Both the original version (Gratz and Roemer, 2004) and its Italian adaptation (Giromini et al., 2012) have shown adequate psychometric properties and evidence of construct validity. The DERS appeared especially appropriate for a study of ER because most of its items include the stem “When I am upset...”, thus inquiring about ER skills in response to situations of distress.

2.2.2. Self Report Psychopathy-Short Form (SRP-SF; Paulhus et al., 2016)

The SRP-SF was used to assess psychopathic traits in the two North American samples (Sample 1 and 2). The SRP-SF is a self-report questionnaire modeled after the PCL-R (Hare, 2003) and consists of 29 items rated on a 5-point Likert scale. Factor analytic studies have provided extensive evidence for the four-factor structure of the SRP-SF, as well as good reliability and validity across different populations (Gordts et al., 2017; Neal and Sellbom, 2012; Neumann et al., 2015; Neumann et al., 2012). In analogy with the PCL-R (Hare, 2003), the four facets of the SRP-SF are labeled interpersonal, affective, lifestyle, and antisocial.

2.2.3. Dirty Dozen (DD; Jonason and Webster, 2010)

The DD was used to measure psychopathic traits as well as Machiavellianism and narcissism in the Italian samples (Sample 3 and 4). The DD is a 12-item self-report questionnaire that measures each of the dark triad traits with 4 items, rated on a 7-point Likert scale. Although the brevity of the DD scales limits the breadth of their content coverage (e.g., Maples et al., 2014; Miller et al., 2012), the DD and especially its psychopathy scale have shown acceptable reliability and validity, and some prior studies suggested that the psychopathy scale seems to primarily capture the core callous psychopathic features (Jonason and Luévano, 2013; Klimstra et al., 2014).

2.3. Data analytic approach

Descriptive statistics and internal consistency estimates were calculated in SPSS whereas latent variable analyses were conducted in Mplus (Muthén and Muthén, 2013). To examine variable-centered associations between latent psychopathy and ER factors, we employed Structural Equation Modeling (SEM) using robust weighted least squares estimation. SEM is a rigorous statistical method that allows investigators to model the underlying latent dimensions (factors) among a set of measures or items while also allowing the regression of relevant factors onto other latent factors (Neumann et al., 2015). The advantages of SEM over classical test theory statistical methods include the ability to model error separately from common variance and to specify clear item-to-factor relations to compare distinct patterns of relationships among the constructs being examined (Strauss and Smith, 2009). Preliminary CFAs were conducted on the SRP-SF and DD scales. The only differences between those with versus without DD data were associated with trivial effect sizes (range = .01 - .03).2

In particular, participants with available DD data scored significantly lower than those without available DD data on the DERS Goals (η2 partial = .03), Impulse (η2 partial = .01), and Strategies (η2 partial = .01) scales.

2
Table 1

| Sample 1 + 2 (N = 1217) | Sample 3 (N = 559) | Sample 4 (N = 164) |
|-------------------------|-------------------|-------------------|
| **M (SD)**              | **M (SD)**        | **M (SD)**        |
| DERS total              | 83.54(23.34)      | 73.27(17.05)      | 72.17(18.16) |
| DERS Nonacceptance      | 13.98(6.05)       | 12.10(4.45)       | 13.63(5.77)  |
| DERS Goals              | 14.56(6.05)       | 12.47(4.03)       | 10.83(4.18)  |
| DERS Impulse            | 12.05(5.03)       | 11.15(3.91)       | 10.51(4.34)  |
| DERS Awareness          | 14.21(4.64)       | 13.72(3.69)       | 14.20(4.54)  |
| DERS Strategies         | 17.53(6.96)       | 14.67(5.18)       | 14.03(5.19)  |
| DERS Clarity            | 11.21(3.86)       | 9.14(3.04)        | 8.92(3.43)   |
| SRP-SF total            | 1.81(0.44)        | 0.78              | 0.79         |
| SRP-SF Interpersonal    | 1.84(0.82)        | 0.78              | 0.79         |
| SRP-SF Affective        | 1.92(0.74)        | 0.86              | 0.86         |
| SRP-SF Lifestyle        | 2.06(0.79)        | 0.81              | 0.81         |
| SRP-SF Antisocial       | 1.78(0.33)        | 0.79              | 0.79         |
| DD Psychopathy          | 2.36(1.28)        | 2.54(1.25)        | 2.74         |
| DD Machiavellianism     | 2.19(1.29)        | 2.09(1.28)        | 2.09         |
| DD Narcissism           | 3.22(1.48)        | 3.03(1.54)        | 3.03         |

Note. Sample 1 = North American community participants (Mturk). Sample 2 = North American college students. Sample 3 = Italian community participants. Sample 4 = Italian offenders. DERS = Difficulties in Emotion Regulation Scale. SRP-SF = Self-Report Psychopathy-Short Form. DD = Dirty Dozen. MIC = mean inter-item correlation. DERS scores are mean sum scale score and SRP-SF and DD scales are in mean item response format. To convert DERS to mean item response format divide sum totals by number of items in each scale (see Supplemental Figure 2).

3. Results

3.1. Preliminary analyses

Descriptive statistics and reliability estimates are reported in Table 1. In line with prior studies (Neumann et al., 2015), preliminary CFA results showed adequate model fit for the item-level four-factor SRP-SF model of psychopathy in the North American combined sample (CFI = .93, RMSEA = .07), as well as the separate samples (college: CFI = .93, RMSEA = .07; M Turk: CFI = .96, RMSEA = .07), with all loadings above .55 and all factor correlations above .80 (p’s < .001, see Supplemental Figure 1B). Consistent with previous research (Neumann et al., 2007; Neumann and Hare, 2008), the four psychopathy factors could be accounted for in terms of a superordinate factor representing the syndrome of psychopathy (CFI = .93, RMSEA = .07). With respect to the DD, model fit was adequate for the three-factor DD model in Sample 3 (CFI = .97, RMSEA = .07) and acceptable only on one of two indices in Sample 4 (CFI = .94, RMSEA = .11), with strong loadings and moderately strong factor correlations (all p’s < .001; see Figure 2).

There was also adequate fit for the six-factor item-level DERS model across all samples (CFIs = .90 - .92, RMSEAs = .05 - .08), with strong item loadings and generally moderate-to-strong factor correlations (p’s < .01 - .001, see Supplemental Table 1). The exception was the DERS Awareness factor which displayed small to moderate associations with most other DERS factors. Still, based on the pattern of DERS modeling results, we also tested a DERS hierarchical model, based on all six DERS manifest variable scale scores loading on a single DERS superordinate factor. As expected, this superordinate model resulted in adequate fit across all samples (CFIs = .90 - .92, RMSEAs = .05 - .06), though the Awareness scale contributed only modestly to the DERS superordinate factor (see Supplemental Figure 1A).

Finally, a series of SEM analyses were run to test the comprehensive model fit with both the DERS superordinate factor and SRP/DD first-order factors. These SEM analyses resulted in good fit (CFI’s = .92 - .96, RMSEAs = .05 - .07). Inspection of latent correlations revealed that, in the North American combined sample, the estimated DERS superordinate factor score was uniformly and positively related to the estimated SRP-SF facets (rs range .42 -.47, p’s < .001). In Samples 3 and 4, the DERS superordinate factor was significantly and positively related to the DD psychopathy (rSample 3 = .23; rSample 4 = .54). Machiavellianism (rSample 3 = .23; rSample 4 = .32), and narcissism scales (rSample 3 = .29; rSample 4 = .44), all p’s < .001.

3.2. Variable-Centered Associations between Psychopathy and Emotion Dysregulation

The SEM results are graphically presented in Figs. 1 and 2. All models showed acceptable fit (CFIs = .93 - .96; RMSEAs = .05 - .09). In light of the strong intercorrelations among SRP-SF facets (rRange = .84-.95), as well as uniform associations between the SRP-SF facets and the DERS, we employed a superordinate SRP-SF factor (i.e., representing the syndrome of psychopathy) to predict the DERS superordinate (broad emotion dysregulation) factor. The results revealed a significant positive relation between psychopathic traits and emotion dysregulation, with the SEM accounting for 15% of the variance in estimated DERS scores. We also analyzed the two North American Samples separately and the same pattern of results was found (See Fig. 1). Finally, given the sample size of the North American sample, we also tested an item level model for both the DERS and SRP-SF, which also resulted in adequate model fit (CFI = .92; RMSEA = .05), and this SEM accounted for 21% of DERS variance (bottom Fig. 1).

With respect to the two Italian samples, Fig. 2 shows the graphic results of the SEM analyses examining the unique associations between the three DD-assessed dark triad traits and DERS superordinate factor (CFIs = .93 - .96; RMSEAs = .05 - .07). Controlling for shared variance among DD scales, psychopathy was the strongest predictor of the DERS superordinate factor in the offender sample, in a model that explained 33% of variance in emotion dysregulation (Sample 4). Psychopathy was also uniquely related to the DERS in the community sample (Sample 3), though with a relatively smaller effect size than narcissism in this sample (overall model R² = .10). It is noteworthy that, in both samples examined, narcissism was significantly and positively related to higher...
DERS scores, whereas the relations between Machiavellianism and DERS latent variables were not significant in both samples.

4. Discussion

The present study provided a comprehensive replication and extension of findings based on the emerging literature that applies an ER framework to examine individual differences in psychopathic traits, via a multi-sample, multi-measure approach. Overall, the findings provide convincing incremental evidence that self-reported psychopathic traits are robustly linked with poorer self-reported ER in both community and offender samples from the United States and Italy. Extending previous studies, we showed that, in both Italian samples examined, there were specific associations between psychopathy and DERS-assessed ER that were not due to shared variance with other antagonistic personality traits.

In line with a growing body of research (for reviews, see John and Eng, 2014 or Garofalo and Neumann, 2018), both preliminary analyses...
Fig. 2. SEM analyses with DD scale-level factors predicting the DERS super-ordinate factor in the Italian community sample (Sample 3, $N = 559$; upper part) and in the Italian offender sample (Sample 4, $N = 164$; bottom part).
indicated that the different dimensions of emotion dysregulation measured by the six DERS first-order factors (Nonacceptance, Goals, Impulse, Awareness, Strategies, and Clarity) reflected a generalized, and broad underlying disturbance in ER. Latent correlations showed consistent associations between the superordinate emotion dysregulation (DERS) factor, psychopathy, and other antagonistic personality features (i.e., Machiavellianism and narcissism). This pattern of findings replicated in community and offender samples, though with larger effect sizes among offenders. This result is not surprising, given the greater variability of antagonistic personality features in offender samples than in general community samples. Latent correlations also showed consistent positive associations between emotion dysregulation and psychopathic traits across facets, suggesting that there was uniformity in the associations of ER problems with interpersonal, affective, lifestyle, and antisocial psychopathic traits.

In accord with research on the PCL-R (Neumann and Hale, 2008; Neumann et al., 2007), the most parsimonious SEM analysis involved use of a superordinate (SRP-SF) psychopathy factor, which is a mathematical representation of the syndrome of psychopathic personality. The SEM analyses revealed that psychopathy predicted the emotion dysregulation (DERS) factor among community participants, across countries, as well as male offenders. Notably, supplementary person-centered results largely corroborated SEM findings involving latent variable associations (see online Supplemental Materials). In particular, LPA findings showed that profiles of ER difficulties in all samples varied in degree rather than in kind, such that three profiles could be identified in each sample, reporting low, medium, and high levels of ER difficulties across all domains. Further, those findings revealed that broader ER difficulties were linearly linked to psychopathic traits across samples.

In the Italian community and offender samples, SEM analyses indicated that, when controlling for shared variance among dark personality traits, psychopathy remained a significant predictor of emotion dysregulation. Also, narcissism showed a unique and independent contribution to elevated levels of emotion dysregulation, whereas the association between Machiavellianism and emotion dysregulation dropped to nonsignificance. Thus, once common variance between the two is accounted for, it appears that Machiavellianism does not have any unique predictive link with emotion dysregulation (for similar findings obtained with different correlates, see Glenn and Sellbom, 2015; Miller et al., 2016). This pattern of findings was similar across community participants and offenders, though the predictive parameters were somewhat attenuated in the community sample (as expected due to range restriction). These results suggest that the association between psychopathy and emotion dysregulation is not explained by other maladaptive personality traits, at least in the domain of the dark triad.

Taken together, our findings provide consistent evidence of a positive association between psychopathic personality and disturbance in ER across domains, samples (college, MTurk, community, and offenders), countries (United States and Italy) and measures of psychopathic traits (SRP and DD). Results also suggest that offender samples may display stronger associations compared to college and community samples. Of note, the present findings provide some compelling evidence consistent with the clinical and theoretical intuition that emotion dysregulation may play an important role in the emotional functioning of individuals with high levels of psychopathic traits (Harenski and Kiehl, 2010).

Replicating recent findings, these results suggest that the relevance of ER in the construct of psychopathy might be greater than previously believed. Indeed, related research provided evidence suggesting that individuals with psychopathic traits are characterized by a variety of specific forms of maladaptive ER, including both larger and smaller heart rate increases while viewing negative affective pictures under different conditions compared with nonpsychopathic individuals (Casey, Rogers, Burns, and Yiend, 2013) and externalizing some of their emotional experiences in terms of other-directed negative emotions, such as contempt and spite (Garofalo et al., 2019; but see also Nentjes, Bernstein, Meijer, Arntz, and Wiens, 2016). Similarly, studies that have tested some hypotheses based on Penney and Kosson’s (2013) affect regulation theory of psychopathy have documented that individuals with psychopathic traits rely on maladaptive ER strategies to cope with negative affective experiences (e.g., Kosson et al., 2018; Riser and Kosson, 2015; Vitale et al., 2018), and appear prone to chronic expression of anger in particular (Kosson et al., 2020). Taken together, findings suggest that an emotion dysregulation framework can be aptly applied to further our understanding of psychopathic traits, as well as their similarities and differences with other dark personality domains such as Machiavellianism and narcissism.

The current findings should be considered in light of the study limitations. First, we relied exclusively on self-report measures. Although these instruments were well-validated and largely immune to response bias (Ray et al., 2013; Verschuere et al., 2014; Watts et al., 2016), this choice could have led to inflated correlations due to the spurious effect of common method variance. Second, although we used two different measures of psychopathic traits, we used the same measure of emotion dysregulation in all samples. This decision was made as the DERS is one of the most widely used self-report measures that provides a comprehensive multidimensional assessment of ER. This choice also had some benefits, as it allowed us to test the replicability of DERS latent profiles across three large and diverse samples (see online Supplemental Materials). Third, the cross-sectional design of the study does not allow us to speculate about the directionality of the associations between psychopathy and ER. Yet, the robustness of current findings may help to frame hypotheses and design studies to examine longitudinal associations between psychopathic traits and ER during development. Finally, our assessment of psychopathy was somewhat limited to a PCL-R based conceptualization of the construct and a theory-neutral measure of the dark triad traits, which included a concise index of psychopathy. Future studies should attempt to extend current findings to other measures of psychopathy.

Its limitations notwithstanding, the present study offers novel insights into the emotional functioning of individuals with high levels of psychopathic traits. Indeed, the present findings provide additional evidence that disturbances in ER could be more pertinent to the construct of psychopathy than traditionally acknowledged. Future research could build on the present findings to pursue broader implications of the links between psychopathy and emotion regulation, an endeavor that can take different routes. First, by including a focus on the role of positive emotionality (e.g., Sakai et al., 2020) and emotion goals (i.e., what individuals want to feel; e.g., Spanidaki-Kyriazi et al., 2020) in the emotion regulatory efforts of psychopathic individuals. Second, by investigating the potential mediating role of emotion regulation in the well-established association between psychopathy and violence (e.g., Kosson et al., 2020; Garofalo et al., 2020). Third, by examining the role of emotion regulation in the relationship between psychopathy and violence (or otherwise antisocial behavior) within the broader construct of self-regulation (e.g., Billen et al., 2020). Fourth, by trying to pinpoint more selected deficits within the broader ER construct that can be specific to psychopathy (e.g., Kosson et al., 2019). In conclusion, we contend that time has come for the construct of ER to receive greater attention when examining the construct of psychopathy and its maladaptive correlates. Importantly, a focus on ER may also provide invaluable insight that helps us to refine developmental theories of psychopathy, to understand associations between psychopathic traits and maladaptive behavior, and to tailor and improve treatment interventions for individuals with psychopathic traits.

### CRediT authorship contribution statement

**Carlo Garofalo:** Conceptualization, Formal analysis, Writing - original draft. **Craig S. Neumann:** Conceptualization, Formal analysis,
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