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Two facets of affective empathy: concern and distress have opposite relationships to emotion recognition

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ABSTRACT
Theories on empathy have argued that feeling empathy for others is related to accurate recognition of their emotions. Previous research that tested this assumption, however, has reported inconsistent findings. We suggest that this inconsistency may be due to a lack of consideration of the fact that empathy has two facets: empathic concern, namely the compassion for unfortunate others, and personal distress, the experience of discomfort in response to others' distress. We test the hypothesis that empathic concern is positively related to emotion recognition, whereas personal distress is negatively related to emotion recognition. Individual tendencies to respond with concern or distress were measured with the standard IRI (Interpersonal Reactivity Index) self-report questionnaire. Emotion recognition performance was assessed with three standard tests of nonverbal emotion recognition. Across two studies (total $N = 431$) anddifferent emotion recognition tests, we found that these two facets of affective empathy have opposite relations to recognition of facial expressions of emotions: empathic concern was positively related, while personal distress was negatively related, to accurate emotion recognition. These findings fit with existing motivational models of empathy, suggesting that empathic concern and personal distress have opposing impacts on the likelihood that empathy makes one a better emotion observer.

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A woman is in tears when hearing the sad story of a dear friend who lost her son in a car accident. But is the woman's sadness a sign concern for her friend, or is she upset that she herself might also lose her son in that way? The first aspect of empathy in this example is referred to as empathic concern, feeling compassion for another person, whereas the second component is referred to as personal distress, which implies that one feels distress because of what could happen to oneself. The question we address in the present paper is whether these different empathic states have different relationships to how accurately we recognise others' emotions.

Empathy has been defined as sharing the emotional states of other people as well as having at least a rudimentary understanding of their emotions (Taylor, Eisenberg, Spinrad, Eggum, & Sulik, 2013; see also Cuff, Brown, Taylor, & Howat 2016 for an overview of definitions). This definition incorporates two components, namely that of affective empathy (sharing the same emotions) and cognitive empathy (understanding the other's emotions). A question that then logically follows is whether the understanding that the other is feeling bad, also involves the ability to recognise others' specific emotions? For instance in the opening example, when the empathising woman meets the mother who is in grief, does her own crying imply that she is also able to correctly recognise the mother's nonverbal signals of paralyzing pain, sadness, or anger?

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A considerable amount of scientific attention has been devoted to the question of whether "being empathetic" also includes the recognition of others' discrete emotions, or whether empathy for others' emotions and emotion recognition are conceptually and empirically independent (e.g. Davis, 1994; Dvash & Shamay-Tsoory, 2014; Preston & de Waal, 2002; Reniers, Corcoran, Drake, Shryane, & Völlm, 2011; Shamay-Tsoory, Aharon-Peretz, & Perry, 2009; Zaki & Ochsner, 2015). If empathic tendencies and emotion recognition skills are different constructs, they should be measured independently. This implies that variations in the extent to which an individual has empathic tendencies may be associated with different levels of accuracy in emotion recognition. That issue is the focus of the present paper. Several lines of theory and research have described how empathy may predict better emotion recognition. First, feeling empathy motivates people to shift attention toward others, which can thereby increase accuracy in emotion recognition (see also Zaki, 2014). Second, feeling empathy can lead perceivers to focus on expressive cues that communicate information about the feelings of others (e.g. the eye region; Cowan, Vanman, & Nielsen, 2014). Third, feeling empathy is associated with the goal to affiliate, which is in turn linked to emotional mimicry. Several scholars have argued that mimicry may facilitate emotion recognition (Drimalla, Landwehr, Hess, & Dziobek, 2019; Hess & Fischer, 2016, Stel, 2016).

However, although the relationship between empathy and emotion recognition has been well articulated in theories and models of empathy – e.g. the Perception-Action Model (Preston & de Waal, 2002) or Emotional Contagion (Hatfield, Cacioppo, & Rapson, 1994), empirical tests of this relation have yielded inconsistent findings, even when emotion recognition and empathy across studies have been operationalised in similar ways. Though some findings point to a negative relation between affective empathy and emotion recognition (for one exception see the recognition of negative shared experiences; Israelashvili, Sauter, & Fischer, 2020), findings typically range from a positive relationship (e.g. Chikovani, Babuadze, Iashvili, Gvalia, & Surguladze, 2015; Ibanez et al., 2013; Melchers, Montag, Reuter, Spinath, & Hahn, 2016; Olderbak & Wilhelm, 2017) to a relationship that is not significantly different from zero[1] (e.g. Allen-Walker & Beaton, 2014; Brosnan, Hollinworth, Antoniadou, & Lewton, 2014; Gallant & Good, 2019; Mullins-Nelson, Salekin, & Leistico, 2006; Riggio, Tucker, & Coffaro, 1989).

We argue that this inconsistency in previous results may partially stem from different definitions and operationalisations of the empathic experience. Investigations of empathy have differentiated between two different components, most commonly assessed by two different scales of the Interpersonal Reactivity Index (IRI; Davis, 1983, 1994): (1) *Empathic Concern* (EC), that is, the tendency to experience feelings of compassion for unfortunate others (e.g. agreeing with the statement "I often have tender, concerned feelings for people less fortunate than me"), and (2) *Personal Distress* (PD), that is, the tendency to experience distress and discomfort in response to extreme distress in others (e.g. agreeing with the statement "Being in a tense emotional situation scares me"). There is thus a clear distinction between feelings of concern for others (empathic concern), versus feelings of personal concern for oneself (personal distress). This latter component of empathy can result in an aversive, self-focused reaction, which has been referred to as personal distress (Batson, 2019; Eisenberg, Fabes, & Spinrad, 2006; Trommsdorff, Friedlmeier, & Mayer, 2007).

Importantly, studies on the relation between individual differences in empathy and emotion recognition generally have not differentiated between these two components. Moreover, in studies in which these components were specified and differentiated, feelings of Empathic Concern (EC) have been measured much more frequently than feelings of Personal Distress (PD, e.g. Hall & Schwartz, 2018, Table 2). PD is particularly understudied when emotion recognition is the object of investigation. For example, in previous studies on emotion recognition, a measure of PD was often omitted (e.g. Brosnan et al., 2014; Olderbak & Wilhelm, 2017; Riggio et al., 1989). In some other studies, PD has been averaged as a global empathy score, including the measure of EC (e.g. Ibanez et al., 2013; Mullins-Nelson et al., 2006), and the independent relation of the different components typically has not been calculated. This is potentially problematic, because the self-oriented feeling of personal distress may disrupt the emotion recognition process by decreasing attention to affective cues displayed by the other person (Todd, Cunningham, Anderson, & Thompson, 2012). Thus, one explanation for the findings that affective empathy is unrelated, or weakly related, to accurate emotion recognition (e.g. $r = 0.13$; Olderbak & Wilhelm, 2017), may be that participants in these studies also experienced high levels of PD, which were not examined.

This relative ignorance of PD is also problematic when taking into account motivational models of empathy, such as Batson and Oleson's (1991; see also Batson's (2019) model of engagement in prosocial behaviour, as well as Zaki's (2014) model of motivated empathy, and Israelashvili and Karniol's (2018) model of engagement in perspective taking). All these models suggest that PD works in the opposite direction of EC. For example, in studies on prosocial behaviour, Batson (2019) found that individuals with high PD engage in less prosocial behaviour than individuals low in personal distress in reaction to a person needing help. In a similar vein, Israelashvili and Karniol (2018) found that across several cultures and age cohorts, EC and PD had opposing impacts on the likelihood of taking others' perspective.

From a motivational angle, different associations of EC and PD on emotion recognition may occur because EC motivates individuals to pay attention to others' emotions in order to try to comfort that person, whereas PD drives attention away from others in order to reduce aversive effects for oneself (Zaki, 2014). In the latter case, the attention focuses on one's own distress, and thereby may hinder accurate emotion recognition. This distraction from the other to oneself may be especially relevant if one is not deeply concerned with the distressed individual. To date, no studies have examined how these two components of affective empathy separately relate to accurate emotion recognition.

The current research

In the current research, we sought to study whether and how individual differences in the empathic components of PD and EC are related to the performance on an emotion recognition task of nonverbal facial expressions of emotions. In an earlier study, we examined the way in which affective and cognitive subscales of the IRI are integrated and jointly contribute to dispositional empathy (Israelashvili & Karniol, 2018). We examined two competing models to explain the antecedents of empathy: one in which affective processes lead to cognitive ones (ACM: Affect-to-Cognition Model), and the other in which cognitive processes lead to affective ones (CAM: Cognition-to-Affect Model). Findings showed stronger support for the Affect-to-Cognition (ACM) model indicating that affective states (of EC and PD) that are elicited by exposure to another person's plight engender cognitive processes aimed at understanding another person's thoughts and experiences (Israelashvili & Karniol, 2018). This ACM perspective predicts that EC activates cognitive engagement with the other person, while PD activates cognitive disengagement from the other person. In line with this notion, other researchers have found that levels of EC are positively associated with shifting attention toward emotional expressive cues (e.g. Cowan et al., 2014), while PD is positively associated with avoiding exposure to others' emotions (e.g. Grynberg & Lopez-Perez, 2018; Pancer, 1988). Accordingly, we expect EC to be positively and PD to be negatively related to emotion recognition accuracy. We did not have a priori predictions about interactions between the two facets of affective empathy, but we sought to explore a potential moderation effect.

Our main hypothesis was tested across two studies. In Study 1, we performed secondary analyses of data that we reported in an earlier paper (Israelashvili, Oosterwijk, Sauter, & Fischer, 2019). Study 2 was specifically designed to test the present hypothesis with a new dataset.

To assess individual differences in empathic responses, we used the Interpersonal Reactivity Index (IRI; Davis, 1983), as it is the most widely used measure of empathic tendencies (Hall & Schwartz, 2018). In previous research, this measure showed satisfactory internal consistency, good test-retest reliability, and strong correlations with external measures of emotionality (see David, 1980, 1983). Moreover, although self-reports can sometimes be an inaccurate reflection of people's behavioural tendencies, the facets of affective empathy measured by the IRI (i.e. PD, EC, Davis, 1983) have consistently been found to constitute significant predictors of how individuals relate to others' situational distress. For instance, the IRI subscales have been shown to be associated with various external indicators, such as physiological arousal (e.g. Buffone et al., 2017; Eisenberg & Strayer, 1987; Kameda, Murata, Sasaki, Higuchi, & Inukai, 2012; van der Graaff et al., 2016), engagement of the anterior cingulate cortex and insula, brain regions associated with experience sharing (e.g. Jackson, Brunet, Meltzoff, & Decety, 2006; Singer, Kiebel, Winston, Dolan, & Frith, 2004), and state level report of empathising with negative emotions of others (e.g. Drimalla et al., 2019). Thus, individual differences in empathy are likely related to distress and concern that would be activated when faced with emotional stimuli, especially facial expressions of emotions (Cowan et al., 2014).

To assess accurate emotion recognition in Study 1, we used three standardised measures that have been previously used in the empirical literature: the Reading the Mind in the Eyes Test (RMET), the Amsterdam Emotion Recognition Task (AERT), and the Geneva Emotion Recognition Test (GERT). We included three different tasks because we wanted to be able to generalise our findings across different recognition measures. The three tests differ in the nature and number of emotion stimuli, as well as in the type and number of response alternatives (chance accuracy of RMET = 25%, of AERT = 17%, of GERT = 7%). We used the RMET, consistent with previous research on empathy and emotion recognition (e.g. Brosnan, Hollinworth, Antoniadou, & Lewton, 2014; Di Girolamo et al., 2019; Eyal, Steffel, & Epley, 2018; Gallant & Good, 2019; Ibanez et al., 2013). Admittedly, the RMET provides emotional cues surrounding the eyes alone, while observers tend to rely on cues from both the eye and the mouth regions when attempting to recognise facial expressions (Wegrzyn, Vogt, Kireclioglu, Schneider & Kissler, 2017). Research shows, however, that inference about emotional states can be based on the eyes alone (e.g. Allen-Walker & Beaton, 2014; Ipser & Cook, 2016). In one study, for example, Allen-Walker and Beaton (2014) manipulated full-face expressions such that only the region of the eyes was visible. They then asked participants to identify the emotion by selecting one of the six possible alternatives. Their findings showed that people were able to detect each of the six basic emotions significantly better than chance (chance accuracy – 17%; actual accuracy for each emotion: Anger – 62%, Disgust – 31%, Fear – 51%, Happiness – 85%, Sadness – 75%, Surprise – 80%; see Allen-Walker & Beaton, 2014, Table 1). Furthermore, although the RMET was originally designed to measure Theory of Mind (ToM), it correlates strongly with other emotion perception tests, leading recent studies to discuss the RMET as a measure of emotion recognition, and not only of ToM (e.g. Oakley, Brewer, Bird, & Catmur, 2016; Wilhelm, Hildebrandt, Manske, Schacht, & Sommer, 2014). Finally, we chose the RMET, because it is the most frequently used measure (among the three) to assess emotion recognition, as reflected in nearly 1,000 published papers, making the results of the current studies of great relevance to the wider research literature (PsycNET search in June 2019 using the following terms: "eye test" [Tests & Measures] OR "reading the mind in the eyes" [Tests & Measures] OR "RMET" [Tests & Measures] AND "emotion recognition" [Abstract] AND "emotion perception" [Abstract]). The AERT was used because it includes different emotions and earlier studies showed that the stimuli were recognised well (e.g. Israelashvili, Oosterwijk, et al., 2019; Van Der Schalk, Hawk, Fischer, & Doosje, 2011). The GERT was used because it is an established test that not only includes faces, but also voice and posture (Schlegel & Scherer, 2016). We used the 10-minute version of the test (GERT-Short; Schlegel & Scherer, 2016), rather than the 20-minute version (GERT-Long; Schlegel, Grandjean, & Scherer, 2014), based on previous findings demonstrating that the short version of the GERT is sufficiently reliable to assess accurate emotion recognition.

In Study 2, emotion recognition was assessed with one test. We had two reasons to reduce the number of emotion recognition tests. First, results from Study 1 showed that the three tests measured the same underlying construct, reflected in their high internal consistency (Cronbach's α .784) and the overall similar results across the tasks. Second, we aimed to keep the questionnaire in Study 2 short, based on previous findings suggesting that data collected in short online studies produce better response quality (e.g. Galesic & Bosnjak, 2009; Liu & Wronski, 2018). Accordingly, Study 2 was designed to be shorter than Study 1 and took an average of 7 minutes to complete (compared with 20 minutes to complete the three tests in Study 1). All measures and exclusions are reported below.

Method

Participants

Study 1. Participants in Study 1 were 245 US citizens (47% men; $M_{age} = 37$, $SD_{age} = 12$) who were recruited via Amazon Mechanical Turk (Mturk), an online crowdsourcing platform. This target sample size was determined based on an a-priori power analysis showing that it has a sufficient power to establish small correlations (i.e. .20) with a power of .80. The description of the study was "View people in various situations and rate their emotions". Each participant received 3 $ in compensation for their time. Participants completed the IRI questionnaire and several emotion recognition tests as part of a larger test session which examined the role of emotion differentiation ability in interpersonal accuracy (see Israelashvili, Oosterwijk, et al., 2019).

Study 2. Participants in Study 2 were 261 US citizens (56% men; $M_{age} = 36$, $SD_{age} = 12$) who were recruited via Mturk platform. Following the recommendation of Maniaci and Rogge (2014), we removed careless responders to safeguard the quality of the data. In particular, seventy-five participants were excluded from the analyses because they did not pass the attention check question measuring attentiveness to the instructions of the survey (see description of the measure labelled *directed response,* which was modelled after a similar question by Meade & Craig, 2012). The remaining sample consisted of 186 US citizens (54% men; $M_{age} = 37$, $SD_{age} = 12$). A sensitivity analysis conducted in G-power suggested that with $\alpha = .05$ and 3 predictors, our analysis would have a power of 0.80 to detect a small to medium effect ($f^2 = 0.06$). The description of the study was identical to Study 1. Study 2 sought to test a replication of the exploratory findings we obtained in Study 1. Participants in Study 2 completed the IRI questionnaire and a single emotion recognition test (RMET). Participants received 0.75 $ in compensation for their time.

In both studies, all the participants were currently living in the USA and for 98% English was their native language (239/245 in Study 1 and 258/261 in Study 2).

Measures and procedure

Measures used in both Study 1 and Study 2.

The Interpersonal Reactivity Index (IRI: Davis, 1983) – is a 28-item self-report scale, tapping four components of dispositional empathy, of which two represent affective components and two represent cognitive components. (A) *Affective components*: *Empathic Concern* (EC) – a subscale measuring other-oriented feelings of compassion for the misfortune of others (e.g. "I often have tender, concerned feelings for people less fortunate than me") and *Personal Distress* (PD) – a subscale measuring self-oriented feelings of distress in response to others' misfortune (e.g. "When I see someone who badly needs help in an emergency, I go to pieces"). (B) *Cognitive components*: *Perspective Taking* (PT) – a subscale measuring the tendency to imagine other people's points of view (e.g. "I sometimes try to understand my friends better by imagining how things look from their perspective") and *Fantasy* (FS) – a subscale measuring the tendency to identify imaginatively with fictional characters in books or movies (e.g. "I really get involved with the feelings of the characters in a novel"). Participants rate their agreement with each item on a 5-point Likert scale, ranging from 1 = *does not describe me well*, to 5 = *describes me very well*. For hypothesis testing in the current research, we only used the two subscales of EC and PD. Cronbach's α reliabilities of the relevant subscales in Study 1 were: EC= .91; PD = .88, and in Study 2: EC= .89; PD = .84**.** The Means (and standard deviations) of the relevant subscales in Study 1 were: EC = 3.83 (SD= .92); PD = 2.60 (SD= .96), and in Study 2: EC = 3.54 (SD= .95); PD = 2.68 (SD= .89).

Reading the Mind in the Eyes (RMET). The RMET comprises 36 photos (19 male and 17 female) depicting the eye region of 36 Caucasian individuals (Baron-Cohen, Wheelwright, Hill, Raste, & Plumb, 2001). Participants are asked to identify the emotional state of a target person, whose eye region is shown in a photograph, by choosing one out of four words that each represents an emotional state. Responses are scored as correct (1) or incorrect (0); the RMET score is calculated by summing the correct answers. Performance was determined by calculating the percentage of correct responses. The reliability (Cronbach's α) of the test in Study 1 was = .84, and in Study 2 = .89. The average recognition in Study 1 was 72% (SD = 17%) and in Study 2 68% (SD = 20%).

Measures used in Study 1 only.

Amsterdam Emotion Recognition Test (AERT). The AERT comprises 24 photos of four student white models (2 male and 2 female) who display 6 negative emotions (anger, fear, sadness, embarrassment, contempt and disgust) with low intensity (for more details see Israelashvili, Oosterwijk, et al., 2019). Participants were asked to label the emotion they saw on the face, by selecting one of 6 emotion labels, or "I do not know". Responses were scored as correct (1) or incorrect (0). Similar to RMET, accurate emotion recognition was operationalised by calculating the percentage of correct answers across the 24 pictures. This test was used only in Study 1 (reliability Cronbach's α = .70) and the overall recognition rate was 62% (SD = 16%).

Geneva Emotion Recognition Test (GERT). We used the short version of the Geneva Emotion Recognition Test (Schlegel & Scherer, 2016). The test consists of 42 short video clips with sound (duration 1–3 s), in which ten professional White actors (five male, five female) express 14 different positive and negative emotions: joy, amusement, pride, pleasure, relief, interest, surprise, anger, fear, despair, irritation, anxiety, sadness, and disgust. In each video clip, the actors are visible from their upper torso upward (conveying facial and postural/gestural emotional cues) and pronounce a sentence made up of syllables without semantic meaning. After each clip, participants were asked to choose which one out of the 14 emotions best describes the emotion the actor intended to express. Responses were scored as correct (1) or incorrect (0). Similarly to RMET and AERT, the final GERT score was calculated as the percentage of accurate recognitions ranging from 0% to 100%. This test was also used only in Study 1 (reliability Cronbach's $\alpha = .80$) and the average recognition was 55% (SD = 15%).

Directed Response. We included an attention check item on the page that assesses the IRI (in Study 2), instructing participants to give a specific answer ("*I enjoy making other people feel better. Regardless of your true answer, please select describes me moderately well*"). The response to the directed question was dummy coded such that "0" indicated incorrect responses and "1" indicated correct responses. 29% of the total sample (75/261 = 29%) failed to answer this item correctly and were excluded from the analysis of Study 2.

Procedure. We expected that performance on an emotion recognition task would demand more concentration than self-reporting empathic tendencies; hence, in both studies we first administrated the emotion recognition test(s) and then asked the participants to complete Davis (1983) Interpersonal Reactivity Index (IRI). In Study 1 we used the following three emotion recognition tests (in a randomised order): the Reading the Mind in the Eyes Test (RMET), the Amsterdam Emotion Recognition Task (AERT), and the Geneva Emotion Recognition Test (GERT).[2] In Study 2, only the RMET was used as an emotion recognition test to test for replication of the pattern of results found in Study 1.

Results

Emotion recognition. To test whether individuals' levels of empathic concern and personal distress were associated with accurate emotion recognition, we conducted a multiple regression analysis for each of the three emotion recognition DVs (RMET, AERT, GERT) in Study 1 and for the single DV (RMET) in Study 2. Personal distress (PD), Empathic concern (EC), and their interaction were entered as predictors in each one of the analyses. In the first step, we entered into the model the PD and EC (standardised) variables, while in the second step, their interaction component was added. The significance of all effects was assessed using a bootstrap technique (Efron & Tibshirani, 1993) with 5000 samples to overcome violations of normality. All four models were significant and explained 7% to 16% of the variance in the emotion recognition task: AERT: $F(3, 241) = 7.810$, $p < .001$; GERT: $F(3, 241) = 14.685$, $p < .001$; RMET-Study1: $F(3, 241) = 16.780$, $p < .001$; RMET-Study2: $F(3, 182) = 5.853$, $p < .001$ (see Table 1 for all statistics). Adding the interaction component in the second step significantly increased the explained variance of all four models: AERT: $F(1, 241) = 7.138$, $p = .008$, $\Delta R^2_{adj} = .023$; GERT: $F(1, 241) = 14.694$, $p < .001$, $\Delta R^2_{adj.} = .048$; RMET-Study1: $F(1, 241) = 21.087$, $p < .001$, $\Delta R^2_{adj.} = .069$; RMET-Study2: $F(1, 182) = 5.740$, $p = .018$, $\Delta R^2_{adj.} = .024$. The variance in ER scores explained by EC alone ranged from 4% to 10%; the variance in ER scores explained by PD alone ranged from 1% to 5%; the variance in ER scores explained by the interaction between PD and EC ranged from 2% to 7% (explained variance calculated based on beta squared values [β^2] detailed in Table 1).

The results of the regression analyses clearly indicate that EC is positively related to emotion recognition across different standardised performance tests. For most of the tests, PD was negatively associated with ER scores. In addition, the relation between EC and emotion recognition was moderated by PD levels. Figure 1 illustrates this moderation effect, using simple slope analysis to predict the correlation between EC and performance on RMET, for low (−1SD below the mean) to high (+1SD above the mean) levels of PD (the illustration was created using interActive software, McCabe, Kim, & King, 2018). Figure 1 shows that EC is positively associated with accurate emotion recognition in individuals who experience low to high levels of PD, but not in individuals with very low levels (−1SD below the mean) of personal distress (= raw PD levels below 1.6).

Discussion

The current studies show that individuals who report higher levels of empathic concern for others also recognise others' emotions more accurately. Individuals who report higher levels of personal distress on the other hand, generally show poorer performance in emotion recognition. In addition, we found that empathic concern positively relates to performance on emotion recognition tasks in individuals who report experiencing average to high levels of personal

Table 1. Standardised weights of emotional concern, personal distress, and their interaction component, in accounting for individual differences in accurate emotion recognition, using RMET, AERT, GERT in separate linear hierarchical regression analyses (Study 1, $N = 245$, Study 2, $N = 186$).

	AERT (*Study 1*)		GERT (*Study 1*)		RMET (*Study 1*)		RMET (*Study 2*)	
Test	β [95% CI]	$R^2_{adj.}$	β]95% CI]	$R^2_{adj.}$	β [95% CI]	$R^2_{adj.}$	β [95% CI]	$R^2_{adj.}$
Step 1		.054		.096		.093		.049
Empathic Concern	.244***		.273***		.295***		.168*	
	[.122, .367]		[.153, .393]		[.175, .415]		[.027, .310]	
Personal Distress	−.045		−.169**		−.116†		−.178*	
	[−.168, .078]		[−.289, −.049]		[−.237, .004]		[−.320, −.037]	
Step 2		.077		.144		.162		.073
Empathic Concern	.261***		.296***		.323***		.198**	
	[.139, .383]		[.179, .414]		[.207, .439]		[.056,.340]	
Personal Distress	−.080		−.217***		−.173**		−.191**	
	[−.204, .044]		[−.337, −.098]		[−.291, −.055]		[−.331,−.051]	
Interaction (EC, PD)	.165**		.228***		.270***		.144*	
	[.043, .286]		[.111, .345]		[.154, .385]		[.025, .262]	

Note*:* AERT – Amsterdam Emotion Recognition Test; GERT – Geneva Emotion Recognition Test; RMET – Reading the Mind in the Eyes Test; EC – Empathic Concern; PD – Personal Distress.
†$p < .06$.
*$p < .05$.
**$p < .01$.
***$p < .001$.

distress in response to others' suffering, but not for individuals who report very low levels of distress. Below, we discuss the theoretical implications of these results alongside the study limitations.

The relation of affective facets of empathy to emotion recognition

The results of these two studies support several conclusions. First, for most people, empathic concern is positively related to performance on emotion recognition tasks. This is consistent with similar findings obtained when using other measures of affective empathy (Lockwood, Ang, Husain, & Crockett, 2017; Olderbak & Wilhelm, 2017), and together these findings point to the fact that empathic concern for others has a robust positive relation to accurate emotion recognition. This finding is also in line with earlier results showing that empathic concern is driving the attentional focus to expressive cues that communicate information about the feelings of others (e.g. the eye region; Cowan et al., 2014). In addition, empathic concern is associated with an increased tendency to mimic, and presumable thereby, to recognise emotions of others (e.g. Drimalla et al., 2019; Stel, 2016).

Second, individuals who experience personal distress tend to shift their attention away from engaging with others' emotions, and do not invest sufficient attention to allow the identification of facial expressions. This is supported by work showing that personal distress is related with reduced accuracy of trait judgment (Colman, Letzring, & Biesanz, 2017), keeping greater physical distance (Pancer, 1988) and avoiding exposure to suffering others (e.g. Davis et al., 1999).

The pattern of divergent associations between the two affective components of empathy and emotion recognition is consistent with motivational models of empathy. Motivational models highlight the facilitating role of empathic concern and the inhibiting role of personal distress in predicting attention modulation (Zaki, 2014), engagement in perspective taking (Israelashvili & Karniol, 2018), and prosocial behaviour (Batson & Oleson, 1991; Batson 2011, 2019). The current findings fit with these motivational models and extend their application by showing that both affective components (PD, EC) account for individual differences in accurate emotion recognition, but in different ways.

The interaction between empathic concern and personal distress highlights that the relation between empathic concern and emotion recognition is moderated by personal distress: empathic concern positively relates to performance on emotion recognition tasks in individuals who report to experience average to high levels of personal distress in response to others' suffering. For individuals who report very low levels of distress, empathic concern was not linked with better accuracy. As noted in the introduction, previous studies have shown inconsistencies in the relation between affective empathy and emotion recognition (e.g. Allen-Walker & Beaton, 2014; Brosnan et al., 2014; Mullins-Nelson et al., 2006). The

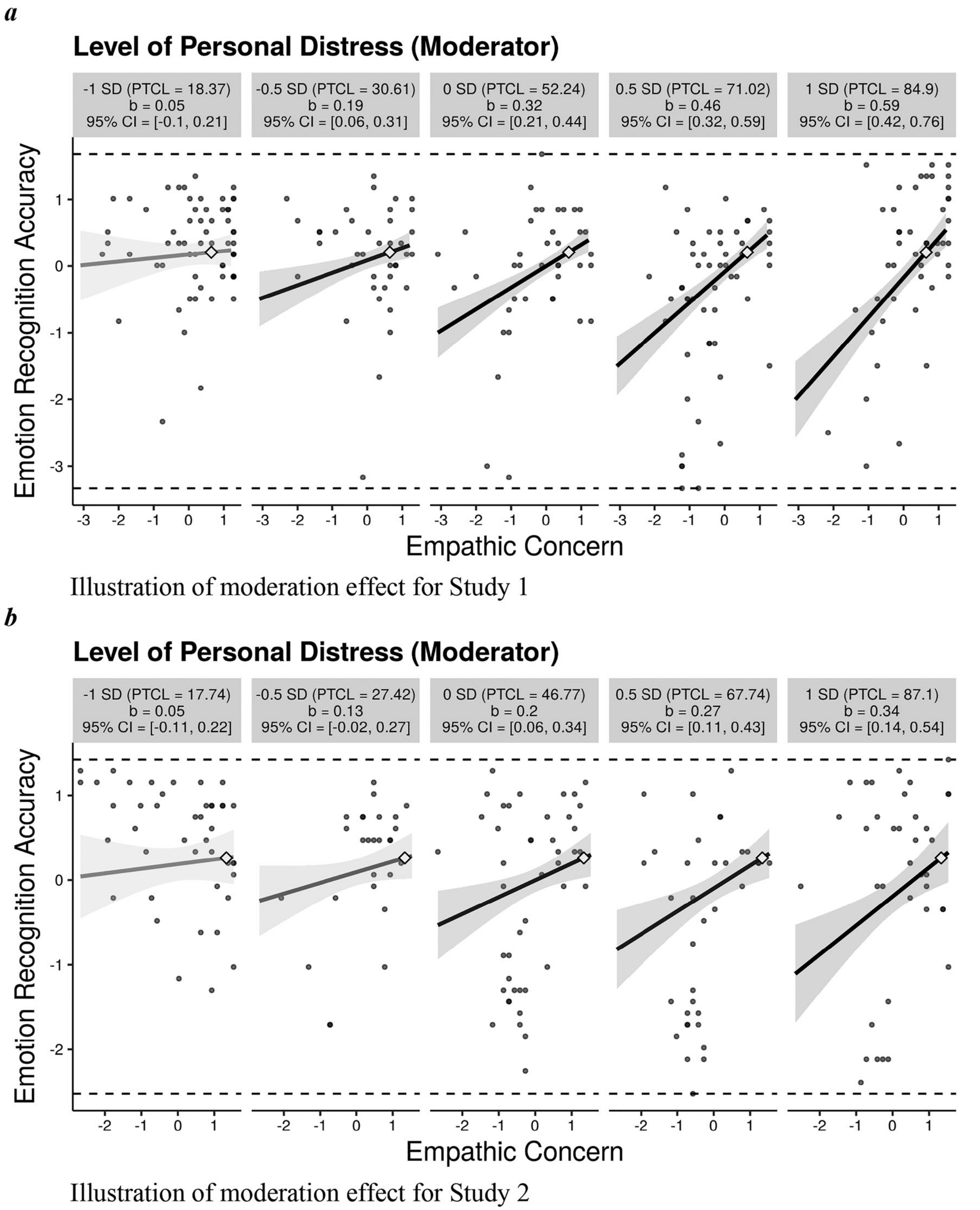

Figure 1. Percentage of accurate emotion recognition (standardized) as a function of individual's level of empathic concern (standardised), illustrated for very high (+1SD above Mean), high (+0.5SD above Mean), average (at the mean), low (−0. 5SD below Mean) and very low (−1SD below Mean) levels of personal distress. Notes: Slopes are printed bold when significant ($p < .05$). Accurate emotion recognition assessed by Reading the Mind in the Eyes Test (RMET). Empathic concern and personal distress assessed by Interpersonal Reactivity Index (IRI). Each graphic shows the computed 95% confidence region (shaded area), the full range of the observed data (grey circles) and the threshold at which the association between EC and emotion recognition changes as a function of PD (diamond). CI = confidence interval; PTCL = percentile.

present results suggest that a potential explanation may be that these studies did not measure personal distress, and that individual differences in personal distress has been differentially represented across these samples. Supporting this explanation, we found divergent relationships between empathic concern and emotion recognition across subgroups of the population with different personal distress levels (see Figure 1).

Finally, the focus of the current study was to investigate the relationships between affective empathy and accurate recognition of nonverbal facial expressions displaying emotions. Yet, cognitive empathy also involves reading beyond facial expressions, and better understanding the psychological perspectives of others (e.g. Baron-Cohen, 2005; Stueber, 2006). Interestingly, an exploratory analysis of the current data showed that individuals' report of their tendency to engage in Perspective Taking was indeed positively associated with accurate emotion recognition in both studies (see supplementary Tables 1 and 2 and Israelashvili, Sauter, & Fischer, 2019). It thus seems important for future research to consider nuances of cognitive, as well as affective, empathy.

Study limitations and directions for future research

We note two potential limitations of the current studies. First, the use of a correlational design allowed us to establish the relationship between different facets of affective empathy and emotion recognition, but is also a limitation. To establish causality, experimental designs are needed to examine whether the facets of affective empathy predict emotion recognition. Second, the measurement of empathic tendencies with self-reports may not accurately reflect participants' actual dispositions (e.g. due to self-enhancement; Sedikides, Gaertner, & Toguchi, 2003). Yet, these self-reported measures of the two affective components of empathy are in line with previous research, and therefore make the results of our research more comparable. Future research could experimentally manipulate the feelings of empathic concern and personal distress, rather than assess them using self-report. For instance, participants could be asked to recall situations in which they felt either concern or distress (or both). Alternatively, feeling concern or distress could be elicited experimentally by previously validated stimuli. These or similar paradigms could clarify the exact role of different facets of empathy in emotion recognition.

Conclusion

We investigated two different facets of affective empathy, that is, feelings of empathic concern for others and personal distress, in relation to emotion recognition. We found that they differently relate to performance on standardised tests of emotional facial expression recognition. Individuals who score high on empathic concern also recognise others' emotions more accurately on a number of standardised emotion recognition tests, whereas individuals who score high on personal distress generally show poorer performance. Thus, empathic concern and personal distress have opposing relations to emotion recognition. We wish to encourage future researchers in empathy to consider nuances in affective as well as cognitive empathy, when investigating the role of empathy in emotion recognition.

Notes

1. For insightful discussion regarding the weak relation between empathy and emotion recognition see also Olderbak and Wilhelm (2017).
2. After the emotion recognition tests in Study 1 we also administrated tasks designed to measure Emotion Differentiation (see Erbas, Ceulemans, Lee Pe, Koval, & Kuppers, 2014) and Verbal IQ (see Liepmann, Beauducel, Brocke, Amthauer, & Vorst, 2010). These are reported elsewhere (Israelashvili, Oosterwijk, et al., 2019). Importantly, across all three tests, the relationship between empathic response (EC, PD and EC*PD) and emotion recognition remained significant when controlling for verbal IQ. See supplemental materials [Table 3] for full statistical description.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Data availability statement

The authors confirm that the data supporting the findings of this study are available within the article or its supplementary materials.

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