



Review

No feelings for me, no feelings for you: A meta-analysis on alexithymia and empathy in psychopathy

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ABSTRACT

Psychopathy is characterized by extensive emotional impairments. However, the current empirical literature on empathy and alexithymia in psychopathy provides heterogeneous results.

Random-effects models were performed on studies examining the association between psychopathy and the Interpersonal Reactivity Index as well as the Toronto Alexithymia Scale-20. In total, 72 articles providing 716 effect sizes and representing 15,016 participants were included in the analyses. Furthermore, differences among psychopathy factors and the role of potential moderators were assessed.

We found negative relationships between psychopathy and empathy ($r = -0.31$), empathic concern ($r = -0.29$), perspective taking ($r = -0.22$), and personal distress ($r = -0.14$). In addition, our results yielded positive relationships between psychopathy and alexithymia ($r = 0.21$), difficulty describing feelings ($r = 0.20$), difficulty identifying feelings ($r = 0.16$), and externally-oriented thinking ($r = 0.15$). The results varied by psychopathy factors, and some were moderated by gender.

These findings suggest that psychopathy is associated with deficits in various empathic processes as well as with an impaired perception of one's own emotions. Moreover, the results highlight the necessity to investigate these deficits not only across overall constructs, but also across their factors to further improve the understanding of aberrant emotionality in psychopathy.

1. Introduction

A hallmark characteristic of psychopathy is a lack of deep feelings. However, despite decades of research on emotions in individuals with psychopathy, the current literature seems heterogeneous with regard to their awareness for own emotions, as well as their feelings for others. To quantify the strength of association between emotional impairments and psychopathy, the current meta-analysis focuses on two aspects of emotional responding: empathy and alexithymia.

Psychopathy is a severe personality disorder characterized by callousness, a lack of remorse, and antisocial behavior (Hare, 2003). It overlaps with antisocial personality disorder in some respects (Strickland et al., 2013), but the interpersonal and affective deficits are more pronounced in psychopathy (Ogloff, 2006). On a more general level, psychopathy can be described by a weak manifestation of personality traits related to prosocial emotions and a strong manifestation of personality traits reflecting negative emotions and sensation seeking (Lynam et al., 2018). With reference to the prominent Five-Factor Model of Personality, psychopathic individuals are low on Agreeableness and

Conscientiousness, whereas some traits related to Neuroticism and Extraversion have a high expression (angry hostility, impulsivity, and excitability) and others have a low expression (depression, warmth, and positive emotions; Lynam et al., 2018).

The gold standard for assessing psychopathy is the Psychopathy Checklist-Revised (PCL-R), which consists of four facets: affective (e.g., lack of empathy and remorse), interpersonal (e.g., pathological lying and grandiose sense of self-worth), lifestyle (e.g., impulsivity and sensation-seeking), and antisocial (e.g., delinquency), which can be further summarized by two higher order factors: Interpersonal/Affective (Factor 1) and Social Deviance (Factor 2; Hare, 2003). However, since its application is time-consuming and requires the assessment of collateral information, many self-report measures of psychopathy have emerged over the last few years. Most notably are the Self-Report Psychopathy Scale-4 (SRP-4; Paulhus et al., 2017), Levenson Self-Report Psychopathy Scale (LSRP; Levenson et al., 1995), Psychopathy Personality Inventory-Revised (PPI-R; Lilienfeld & Widows, 2005), and the Triarchic Psychopathy Measure (TriPM; Patrick et al., 2009). The SRP-4 is analogous to the PCL-R and therefore follows the same four-facet/two-factor

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structure. The LSRP divides psychopathy into primary and secondary subtypes. While primary psychopathy refers to individuals with low anxiety as well as interpersonal and affective deficits, secondary psychopathy is associated with high anxiety, antisociality, and general behavior problems. In contrast, the PPI-R and the TriPM are both comprised of three factors (Sellbom et al., 2018). The PPI-R delineates psychopathy with three subdimensions: fearless dominance (e.g., fearlessness and stress-immunity), self-centered impulsivity (e.g., rebellious behavior and blame externalization), and coldheartedness (e.g., lack of empathy). The TriPM, reflects psychopathy through the factors of boldness (e.g., low anxiety and adventurousness), disinhibition (e.g., impulsivity and irresponsibility), and meanness (e.g., callousness and cruel behavior).

Since the earliest reports, which are also reflected in the content of the psychopathy factors, psychopathy has been associated with fundamental empathic deficiencies (Cleckley, 1988). This lack of empathy is believed to facilitate criminal offending (van Langen et al., 2014) and may partially explain the socially deviant behavior in psychopathy. However, empirical findings on the relationship between empathy and psychopathy are more heterogeneous than one might expect (Marsden et al., 2019). One reason for this might be the diversity of empathy definitions.

Empathy is a multifaceted construct that encompasses various interrelated but conceptually distinct phenomena (Batson, 2009). The definitions of these phenomena vary widely across studies (Preston & Hofelich, 2012). Nevertheless, there is general agreement that empathy can be divided into two main facets: affective empathy and cognitive empathy (Zaki & Ochsner, 2016). Affective empathy describes what is by many intuitively understood as “empathy” – that is, feeling *with* another person (German: *Mitgefühl*; Preston & Hofelich, 2012), and is closely related to compassion and sympathy. Although several studies reveal a lack of affective empathy in psychopathy, the magnitude of effect sizes vary extensively (cf. Sörman et al., 2016; van Dongen et al., 2018). Importantly, affective empathy may also elicit a self-focused and aversive reaction to another's suffering – so-called personal distress (Batson et al., 1987). This aversive reaction has repeatedly been associated with antisocial behavior (for a review, see Eisenberg et al., 2010). The current evidence with regard to psychopathy, however, is heterogeneous and inconclusive. While some have argued that individuals with psychopathy are less prone to personal distress due to a general lack of affective empathy (Blair, 2008), others have suggested the opposite in view of their antisocial tendencies (Díaz-Galván et al., 2015).

Similar discrepancies are found across studies that assessed cognitive empathy in psychopathy. Cognitive empathy refers to the ability to understand the emotional state of another person (Preston & Hofelich, 2012). It requires a metacognitive process called mentalizing that enables us to represent our own and other's mental states, including feelings, desires, wishes, attitudes, and goals (Fonagy & Target, 2006; Luyten & Fonagy, 2015). Many researchers have suggested that individuals with psychopathy do not display any deficits in mentalizing and therefore do not lack cognitive empathy (Blair, 2005, 2008; Dolan & Fullam, 2004; Hare, 1999), which is corroborated by their pronounced charming and manipulative abilities (Hare, 1999). Yet, there are a substantial number of studies that report a negative association between psychopathy and cognitive empathy (see, for example, Brook & Kosson, 2013). This contradiction may again be due to the generalization of in fact conceptually distinct empathy phenomena. Particularly noteworthy are studies that investigate Theory of Mind (ToM) in psychopathy as a measure of cognitive empathy. Even though ToM requires the observer to mentalize a person's state or situation, these states do not necessarily need to be emotional in nature (Preston & Hofelich, 2012; Quesque & Rossetti, 2020). Thus, cognitive ToM tasks can be solved without understanding a protagonist's emotions and consequently, may lead to different results in psychopathy than other cognitive empathy tasks (Quesque & Rossetti, 2020). This was well illustrated in a study by Dolan and Fullam (2004), who confronted offending individuals with and

without psychopathy with a faux pas task. They found that, compared to a matched control group, there were no differences in recognition and understanding of the faux pas situations, but impaired empathic understanding after the faux pas. This suggests that in psychopathy, the emotional aspects (e.g., understanding a person's feelings) rather than the cognitive aspects (e.g., understanding a person's goals) of mentalizing are impaired.

The inconclusive research findings on affective and cognitive empathy in psychopathy are only further exacerbated by the differences between trait empathy and state empathy. While trait empathy refers to a stable feature of personality, state empathy can fluctuate (Konrath et al., 2018). Arbuckle and Shane (2017) demonstrated this in a sample of 22 parolees who were instructed to increase their empathic concern while viewing pictures of other individuals in pain. Compared to a no-instruction condition, participants showed increased neural activity in areas associated with affective empathy. The same was found when only parolees with high PCL-R ratings were considered. In light of these findings, it is evident that the differences between state and trait must be taken into account when assessing empathy in psychopathy.

Going beyond a lack of empathy, people with psychopathy are also characterized by shallow emotions and a “cold-blooded nature” (Hare, 1996). In particular a lack of feeling fear was shown in early psychophysiology studies (Patrick, 1994; Patrick et al., 1994), and later complemented by fMRI studies demonstrating low amygdala activation (Birbaumer et al., 2005). Reports ranging back to Hervey Cleckley highlight a lack of emotional awareness (Cleckley, 1988). A clinical concept related to reduced emotional awareness and reduced emotionality is alexithymia (Taylor et al., 1991). First described in the 1970s (Sifneos, 1972), alexithymia was initially used to explain psychosomatic symptoms but was later also linked to other mental disorders (see, for example, Erkcic et al., 2018). It is characterized by the inability to identify and describe feelings, as well as by an externally oriented thinking style (Bagby et al., 1994), which has been attributed to an impaired affect development in early childhood (Taylor, 2000; Taylor & Bagby, 2004). More recent research indicates that alexithymia is associated with deficits in both mentalizing and empathy (Taylor & Bagby, 2013). For instance, Moriguchi et al. (2006) found in an fMRI study lower activation in medial prefrontal cortices (a region related to mentalizing) and lower levels of perspective taking in alexithymic individuals, suggesting a link between impaired understanding of one's own and other's emotions. Further studies have linked alexithymia to aggression and emotion dysregulation (Jonason & Krause, 2013; Sifneos, 2000). This has led to a growing body of literature also examining alexithymia in psychopathy. However, the current literature is heterogeneous which makes it difficult to quantify the true strength of relationship between the two constructs (cf. Lander et al., 2012; Pham et al., 2010).

1.1. The present meta-analysis

In light of the inconclusive findings on empathy and alexithymia in individuals with psychopathy, we aimed at answering the following questions: (1) to what extent is psychopathy associated with impairments in trait empathy and its facets; (2) to what extent is psychopathy associated with alexithymia and its facets; (3) do these associations differ among the distinct psychopathy factors; and (4) are these associations influenced by moderators? To allow a clear definition of the empathy and alexithymia facets, the meta-analysis was restricted to the prominent self-report measures Interpersonal Reactivity Index (IRI; Davis, 1983) and Toronto Alexithymia Scale-20 (TAS-20; Bagby et al., 1994). The IRI is a self-report measure with four distinct subscales: Empathic concern, perspective taking, personal distress, and fantasy. Empathic concern resembles most closely affective empathy and measures the tendency of feeling compassion or concern for a suffering individual. Perspective taking measures aspects of cognitive empathy, namely the tendency to take over the perspective of another person.

Personal distress describes the tendency to experience a self-focused and aversive reaction as a result of seeing others suffering. The fantasy scale assesses the ability to relate with fictional characters in books and movies (Davis, 1983). Similar to the IRI, the TAS-20 is a self-report measure that encompasses three subscales: Difficulty identifying feelings (DIF), difficulty describing feelings (DDF), and externally-oriented thinking (i.e., the tendency to not think about internal emotional states; EOT; Bagby et al., 1994). Although limiting our results to the IRI and the TAS-20 restricts their generalizability, the inclusion of several different empathy and alexithymia measures could potentially conflate distinct phenomena, thereby introducing heterogeneity to the meta-analytical model. While our approach avoids this, it is important to note that as a consequence, when presenting our results on the multidimensional constructs of empathy and alexithymia, we can only make assumptions regarding these constructs as measured by the IRI and the TAS-20. This is also a distinction to a similar meta-analysis by Campos et al. (2022) who are more general in their definition of empathy, including state and trait empathy measures. In addition, they do not investigate other types of emotional processing, such as personal distress and alexithymia, but instead focus on differences in empathy between psychopathy and antisocial personality disorder.

2. Materials & methods

2.1. Protocol and statistical software

This meta-analysis was pre-registered on PROSPERO under the following ID: CRD42020188380. The raw data and supplementary materials are available at <https://osf.io/rwn2v/>. For all analyses, the latest version of R 4.0.3 (R Core Team, 2020) was used. Effect sizes and all meta-analytical models were calculated with the metafor package (Viechtbauer, 2010).

2.2. Literature search and study selection strategy

2.2.1. Literature search

Relevant articles were searched on May 28, 2020 and November 18, 2020 in three electronic databases (PsycInfo, PubMed, Web of Science) with the keywords: (*empathy* OR *empathic* OR *affective empathy* OR *cognitive empathy* OR *emotion contagion* OR *theory of mind* OR *affective metalizing* OR *compassion* OR *perspective taking* OR *emotional empathy* OR *empathic accuracy* OR *personal distress* OR *emotional distress* OR *interpersonal reactivity index* OR *alexithymia* OR *alexithymic* OR *TAS-20* OR *toronto alexithymia scale*) AND (*psychopathy* OR *psychopathic* OR *pcl* OR *antisocial* OR *dissocial*). In addition, Google Scholar and reference lists of related publications were searched manually.

2.2.2. Eligibility criteria

To be included in this meta-analysis, studies had to meet three criteria. First, studies needed to assess the association between the IRI and psychopathy and/or TAS-20 and psychopathy. Both interview and self-report measures of psychopathy were considered eligible. Second, the examined samples had to be over the age of 18, irrespective of the population they were drawn from (i.e., clinical, correctional, community). Third, articles had to report sufficient statistical data for the calculation of effect sizes. Both peer-reviewed articles and grey literature (i.e., dissertations and book chapters) were included, whereas single case studies and manuscripts that did not provide primary data were excluded.

2.2.3. Study selection and data extraction

In accordance with the PRISMA guidelines (Moher et al., 2009), the study selection was conducted by two independent reviewers (MB and a student research assistant). Titles and abstracts of all identified studies were screened for eligibility first, followed by a second stage where the full texts were assessed. At each stage, a consensus between the two

reviewers had to be achieved for a study to be included. Any conflicts that arose were resolved by DM. After study selection, data was extracted from all included articles by MB and additionally reviewed by a student research assistant. Missing information was requested from the corresponding author of an article.

2.3. Meta-analytical strategy

2.3.1. Effect size

The Pearson product-moment correlation was chosen as effect size index. Where possible, the coefficients were taken directly from zero-order correlation matrices. However, in six cases the correlation had to be converted from standardized mean differences ($k = 5$), or from beta coefficients of regression analyses ($k = 1$). Effect sizes were extracted for the association between psychopathy and the IRI total score and TAS-20 total score, as well as for their subscales. If available, additional effect sizes were gathered for the individual factors of psychopathy. In the few cases ($k = 13$) where correlations were only given for psychopathy factors (i.e., without reporting an effect size for a psychopathy total score) or where multiple psychopathy measures were used in the same sample ($k = 4$), a composite effect size was calculated (Borenstein et al., 2011). Furthermore, to avoid dependence among effect sizes, correlations that were reported in separate publications, but clearly originated from the same sample, were only included once (from the larger study). Independent samples from a single publication were treated as separate studies.

2.3.2. Meta-analysis

Since the effect sizes were expected to vary considerably across studies, random effects models were applied (Borenstein et al., 2011). The between study variance (τ^2) was calculated with restricted maximum likelihood (REML) method and subsequently used to assign weights to each study by the inverse of the total variance. In addition to τ^2 , I^2 was examined to quantify the proportion of variance that is caused by true heterogeneity (i.e., not caused by sampling error). I^2 levels of 25%, 50% and 75% were considered indicative of low, moderate, and high degree of heterogeneity, respectively (Higgins et al., 2003).

Separate meta-analyses were performed for the IRI and its four subscales, as well as for the TAS-20 and its three subscales. Among the subset of studies that also reported effect sizes for the association between empathy/alexithymia and the individual factors of psychopathy, subgroup analyses were conducted to assess whether the pooled effects vary in size across psychopathy factors. That is, each factor was included as its own subgroup in the model and tested for between group differences ($H_0: r_{factor_1} = r_{factor_2} = \dots = r_{factor_n}$). Given that most studies reported effect sizes for more than one psychopathy factor, three-level random effects models were used, where τ^2 is broken down into the heterogeneity within samples (σ_2^2) and the heterogeneity between samples (σ_1^2 ; Cheung, 2014).

2.3.3. Additional analyses

Whether the strength of association between empathy/alexithymia and psychopathy was influenced by potential moderators was tested with mixed-effect meta-regression models (van Houwelingen et al., 2002). Categorical moderators (sample type: community vs. clinical/correctional; publication type: journal article vs. grey literature) were included as dummy variables, whereas the proportion of women in a sample was included as a continuous variable (ranging from 0 to 100%). Since the average proportion of women as well as the used psychopathy measure (PCL vs. other) differed significantly between community and correctional/clinical samples (with more women and fewer PCL measures in community samples), covariates were added to each mixed-effect meta-regression model to avoid possible confounding effects.

In addition, the robustness of our results and the presence of publication bias were assessed using various methods. These are described in detail in the supplementary materials.

3. Results

3.1. Study selection and characteristics

The systematic literature search yielded 2122 publications. After the study selection procedure, 72 articles with 87 independent samples were included in this meta-analysis (Fig. 1). In fifty-seven samples the association between empathy and psychopathy was examined, in 22 the association between alexithymia and psychopathy, and in eight samples both. A total of 716 effect sizes were analyzed, based on 15,016 participants (range = 12 to 863, mean = 172) from 19 different countries. Articles were mostly published in peer reviewed journals ($k = 61$) between 1994 and 2020. Sixty-six samples originated from the general population, 17 were drawn from correctional populations and four from clinical populations. The average proportion of women across all samples was 43%. Table S1 in the supplementary materials provides a detailed description of all included articles.

3.2. Main analyses

Significant negative pooled correlations were found for the IRI total score, as well as for the subscales empathic concern, perspective taking, and personal distress. For the TAS-20 total score and its three subscales

(i.e., DIF, DDF, EOT) significant positive pooled correlations were

Table 1

Results of random effects models assessing the association between empathy and psychopathy and alexithymia and psychopathy.

Outcome	k	r	SE _r	95% CI _r	I ² (in %)
IRI: total	25	-0.31***	0.04	[-0.39, -0.23]	88.70
EC	55	-0.29***	0.03	[-0.35, -0.22]	92.46
PT	52	-0.22***	0.03	[-0.27, -0.17]	85.89
PD	40	-0.14***	0.03	[-0.21, -0.08]	86.13
FS	38	-0.04	0.03	[-0.10, 0.02]	81.01
TAS-20: total	24	0.21***	0.05	[0.12, 0.30]	89.94
DIF	20	0.20***	0.03	[0.14, 0.26]	61.81
DDF	20	0.16***	0.04	[0.09, 0.23]	73.09
EOT	18	0.15**	0.06	[0.04, 0.27]	90.57

Note. k = number of effect sizes; r = pooled correlation; SE = standard error; CI = confidence interval; I² = proportion of true heterogeneity; IRI = Interpersonal Reactivity Index; EC = empathic concern; PT = perspective taking; PD = personal distress; FS = fantasy scale; TAS-20 = Toronto Alexithymia Scale; DIF = difficulty identifying feelings; DDF = difficulty describing feelings; EOT = externally-oriented thinking.

*** $p < 0.001$.

** $p < 0.01$.

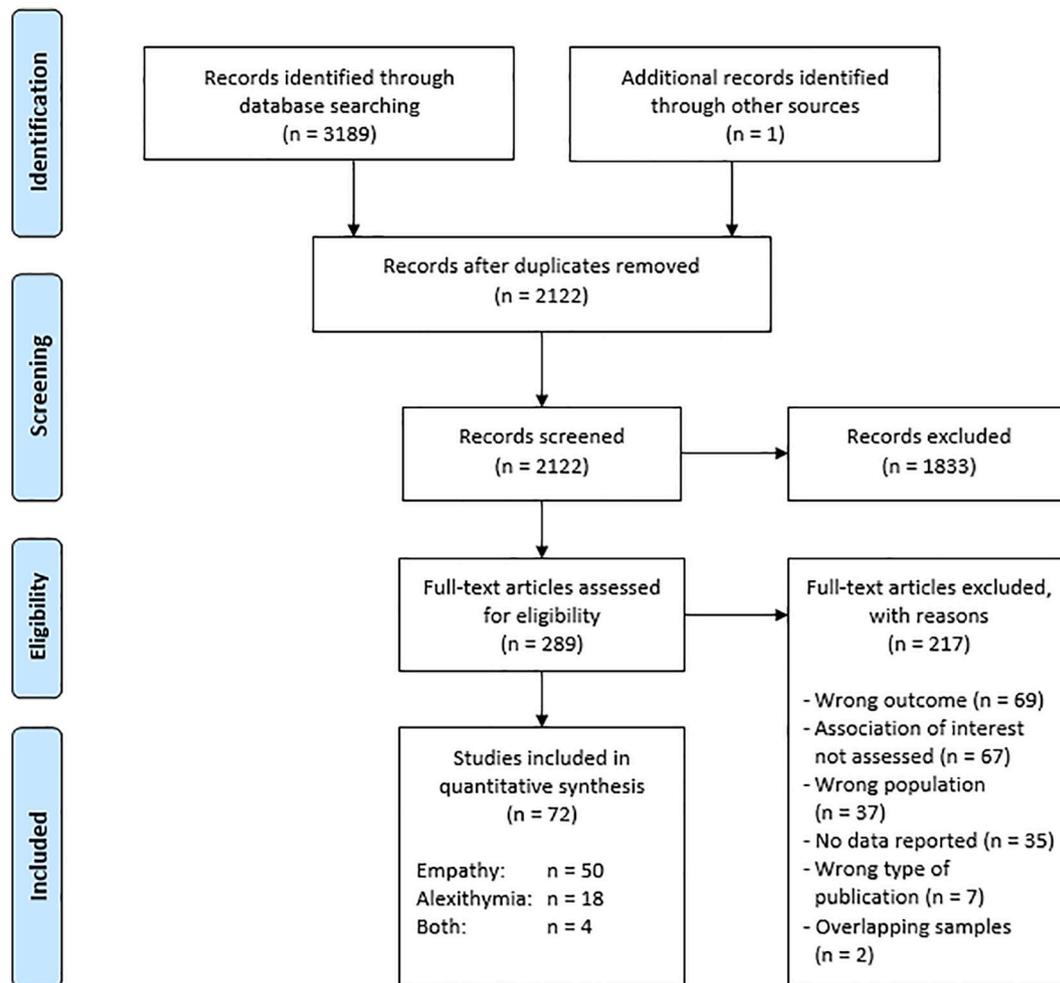


Fig. 1. PRISMA flow diagram of the study selection process.

Note. Wrong outcome: empathy/alexithymia or psychopathy were not examined (e.g., when a study focused on emotion recognition in antisocial personality disorder); Association of interest not assessed: Empathy or alexithymia were assessed, but not with the IRI or TAS-20, respectively; Wrong population: sample included children or adolescents; No data reported: Effect sizes were not reported, could not be estimated from the provided data, or authors did not respond to our request to provide further information; Wrong type of publication: Single case studies, review articles, or conference papers; Overlapping samples: Duplicates (e.g., published first as a dissertation and then as a journal article).

revealed. Heterogeneity across effect sizes was generally high. The findings are summarized in Table 1. Additional forest plots can be found in the supplementary materials (Figs. S1–S9).

3.3. Moderator analyses

Type of publication did not have an influence on the relationship between empathy/alexithymia and psychopathy, nor did sample type when controlling for gender and psychopathy measure (i.e., PCL vs. other). Gender moderated the association between alexithymia (including total score, DDF, and EOT) and psychopathy, with the relationship being significantly stronger in samples with more women. The moderation by gender remained significant after controlling for sample type (Table 2).

3.4. Analyses of psychopathy factors

Between-group differences across psychopathy factors were examined for four distinct measures: (1) LSRP; (2) PCL (including PCL-R and PCL-SV); (3) PPI (including PPI, PPI-R, and PPI-SF); and (4) TriPM. The results for empathy and alexithymia are presented in Tables 3 and 4, respectively.

For the LSRP, significant differences were found between primary and secondary psychopathy for the IRI total score, empathic concern, and fantasy. In all these cases, primary psychopathy yielded stronger negative pooled correlations than secondary psychopathy. For TAS-20 total score, DIF, and DDF, pooled effect sizes were significantly larger for secondary than for primary psychopathy.

Regarding the PCL, differences between factor 1 and factor 2 were only found for DDF, with a larger pooled effect size for factor 2. All other fitted models did not indicate significant variation between the two factors.

The subgroup analyses for the PPI produced significant results for every empathy outcome, with coldheartedness yielding the largest pooled (negative) effect size (except for PD). Moreover, self-centered impulsivity correlated positively with personal distress and fantasy, as did fearless dominance with perspective taking. Given the lack of data, subgroup analyses assessing the three factors of the PPI were not performed for alexithymia.

Pooled effect sizes for boldness, disinhibition, and meanness of the TriPM varied significantly in size among the IRI and its subscales. The strongest negative correlations were found between meanness and IRI total score, empathic concern, perspective taking, and fantasy. For personal distress, however, the largest negative effect size was calculated for boldness, while disinhibition produced a significant positive correlation. Differences among factors of the TriPM could not be examined for alexithymia due to a paucity of data.

Table 2
Results of mixed effect multiple meta-regression models assessing proportion of women as a moderator (controlling for sample type).

Outcome	β_{women} (SE)	Q_{between}	Q_{within}	R^2 (in %)
TAS-20: total	0.36* (0.15)	11.35**	109.97***	34.74
DIF	0.16 (0.10)	3.71	36.38**	17.76
DDF	0.22* (0.10)	5.48	43.54***	33.19
EOT	0.39* (0.18)	6.75*	84.13***	29.54

Note. β_{women} = unstandardized regression coefficient for the proportion of women in a sample (controlled for sample type); Q_{between} = test of moderators; Q_{within} = test for residual heterogeneity; R^2 = amount of heterogeneity accounted for by moderators; TAS-20 = Toronto Alexithymia Scale; DIF = difficulty identifying feelings; DDF = difficulty describing feelings; EOT = externally-oriented thinking.

*** $p < 0.001$.
** $p < 0.01$.
* $p < 0.05$.

3.5. Robustness analyses and publication bias

All results are robust against influential cases. Additionally, there was no evidence of publication bias. These results are reported in detail in the supplementary materials.

4. Discussion

In the current meta-analysis, the strength of association between empathic deficits as well as alexithymia and psychopathy was derived by summarizing more than 700 effect sizes originating from research over the last 30 years. We found strong support for a relationship between psychopathy and empathy deficits as well alexithymia.

4.1. Empathy

Empathy in general, as well as the empathy facets, except for fantasy, yielded significant negative associations with psychopathy, suggesting both affective and cognitive empathy impairments in psychopathy.

The most pronounced empathic deficit in psychopathy was found to be a reduced capacity to feel empathic concern for others, which is in accordance with the results of Campos et al.'s (2022) meta-analysis. This finding is not surprising given that a lack of affective empathy is seen fundamental to psychopathy (Cleckley, 1988; Vitacco et al., 2019). However, the etiological basis for this is still debated (for a review, see Nentjes et al., 2022). One hypothesis that has gained increasing attention in recent years postulates that deficits in affective empathy are motivational in nature rather than inherent (Arbuckle & Shane, 2017; Shane & Groat, 2018). That is, while empathy appears to be a spontaneous and automatic process in healthy individuals (McAuliffe et al., 2020), it requires conscious cognitive control in psychopathic individuals (Meffert et al., 2013). This may be due to an exaggerated attentional bottleneck that limits the simultaneous processing of multiple attentional stimuli (Baskin-Sommers & Brazil, 2022). As a result, psychopathic individuals might focus only on goal-relevant information while ignoring other, goal-irrelevant cues (e.g., feeling with a victim). This in turn implies that affective empathy is not inherently absent in psychopathy, but is often not relevant to achieving an intrinsic goal. It is quite conceivable that these motivational and attentional aspects also explain differences in state-trait empathy among psychopathic individuals, insofar as paradigms that make state empathy goal-relevant may not yield affective empathy impairments. However, this has yet to be investigated.

Our findings regarding perspective taking are in agreement with studies reporting cognitive empathy impairments in psychopathy (Campos et al., 2022; Dolan & Fullam, 2004; Lockwood et al., 2013). Yet, it has been argued that the ability to take the perspective of another person is essential for their profound manipulative and deceitful behavior (Hare, 1999). One explanation for these inconsistencies is methodological differences. While we only included studies that assessed cognitive empathy with the IRI – a self-rating measure – ToM is usually examined with an experimental paradigm (Quesque & Rossetti, 2020). It is possible that individuals high on psychopathy perform objectively well on ToM paradigms, but simultaneously report reduced perspective taking in self-rating measures. This is again related to the differences between state and trait, with ToM paradigms generally assessing state empathy and the IRI assessing trait empathy. In addition, Batson and colleagues pointed out that there are two separate forms of perspective taking, namely imagine-other and imagine-self (Batson et al., 1997). An fMRI study with 121 incarcerated men supports that differentiation. Participants were asked to take either an imagine-self or an imagine-other perspective while observing individuals in painful and non-painful situations. Participants with psychopathy activated less brain regions than controls, only during the imagine-other task (Decety, Chen, et al., 2013). Similar results were found by Shamay-Tsoory et al. (2010) who divided ToM into an affective (i.e., inferring about

Table 3
Results of three-level random effects models assessing differences across psychopathy factors by subscales of the Interpersonal Reactivity Index (IRI).

Psychopathy factors	k	r	SE _r	95% CI _r	Q _{between}	Q _{within}	σ ₁ ²	σ ₂ ²
IRI: total								
LSRP					31.41***	85.16***	0.0016	0.0125
Primary	5	-0.44***	0.06	[-0.56, -0.32]				
Secondary	5	-0.20**	0.06	[-0.32, -0.08]				
PCL					-	-	-	-
Factor 1	-	-	-	-				
Factor 2	-	-	-	-				
PPI					71.29***	116.26***	0.0046	0.0366
Fearless dominance	7	-0.11	0.08	[-0.27, 0.04]				
Self-centered impulsivity	7	-0.08	0.08	[-0.24, 0.07]				
Coldheartedness	7	-0.54***	0.07	[-0.68, -0.39]				
TriPM					10.47**	39.74***	0.0096	0.0026
Meanness	5	-0.45***	0.06	[-0.57, -0.33]				
Boldness	5	-0.29***	0.06	[-0.42, -0.16]				
Disinhibition	5	-0.19**	0.07	[-0.32, -0.06]				
EC								
LSRP					130.00***	76.40***	0.0000	0.0073
Primary	13	-0.49***	0.03	[-0.55, -0.43]				
Secondary	10	-0.23***	0.03	[-0.29, -0.17]				
PCL					0.19	27.48***	0.0015	0.0790
Factor 1	6	-0.02	0.14	[-0.29, 0.26]				
Factor 2	6	0.02	0.14	[-0.25, 0.29]				
PPI					50.53***	165.79***	0.0142	0.0364
Fearless dominance	10	0.03	0.08	[-0.12, 0.18]				
Self-centered impulsivity	10	-0.11	0.08	[-0.26, 0.04]				
Coldheartedness	8	-0.51***	0.08	[-0.67, -0.36]				
TriPM					77.98***	36.75**	0.0059	0.0001
Meanness	6	-0.62***	0.04	[-0.70, -0.54]				
Boldness	6	-0.14**	0.05	[-0.23, -0.04]				
Disinhibition	6	-0.17***	0.05	[-0.26, -0.07]				
PT								
LSRP					0.77	12.89	0.0000	0.0002
Primary	10	-0.34***	0.02	[-0.37, -0.31]				
Secondary	9	-0.32***	0.02	[-0.36, -0.28]				
PCL					0.74	44.08***	0.0000	0.0808
Factor 1	7	-0.02	0.12	[-0.26, 0.23]				
Factor 2	7	-0.08	0.13	[-0.33, 0.17]				
PPI					23.06***	120.92***	0.0169	0.0000
Fearless dominance	10	0.10*	0.05	[0.00, 0.21]				
Self-centered impulsivity	11	-0.19***	0.05	[-0.29, -0.10]				
Coldheartedness	10	-0.21***	0.05	[-0.31, -0.11]				
TriPM					77.66***	17.98	0.0014	0.0000
Meanness	6	-0.47***	0.03	[-0.53, -0.40]				
Boldness	6	-0.04	0.04	[-0.11, 0.04]				
Disinhibition	6	-0.30***	0.03	[-0.37, -0.23]				
PD								
LSRP					1.35	105.86***	0.0291	0.0000
Primary	6	-0.05	0.08	[-0.20, 0.11]				
Secondary	5	0.09	0.08	[-0.08, 0.25]				
PCL					1.26	7.98	0.0000	0.0034
Factor 1	6	-0.12	0.07	[-0.27, 0.02]				
Factor 2	6	-0.02	0.08	[-0.17, 0.13]				
PPI					29.07***	95.75***	0.0294	0.0173
Fearless dominance	7	-0.34***	0.09	[-0.52, -0.16]				
Self-centered impulsivity	7	0.20*	0.09	[0.01, 0.38]				
Coldheartedness	6	-0.32***	0.10	[-0.51, -0.13]				
TriPM					196.46***	14.45	0.0000	0.0026
Meanness	5	-0.12**	0.05	[-0.22, -0.03]				
Boldness	5	-0.54***	0.04	[-0.61, -0.46]				
Disinhibition	5	0.09*	0.05	[0.01, 0.19]				
FS								
LSRP					14.33***	11.16	0.0000	0.0030
Primary	5	-0.09*	0.03	[-0.16, -0.02]				
Secondary	4	0.04	0.04	[-0.03, 0.12]				
PCL					0.42	19.30*	0.0123	0.0291
Factor 1	6	-0.10	0.12	[-0.32, 0.13]				
Factor 2	6	-0.02	0.12	[-0.25, 0.21]				
PPI					26.05***	37.69***	0.0115	0.0133

(continued on next page)

Table 3 (continued)

Psychopathy factors	k	r	SE _r	95% CI _r	Q _{between}	Q _{within}	σ ₁ ²	σ ₂ ²
Fearless dominance	6	0.01	0.08	[-0.16, 0.17]				
Self-centered impulsivity	6	0.27***	0.08	[0.11, 0.43]				
Coldheartedness	5	-0.26**	0.09	[-0.44, -0.09]				
TriPM					26.40***	18.32	0.0009	0.0066
Meanness	5	-0.28***	0.06	[-0.39, -0.17]				
Boldness	5	-0.18**	0.06	[-0.29, -0.07]				
Disinhibition	5	0.02	0.06	[-0.10, 0.13]				

Note. k = number of effect sizes; r = pooled correlation; SE = standard error; CI = confidence interval; Q_{between} = heterogeneity accounted for by subgroups; Q_{within} = residual heterogeneity in effect size; σ₁² = between-study heterogeneity; σ₂² = between-effect-size-within-study heterogeneity; LSRP = Levenson Self-Report Psychopathy Scale; PCL = Psychopathy Checklist; PPI = Psychopathy Personality Inventory; TriPM = Triarchic Psychopathy Measure; EC = empathic concern; PT = perspective taking; PD = personal distress; FS = fantasy scale.

*** p < 0.001.

** p < 0.01.

* p < 0.05.

Table 4

Results of three-level random effects models assessing differences across psychopathy factors by subscales of the Toronto Alexithymia Scale (TAS-20).

Psychopathy factors	k	r	SE _r	95% CI _r	Q _{between}	Q _{within}	σ ₁ ²	σ ₂ ²
TAS-20: total								
LSRP					10.38**	27.37*	0.0031	0.0014
Primary	8	0.28***	0.04	[0.21, 0.35]				
Secondary	8	0.43***	0.03	[0.36, 0.49]				
PCL					2.24	68.12***	0.0045	0.0986
Factor 1	6	-0.01	0.14	[-0.29, 0.26]				
Factor 2	6	0.11	0.14	[-0.17, 0.39]				
DIF								
LSRP					11.05***	7.73	0.0004	0.0000
Primary	4	0.21***	0.03	[0.14, 0.28]				
Secondary	4	0.37***	0.03	[0.30, 0.43]				
PCL					1.63	32.22***	0.0000	0.0584
Factor 1	6	0.03	0.12	[-0.20, 0.26]				
Factor 2	6	0.14	0.12	[-0.09, 0.36]				
DDF								
LSRP					5.50*	26.39***	0.0024	0.0092
Primary	4	0.13*	0.06	[0.01, 0.26]				
Secondary	4	0.27***	0.06	[0.15, 0.39]				
PCL					4.36*	23.45**	0.0000	0.0336
Factor 1	6	0.02	0.10	[-0.17, 0.21]				
Factor 2	6	0.20*	0.10	[0.01, 0.39]				
EOT								
LSRP					3.61	26.94***	0.0008	0.0126
Primary	4	0.32***	0.07	[0.19, 0.45]				
Secondary	4	0.22***	0.07	[0.09, 0.35]				
PCL					0.00	43.33***	0.0000	0.1370
Factor 1	4	0.06	0.20	[-0.33, 0.46]				
Factor 2	4	0.07	0.20	[-0.32, 0.46]				

Note. k = number of effect sizes; r = pooled correlation; SE = standard error; CI = confidence interval; Q_{between} = heterogeneity accounted for by subgroups; Q_{within} = residual heterogeneity in effect size; σ₁² = between-study heterogeneity; σ₂² = between-effect-size-within-study heterogeneity; LSRP = Levenson Self-Report Psychopathy Scale; PCL = Psychopathy Checklist; PPI = Psychopathy Personality Inventory; TriPM = Triarchic Psychopathy Measure; DIF = difficulty identifying feelings; DDF = difficulty describing feelings; EOT = externally-oriented thinking.

*** p < 0.001.

** p < 0.01.

* p < 0.05.

emotions) and a cognitive (i.e., inferring about beliefs) component. Their findings, like those of Dolan and Fullam (2004), indicate that psychopathy is linked to deficits in mentalizing others' affective states, but not their cognitive states. Considering the negative association between perspective taking and psychopathy found in this meta-analysis and the above discussed research findings, the selectivity of empathic impairments in psychopathy – particularly concerning cognitive empathy – becomes evident.

The absence of a significant correlation between fantasy and psychopathy may suggest that individuals with psychopathy can readily

relate with fictional characters in books and movies. However, this result must be interpreted with caution. Because although many scholars combine perspective taking and fantasy to a measure of cognitive empathy (Chrysikou & Thompson, 2016), the importance of the fantasy subscale in empathy is unclear (Davis, 1983) and has been criticized in the past (Nomura & Akai, 2012). Future research may investigate the specific role of fantasy in psychopathy and other disorders characterized by empathy impairments.

The negative association between personal distress and psychopathy is of particular interest given that the result is in contrast to suggestions

of elevated levels of personal distress in antisocial personality disorder (Díaz-Galván et al., 2015), but in line with generally low emotionality in psychopathy (Hare, 2003). Blair et al. (1997) found reduced electrodermal responses to distress cues, but not to threatening or neutral images in psychopathy. Similarly, fMRI studies suggest that psychopathy is related to less brain activation in areas that are associated with empathic responses in general (Decety, Skelly, et al., 2013; Mier et al., 2014), and distress in particular (Birbaumer et al., 2005). In agreement with these psychophysiological and fMRI-studies, the findings of our meta-analysis indicate a reduced distress response in reaction to the suffering of others in psychopathy.

4.2. Alexithymia

Consistent with the result on lower personal distress and the reduced emotional responsiveness in psychopathy reported by previous studies (Birbaumer et al., 2005; Decety, Skelly, et al., 2013; Mier et al., 2014), a positive association between psychopathy and alexithymia was revealed. These findings indicate that individuals with psychopathy struggle to identify and describe their own emotional states and tend to an externally-oriented thinking style. The importance of this relationship is underlined by studies that suggest a role of alexithymia in antisocial behavior. For instance, Velotti et al. (2016) found in a community sample a direct effect between alexithymia and aggression, with a partial mediation by impulsivity and emotion dysregulation. Similarly, Garofalo et al. (2021) showed that the relationship between psychopathy and aggression is mediated by emotion dysregulation. The emotion regulation deficits were in turn attributed to the impaired understanding of one's own emotions. These findings give raise to the assumption that alexithymia plays a causal function in the impulsive and aggressive behavior often displayed by psychopaths. Furthermore, it has been argued that the inability to interpret own affective states may interfere with the experience of empathy (Bird & Viding, 2014; Valdespino et al., 2017). Even though this hypothesis was not directly examined in our meta-analysis, because only few studies investigated both empathy and alexithymia in psychopathy, the identified deficits imply that future treatment programs with psychopathic individuals should not only focus on empathy, but also try to reduce alexithymia.

The relationship between alexithymia and psychopathy was significantly moderated by gender suggesting a stronger association in women than men. A meta-analysis by Levant et al. (2009) indicated that men tend to report higher levels of alexithymia than women regardless of psychopathy. This may lead to a restriction of range which has been shown to diminish correlation coefficients (Bland & Altman, 2011). An alternative explanation would be that women and men with the same latent level of psychopathy, express certain psychopathic traits differently. This assumption is supported by studies showing that despite similar levels of psychopathy, women are characterized by more emotional dysregulation, and manipulative and sexualized behavior than men (Forouzan & Nicholls, 2015; Kreis & Cooke, 2011).

It is important to point out that if controlled for sample type, gender no longer moderated the relationship between DIF and psychopathy. However, given the large standard error, it is unclear whether the analysis failed to reach significance due to an absence of gender differences or because of a lack of power. Future studies should assess gender differences with regard to psychopathy across the three subscales of the TAS-20 more thoroughly.

4.3. Psychopathy factors

A subset of studies allowed for the analysis of differences in effect sizes among psychopathy factors. Of particular interest are the significantly larger correlation coefficients for PPI-R-Coldheartedness and TriPM-Meanness concerning empathy in general, empathic concern, and perspective taking. This could be explained by the similarity of the two factors and their focus on emotional deficits (Sellbom et al., 2018).

Furthermore, while the general association between psychopathy and personal distress was negative, a positive association with PPI-R-Self-Centered Impulsivity and TriPM-Disinhibition occurred, emphasizing its role in impulsive behavior. This is consistent with the prevailing view that personal distress in response to another person's suffering is associated with the desire to alleviate one's own negative arousal, which may subsequently lead to impulsive behavior (Eisenberg et al., 2010).

As hypothesized by Lander et al. (2012), differences were also found between primary and secondary psychopathy, with alexithymia being more pronounced in the latter. The authors argue that secondary psychopathy is particularly characterized by emotional dysregulation which mediates the association between psychopathy and alexithymia. Moreover, except for DDF, no significant differences were found between the two PCL factors. One explanation for this may be insufficient power due to the limited number of studies that reported effect sizes for the two factors of the PCL. This is particularly true for alexithymia, as a clear trend of a stronger association with factor 2 than factor 1 was observed.

4.4. Limitations

The non-negligible item-overlap between the IRI and the included psychopathy measures is an obvious limitation of this meta-analysis. The overlap could have inflated our results, so that the true association between psychopathy and empathy may be smaller. However, several aspects of our own analyses and results from other studies indicate that our findings cannot be explained by item-overlap alone. First, items concerning PT and PD are less prevalent in psychopathy inventories, but still significantly correlate with psychopathy. Second, moderate associations were also found for psychopathy factors (e.g., boldness and disinhibition) that do not exhibit clear item-overlap with the IRI. Third, studies using behavioral measures of empathy (i.e., no item-overlap) yield the same negative association between affective empathy and psychopathy (Foell et al., 2018; Oliver et al., 2016). Nevertheless, future studies that quantify the extent of item-overlap are needed to allow psychopathy and empathy to be assessed while controlling for the shared variance between their measures.

Somewhat related, we only included studies that used the IRI or TAS-20 to assess empathy and alexithymia, respectively. Our aim was to reduce heterogeneity across studies. However, although the IRI and TAS-20 are the most widely used instruments in their field (Parker et al., 2003; Pulos et al., 2004), this lowers the generalizability of the results. Since both instruments are self-report measures, our findings should not be generalized to actual socio-emotional abilities.

Lastly, our moderation analysis and assessment of differences across psychopathy factors were compromised by a small number of effect sizes. For instance, correctional and clinical samples had to be combined. Also, for psychopathy factors, only few studies reported data beyond a psychopathy total score (ranging from 4 to 13 studies). Meta-analytical models on a small number of effect sizes generally perform poorly (Friede et al., 2017) which is why some of our results should be interpreted with caution.

4.5. Implications for future research

The present findings have several implications for future research. We found a clear association between psychopathy and deficits in empathy and emotional awareness. Studies have repeatedly shown that such impairments are related to aggressive (Teten et al., 2008) and impulsive behavior (Velotti et al., 2016) and may be linked to instrumental violence in psychopaths (Woodworth & Porter, 2002). Hence, it is necessary to investigate whether treatment programs specifically directed at empathy deficits and alexithymia have a positive influence on aggression and violence. Empathy training programs have been proven successful in community samples (Teding van Berkhout & Malouff, 2016). Their impact on individuals with psychopathy,

however, has not yet been investigated systematically. In a study by Roche et al. (2011), psychopathy moderated the association between time in treatment and levels of empathy, such that individuals who sexually offended and exhibited more psychopathic traits did not change empathy ratings over time. While this result may appear sobering at first, it is important to note that the treatment program used in Roche et al.'s study was rather general with only a minor part dedicated to improve victim empathy. In order to evaluate whether empathy training is beneficial in psychopathy, future studies need to implement treatment programs that emphasize on empathy and all its facets. As for alexithymia, studies examining the effectiveness of emotional awareness programs specifically directed at individuals with psychopathy are lacking. Some promising results are reported by a pilot study with sex offending populations. Byrne et al. (2016) found significant improvements across all three TAS-20 subscales after only four treatment sessions. However, it is unclear how stable these results are over time and if individuals with psychopathy benefit from such a program the same way.

In view of theoretical models suggesting that alexithymia causally contributes to empathy deficits (Valdespino et al., 2017), studies are needed that assess their interplay in psychopathy. A better understanding of the moderating or mediating effects would help to gain insight into the multitude of emotional deficiencies depicted by psychopaths and are vital to improve treatment. To our knowledge, to date, only Jonason and Krause (2013) have addressed this question by testing a structural equation model including empathy, alexithymia, and the dark triad traits. Their results support the notion of empathy mediating the relationship between alexithymia and psychopathy. However, given that dark triad traits capture only a selection of psychopathy features (Sellbom et al., 2018), studies with more extensive psychopathy measures are necessary.

Our results additionally emphasize the need for future studies to be precise about the operational definitions of empathy. Many scholars summarize distinct empathy facets into affective and cognitive empathy (Chrysikou & Thompson, 2016). While this may be unproblematic in most cases, it can cause contradicting research results. This becomes particularly evident if we consider the negative association between perspective taking and psychopathy found in this meta-analysis. Perspective taking is considered a form of cognitive empathy, but so is cognitive ToM which, however, does not appear to be impaired in individuals with psychopathy (Blair et al., 1996; Richell et al., 2003). Similarly, future studies should report results for all psychopathy factors. The importance of this is highlighted by our findings indicating on one hand a negative association between personal distress and psychopathy in general, but on the other hand positive associations between personal distress and the psychopathy factors self-centered impulsivity (PPI-R) and disinhibition (TriPM).

4.6. Conclusion

Our findings show that psychopathy is associated with significant deficits across a broad spectrum of emotional processing. More specifically, this meta-analysis suggests that individuals with psychopathic traits exhibit impairments in both affective and cognitive empathy and experience reduced levels of personal distress in response to the suffering of another person. In addition to deficits in empathizing with others, we found that psychopathy is also associated with problems in processing one's own feelings, including difficulties in describing and interpreting one's own feelings as well as a tendency toward an externally-oriented thinking style. In conjunction with the differences in these results between psychopathy factors, we believe that this meta-analysis contributes to a better understanding of the specificity of emotional deficits in psychopathy and helps to clarify contradictory findings previously reported in this area of research.

Declaration of competing interest

The authors declare no potential conflict of interest.

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Appendix A. Supplementary materials

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