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Empathy, morality and psychopathic traits in women

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Abstract
Empathic and moral processing correlates of psychopathic personality have seldom been studied in women. In this study, we experimentally tested associations between psychopathic personality traits and empathic and moral processing in a female sample, and further directly compared them to results from a male sample. We found that high levels of affective-interpersonal traits were associated with diminished affective response to sad and fearful emotions in others; lower propensity to feel moral emotions; higher endorsement of utilitarian solutions to moral dilemmas involving direct harm; and less self-reported difficulty when performing moral decision making. Overall, our findings strengthen the view that the two dimensions of psychopathy make distinct contributions to emotional and moral processing; and demonstrate that, in women, psychopathic personality traits are associated with a similar pattern of empathic and moral processing biases as the one that has been previously reported in men.

Keywords: Psychopathy; Empathy; Morality; Moral judgment; Moral emotions; Gender differences; Female

1. Introduction
Although a growing number of studies have investigated psychopathic personality in females (e.g. Nicholls & Petrila, 2005; Rogstad & Rogers, 2008), we know very little about how females with high levels of psychopathic traits perform on empathy and moral processing tasks, and whether they appear similar to males with high levels of psychopathic traits. A number of experimental studies to date have demonstrated that atypical empathic and moral processing are central features of psychopathic personality in males (e.g. Ali, Amorim, & Chamorro-Premuzic, 2009; Blair, 1999; Glenn, Raine, & Schug, 2009; Seara-Cardoso, Neumann, Roiser, McCrory, & Viding, 2012). In the present study, we employed the battery of questionnaires and experimental paradigms previously used in a male sample (Seara-Cardoso et al., 2012) to investigate how these constructs are associated with psychopathic traits in women.

1.1. Dimensions of psychopathic personality
The syndrome of psychopathy is formally diagnosed in forensic settings when an individual scores high on two distinct dimensions on the Psychopathy Checklist – Revised (PCL-R; Hare, 2003). One, historically referred to as Factor 1, is characterized by affective and interpersonal features such as reduced guilt, empathy and attachment to significant others,

along with deceptive, manipulative interactions. The other, Factor 2, relates to features involving impulsivity, poor behavioral control and antisocial behavior (Hare, 2003). Recent taxometric studies suggest that psychopathy is a dimensional rather than a categorical construct, providing empirical basis for studying individuals in terms of level of psychopathic traits (see Hare & Neumann, 2008, for a review). A growing number of community studies on psychopathic traits have reported findings that often mirror those observed in clinical/forensic samples (Hall & Benning, 2006; Lilienfeld & Fowler, 2006; Neumann & Hare, 2008), further supporting that there are continuities between community and forensic participants in the mechanisms underlying psychopathy.

Evidence from forensic and community male samples suggest that the two dimensions of psychopathy present distinct associations with various criterion measures of personality, emotionality and behavior, particularly when their shared variance is controlled for. For example, the affective-interpersonal dimension presents negative associations with emotional correlates such as fearfulness, distress, and empathic concern, whlist the lifestyle-antisocial dimension presents positive associations with these correlates (e.g. Hicks & Patrick, 2006; Seara-Cardoso et al., 2012; Uzieblo, Verschuere, van den Bussche, & Crombez, 2010). The two dimensions thus seem to present distinct contributions to psychopathy. Affective-interpersonal traits are hypothesized to represent the distinct personality traits defining psychopathy in that their presence distinguishes individuals who are psychopathic from those who manifest antisocial characteristics but who are not psychopathic (Blair, et al., 2005). Research so far indicates that emotional and personality correlates of psychopathy such as glibness, grandiosity, lack of empathic concern are akin across genders, but similarities in behavioural correlates, such as criminal behaviour and type of aggression, seem to be less consistent (see Verona & Vitale, 2006, for a review). It has been suggested that differences found across genders are mainly differential expressions of the same underlying construct (Nicholls & Petrila, 2005), and that the same personality traits may confer risk for different forms of behaviour for women versus men (Verona, Sprague, & Javdani, 2012).

1.2. Individual differences in empathic and moral processing
Lack of empathy and amoral behavior, in particular callous and hurtful behavior towards others, are distinctive characteristics of psychopathy (Blair, Mitchell, & Blair, 2005). Empathy is thought to play a crucial role in moral development (Eisenberg, 2000; Blair et al., 2005). Affective empathy is generally understood as a corresponding affective state, which results from the recognition of another person's affective state, but with the observer having awareness that his or her own affective state is vicariously elicited by the other person's emotional state (de Vignemont & Singer, 2006). Concepts such as empathic concern, although often occurring concurrently, should be thus distinguished as distinct phenomena. Affective empathy may not be prosocial *per se,* as only with further cognitive processing the empathic response may develop into compassion (i.e. empathic concern), guilt or a combination of the two (Eisenberg, 2000). Such prototypical moral emotions are, in turn, thought to function as an emotional moral barometer, providing immediate and salient feedback on imagined or actual behavior (Tangney, Stuewig, & Mashek, 2007) and thus motivating and guiding behavior.

Past research with male samples has used a variety of paradigms to study how individual differences in psychopathic personality relate to individual differences in emotion recognition, empathy and morality. Some studies have reported that psychopathic individuals have a selective impairment in recognizing other people's fear and sadness (e.g. Blair et al., 2004; Blair et al., 2002); although similar findings have not been consistently replicated in community samples (e.g. Del Gaizo & Falkenbach, 2008). Psychopathy has also been associated with reduced autonomic response to distress in others (Blair, 1999; Blair, Jones, Clark, & Smith, 1997). Individuals with high levels of psychopathic traits also report blunted affective empathic responses to emotional displays of others (Ali et al., 2009). In respect to

moral decision-making, while some studies have found psychopathy to be associated with more utilitarian responses in moral dilemmas (Koenigs, Kruepke, Zeier, & Newman, 2011), others have not found such different patterns of responses (Cima, Tonnaer, & Hauser, 2010; Glenn, Raine, Schug, Young, & Hauser, 2009). In a previous study with male community participants (Seara-Cardoso et al., 2012), we administered a wide battery of experimental tasks and questionnaires to thoroughly investigate which of the specific constructs considered above, i.e. emotional recognition, affective empathy, moral emotions and moral decision making, were associated with the two underlying dimensions of psychopathy. We found that both affective-interpersonal and lifestyle-antisocial dimensions of psychopathy were associated with weaker empathic responses to fearful faces. However, only the unique variance of the affective-interpersonal dimension was associated with weaker empathic response to happy stories, lower propensity to feel moral emotions (i.e. empathic concern) and less self-reported difficulty in making decisions on moral dilemmas. We also found that the lifestyle-antisocial dimension was uniquely associated with greater propensity to feel empathic concern, when controlling for the affective-interpersonal dimension. These preliminary findings suggested that, while the joint variance between affective-interpersonal and lifestyle-antisocial dimensions might drive some deficits associated with psychopathy, others appear to be uniquely associated with affective-interpersonal dimension.

In women, experimentally tested empathic and moral processing correlates have seldom been studied in relation to psychopathic traits. So far only diminished ability to categorize briefly presented sad faces (Eisenbarth, Alpers, Segrè, Calogero, & Angrilli, 2008) and feel empathic concern (Rutherford, Cacciola, Alterman, & McKay, 1996) have been reported in forensic samples of women (as compared with control participants). In the current study we employed the same battery of paradigms previously used with a male community sample (Seara-Cardoso et al., 2012) to investigate how different dimensions of psychopathic personality traits in women relate to empathic and moral processing. A new set of data from a female sample was collected, and formal statistical tests were performed to verify whether the associations found in this new dataset were similar to the ones previously found in male data.

2. Material and methods
2.1. Participants
One-hundred healthy adult females from western English speaking countries, with no history of psychiatric disorder, aged 18-56 (M=22.68; SD=6.64), and estimated IQ between 85 and 134 (M=112; SD=11), were recruited from the community through the University College London Psychology Subject Pool. Participants provided written informed consent and were compensated with either one course credit or £6 for their time.

2.2. Procedure
All tasks and questionnaires were presented on a computer using Psytools software (Delosis Limited). All tasks were presented randomly across participants and were followed by the questionnaires. Further details of each task can be found in Seara-Cardoso and colleagues (2012).

2.3. Materials
2.3.1. Assessment of General ability
The *WASI (Wechsler, 1999)* Full-Scale IQ Two-Subtest was used to provide an estimate of general cognitive ability.

2.3.2. Assessment of psychopathic traits
Psychopathic traits were assessed with the *Self-Report Psychopathy Scale 4 Short Form* (SRP-4-SF; Paulhus, Neumann, & Hare, in press), a 29-item scale designed to measure psychopathic attributes in non-institutionalized samples. The SRP-4-SF assesses psychopathic traits, organized in four facets – interpersonal, affective, lifestyle and antisocial

– consistent with recent research on the PCL-R. Like the PCL-R, the four facets can be modeled in terms of the traditional two-factor dimensions. The SRP has been shown to have clear latent structure, good construct validity in male and female samples (Neumann et al., 2012) and is strongly correlated with the PCL-R (Lilienfeld & Fowler, 2006; Paulhus et al., in press).

To verify the scale integrity of the SRP in our sample, scale reliability analyses were conducted. Mean Inter-Item Correlations (MICs) for the SRP Interpersonal (.38), Affective (.22), Lifestyle (.25), and Antisocial (.37) scales suggested scale homogeneity among these four SRP facets, indicating that they were unidimensional indicators of their respective SRP psychopathy factors. Alpha for the total SRP scale was good (.87), and similarly for the items used to form composite facet scores of the traditional affective-interpersonal (.84) and lifestyle-antisocial (.75) dimensions. The MICs for the SRP total, affective-interpersonal (AI), and lifestyle-antisocial (AI) scales were also good (.22, .29, .24, respectively). To verify the adequacy of the two-factor model, confirmatory factor analysis was conducted using Mplus, Version 6.1 (Muthen & Muthen, 1998-2010). Using the Interpersonal and Affective SRP scale scores as indicators of AI, and Lifestyle, Antisocial scales as LA indicators, the 2-factor solution showed excellent model fit (Model fit: $X^2(1)=.76$, $p<.05$, CFI=1.00, SRMR=.003), and fit significantly better than a one-factor scale-based model via a chi-square difference test between the two model ($x^2(1)=6.65$, $p<.05$).

2.3.3. Measures of Affect, Empathy and Morality
Emotion Multimorph Task
The Emotion Multimorph, previously used by Blair and colleagues (2004), is a measure of sensitivity to recognize emotional facial expressions. This task consists of identities that gradually morph from a neutral affect expression into each prototypical emotional expression (sadness, fear, anger and happiness) in 20 stages. Mean expression recognition stage scores were computed following the procedure used in Blair and colleagues (2004) to characterize participants' sensitivity to recognize each emotional facial expression type.

Empathy image task using the Self-Assessment Manikin (SAM-Faces)
Based on Ali and colleagues (2009), this task estimates participants' emotional response to emotional faces using the Self-Assessment Manikin (SAM; Bradley & Lang, 1994). Participants were asked to rate their affective state on the valence scale of the SAM when watching images depicting a person showing a sad, fearful, angry, happy or neutral expression. The valence scale ranges from a low-spirited manikin ('1') to a widely smiling one ('9'), going through a middle neutral stance ('5'); low scores thus represent negatively valenced affective responses and high scores represent positively valenced affective responses. This task includes realistic and naturalistic stimuli, previously piloted (Seara-Cardoso, et al., 2012), and is thought to tap into the affective empathy construct as it not only estimates participants' vicarious response to emotional stimuli, but also comprises elements of self-awareness and self/other distinction.

Empathy-Eliciting Short Stories task using the SAM (SAM-Stories)
The SAM-Stories (Seara-Cardoso et al., 2012) was used to assess participants' emotional response to emotional short stories using the SAM valence scale. Participants were presented with 12 short stories portraying sadness, anger or happiness, and asked to rate their affective response on the SAM.

Affective Empathy Scale of the Questionnaire of Cognitive and Affective Empathy (QCAE; Reniers, Corcoran, Drake, Shryane, & Völlm, 2011)
This scale assesses emotion contagion (e.g. "It worries me when others are worrying and panicky."); peripheral responsivity (e.g. "I often get deeply involved with the feelings of a character in a film, play, or novel"); and proximal responsivity (e.g. "I often get emotionally involved with my friends' problems").

Empathic Concern Scale of the Interpersonal Reactivity Index (IRI; Davis, 1980)
This scale assesses the tendency to experience feelings of sympathy and compassion for others (e.g. "I would describe myself as a pretty soft-hearted person.").

Moral emotions task
Adapted from Kédia and colleagues (2008), this task comprised the presentation of brief stories depicting prototypical moral situations, i.e. "an agent harms a victim". Depending on whether the agent and the victim are the self or other, these stories elicit four kinds of moral emotions: Guilt, Compassion, Self-Anger and Other-Anger. The harmful action is performed unintentionally in all stories to prevent possible interferences from other cognitive processes likely involved in moral judgment. In our previous version (Seara-Cardoso et al., 2012) nine scenarios per emotion were presented and each scenario was rated for all possible moral emotions. Based on participant feedback regarding that previous version, this task was shortened and simplified for the present study. The present task contained six scenarios per emotion and participants were asked to rate to what extent they would experience only the target emotion on a scale from 1 to 7 (1=not at all; 4=fairly; 7=extremely).

Moral dilemmas task
Based on previous published work (e.g. Greene, Sommerville, Nystrom, Darley, & Cohen, 2001), this task is a scenario-based measure of moral decision. Participants were asked to make decisions on a series of 8 moral dilemmas portraying a choice of whether or not to sacrifice one person's life in order to save the lives of a group of others, differing on whether there is direct physical contact with the victim (Personal) or not (Impersonal). Participants were asked to answer if they 'Would do… in order to…?' and to rate the difficulty of the decision on a 10-point scale.

2.4. Data analyses
Pearson and Spearman correlational analyses were conducted using SPSS 20 for Windows. Preliminary analyses indicated that estimated IQ was significantly correlated with some of the criterion variables. Therefore, two sets of analyses were conducted. First, to adjust for the influence of cognitive ability on the relationships between SRP scores and criterion variables, estimated IQ was entered as a control variable. Subsequently, to examine the influence of the unique variance of each SRP dimension on criterion variables, the other SRP dimension was entered as a second control variable. Benjamini and Hochberg False Discovery Rate (FDR; Benjamini & Hochberg, 1995) was used to control the probability of making a Type-I error on multiple comparisons. Corrected p-values are presented. Steiger's Z-tests (two-tailed) were conducted to assess the significance of the difference between associations of the two SRP dimensions and criterion variables.

Fisher's Z-tests were conducted to assess the significance of the difference between the correlations in the present female sample and correlations in a previously reported male sample (n=124; Seara-Cardoso, et al., 2012). Because of small alterations on the Moral emotions task, female vs. male comparisons were not conducted on this task.

3. Results
Pearson and Spearman's correlation coefficients and FDR adjusted p-values between SRP dimensions and all measures used are reported in Table 1. Z and p-values of difference between regression coefficients are also presented. Descriptive statistics and bivariate correlations among all criterion variables can be found in Supplementary Materials.

************ Insert Table 1 about here *************

No significant associations between the dimensions of SRP and variables of Multimorph were found. While none of the associations between SRP Lifestyle-Antisocial dimension (SRP-LA) and criterion variables survived FDR correction, the SRP Affective-Interpersonal

dimension (SRP-AI) was significantly correlated with several criterion variables. Higher scores on SRP-AI were associated with less negative emotional responses to sad and fearful faces, to sad stories and lower scores of affective empathy; lower scores of empathic concern and compassion, higher utilitarian responses on personal dilemmas and lower difficulty in making decisions on impersonal dilemmas. Partialing out each SRP dimension from the other yielded similar findings.

Fisher's Z-tests indicated that the pattern of correlations between SRP scores and criterion variables observed in the present study and in our previous study with a male sample was extremely similar. Statistically significant differences between genders were only observed in the associations between SRP-AI and endorsement of personal moral dilemmas. Contrary to men, women presented positive associations between SRP-AI and endorsement of utilitarian responses to personal moral dilemmas (controlling for IQ: Z=2.50, p<.05; controlling for IQ & LA: Z=2.47, p<.05). An additional marginally significant difference was observed between SRP-LA and empathic response to fearful faces where, contrary to men, women did not present a significant association between these variables (controlling for IQ: Z=1.92, p<.06).

4. Discussion
This study examined the associations between multiple measures empathic and moral processing with the two dimensions of the psychopathic personality in a community sample of females. Overall, our findings indicate that in females from the general population affective-interpersonal traits are associated with selective lower affective empathy to sadness and fear, lower propensity to feel other-oriented moral emotions, higher endorsement of utilitarian responses in dilemmas involving direct harm, and lower self-reported difficulty in making decisions in moral dilemmas involving indirect harm.

Although impairments in the ability to recognize emotional distress in others have been reported in clinical male and female samples (e.g. Blair et al., 2004; Eisenbarth et al., 2008) the existence of such impairments in community samples has not yet been confirmed (Del Gaizo & Falkenbach, 2008; Seara-Cardoso et al., 2012). In the present study, neither of the dimensions of psychopathy was associated with lower sensitivity to recognize emotional expressions. It is possible that impairments in emotional recognition are present only in clinical cohorts of psychopathy.

Our findings did however indicate a clear negative association between levels of affective-interpersonal (AI) traits and affective empathy as measured by the Questionnaire of Cognitive and Affective Empathy (Reniers et al., 2012). This association was further corroborated and specified by the results from the affective empathy tasks where participants indicated their feelings using the SAM, where higher levels of AI traits were selectively associated with less negative empathic responses to both observed and imagined displays of fear and sadness. Contrary to men, where lifestyle-antisocial (LA) traits were also associated with diminished empathic responses to fear, in women only the specific AI dimension was associated with it. However, the difference between genders in the associations of LA traits with empathic responses to fearful faces was only marginally significant and therefore the current data does not afford a strong interpretation with regard to gender differences. Nevertheless, the current findings suggest that this association could be explored further, possibly within clinical samples. Affective empathy is considered to be necessary for the development of moral emotions such as guilt and compassion. In fact, high levels of AI traits were not only associated with diminished affective response to sad and fear emotions in others, but also with diminished propensity to feel these moral emotions. The AI dimension was characterized by reduced ability to feel other-oriented moral emotions as demonstrated by its negative associations with the empathic concern scale, compassion and guilt ratings on the moral emotions task. These moral emotions are thought to function as moral barometers and motivate prosocial and inhibit antisocial behaviors. Impairments in

processing such emotions might thus underlie a possible emotional disengagement in moral decision making that might be associated with high levels of AI psychopathic traits.

AI psychopathic traits were indeed negatively associated with higher endorsement of highly emotional harmful actions to others and with less difficulty in making moral decisions. Females with higher AI traits were more willing to endorse direct harm to a single victim in order to save the lives of many. This result is significantly different from our previous male sample where no such association was found. However, it is not yet clear whether in males psychopathy is associated with a different pattern of responses to these dilemmas or not. While most studies so far have reported negative findings (e.g. Cima et al., 2010; Seara-Cardoso et al., 2012), one has reported higher utilitarian responses in personal dilemmas in a group of low-anxious psychopaths in comparison to controls (Koenigs et al., 2011). Similarly to Koenigs and colleagues (2011), in the present study, higher levels of AI traits were associated with higher endorsement of utilitarian responses in more extreme and emotional demanding scenarios where direct contact with the potential victim is necessary. This pattern of higher endorsement of personal dilemmas has also been reported in relation to individual differences in cognitive style, such as higher "need for cognition" and higher "working memory capacity", and it is thought that the endorsement of utilitarian responses in such dilemmas requires overdriving a strong, countervailing emotional response. Higher levels of AI traits were also associated with less difficulty in making decisions on impersonal moral dilemmas but not on personal ones (which are in general deemed less difficult in terms of decision making due to their extreme aversiveness). Taken together, these findings suggest that AI traits of psychopathy might be associated with some level of emotional disengagement and higher involvement of controlled cognition when processing moral decisions.

This was the first study to investigate how different dimensions of psychopathic personality in women are associated with distinct correlates of empathic and moral processing and further directly compare to results from a male sample. Overall, our findings suggest that, in women, psychopathic personality traits present the same underlying empathic and moral biases found in men. Furthermore, these biases were specific of the affective-interpersonal dimension of psychopathy, strengthening the views that the two dimensions of psychopathy make distinct contributions to emotional and moral processing; and that while psychopathy might be manifested differently in females and males, either due to gender-role socialization or biological differences (e.g. Nicholls & Petrila, 2005), its central characteristics appear to be similar. Future work with larger samples from community and forensic settings should further probe the generalizability of these important preliminary findings and the precise extent to which different components of psychopathy present distinct associations with particular empathic and moral processes.

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Table 1. Correlations between SPR scores and criterion variables

SRP scale	Total	Affective-Interpersonal (AI)		Lifestyle-Antisocial (LA)	
Control variables	IQ	IQ	IQ & LA	IQ	IQ & AI
	r	r	r	r	r
Multimorph: Stage Scores[a]					
Sad Faces	-0.07	-0.11	-0.12	-0.01	0.06
Fearful Faces	-0.02	-0.02	-0.02	-0.01	-0.00
Angry Faces	-0.03	0.05	0.11	-0.11	-0.15
Happy Faces	-0.05	0	0.05	-0.08	-0.09
SAM-Faces: Valence Ratings[a]					
Sad Faces	**0.26***	**0.25***	0.14	0.22	0.12
Fearful Faces	0.19	**0.25***	**0.25***	0.07	-0.08
Angry Faces	0.13	0.2	0.23	-0.01	-0.13
Happy Faces	0.16	-0.19	-0.18	-0.07	0.03
SAM-Stories: Valence Ratings[a]					
Sad Stories	**0.24***	**0.24****	0.22	0.15	0.01
Anger Stories	-0.02	-0.02	-0.02	-0.01	0.01
Happy Stories	-0.09	-0.17	-0.23	0.05	0.16
QCAE: Affective Empathy[a]	**-0.28***	**-0.35****†	**-0.35****†	-0.10†	0.11†
IRI: Empathic Concern Scale[a]	**-0.28***	**-0.42****†	**-0.49****†	0.00†	0.28†
Moral Emotions Task: Ratings					
Compassion[a]	**-0.39****	**-0.43****†	**-0.37****†	-0.22†	0.00†
Guilt[b]	**-0.25***	-0.22	-0.14	-0.21	-0.12
Self-Anger[a]	-0.2	-0.09	0.07	-0.29	-0.29
Other-Anger[a]	-0.13	-0.02	0.12	-0.24	-0.26
Moral Dilemmas: Endorsement[b]					
Impersonal Dilemmas	-0.01	0.04	0.09	-0.08	-0.12
Personal Dilemmas	**0.29***	**0.31***	**0.27***	0.16	0.00
Moral Dilemmas: Difficulty Ratings[a]					
Impersonal Dilemmas	-0.21	**-0.24***	-0.22	-0.10	0.03
Personal Dilemmas	-0.12	-0.15	-0.15	-0.05	0.04

[a] Pearson partial correlation coefficients are reported; *p<0.05, **p<0.01 (2-tailed; FDR-corrected); [b] Spearman partial correlation coefficients are reported; *p<0.05, **p<0.01 (2-tailed; FDR-corrected); † Significantly different correlations with criterion variables between SRP dimensions (Z>1.96; p<.05; 2-tailed).

Investigating associations between empathy, morality and psychopathic personality traits in the general population

Supplementary materials

Table 1. Descriptive statistics

	Mean	Std. Deviation	Minimum	Maximum
Age	22.68	6.64	18.00	56.00
Estimated IQ	111.81	10.54	85.00	134.00
SRP-4-SF				
SRP Total	51.12	12.70	31.00	90.00
Affective-Interpersonal Dimension	25.46	8.23	14.00	50.00
Lifestyle-Antisocial Dimension	24.59	6.10	14.00	44.00
Multimorph: Recognition Stage				
Sad.StageScore	9.73	4.15	0.00	18.00
Fear.StageScore	11.84	2.78	1.00	17.67
Anger.StageScore	11.05	3.30	0.67	18.00
Happy.StageScore	13.97	3.74	1.00	19.33
SAM-Faces: Valence ratings				
Sad faces	18.03	7.32	8.00	46.00
Fearful faces	25.09	8.04	8.00	46.00
Angry faces	26.93	8.84	8.00	56.00
Happy faces	58.19	7.50	43.00	72.00
SAM-Stories: Valence ratings				
Sad stories	7.17	2.97	4.00	19.00
Anger stories	13.86	3.36	6.00	20.00
Happy stories	30.18	3.72	19.00	36.00
QCAE: Affective Empathy	36.60	5.66	17.00	48.00
IRI: Empathic Concern	20.60	4.84	2.00	28.00
Moral Emotions task: Ratings				
Compassion	30.45	5.65	13.00	41.00
Guilt	36.68	4.44	20.00	42.00
Self-Anger	30.50	6.17	14.00	42.00
Other-Anger	29.97	6.31	15.00	42.00
Moral Dilemmas: Action Endorsement				
Impersonal dilemmas	3.17	1.09	0.00	4.00
Personal dilemmas	0.92	0.85	0.00	4.00
Moral Dilemmas: Difficulty rattings				
Impersonal dilemmas	7.14	2.29	1.00	10.00
Personal dilemmas	6.09	2.08	1.00	10.00

Table 2. Bivariate correlations between all criterion variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Multimorph: Recognition Stage[b]																					
1. Sadness	-																				
2. Fear	.25*	-																			
3. Anger	.14	.29**	-																		
4. Happiness	.38**	.34**	.26**	-																	
SAM-Faces: Valence Ratings[a]																					
5. Sad faces	-.13	.03	.02	.04	-																
6. Fearful faces	-.07	.04	.23*	.10	.68**	-															
7. Angry faces	.04	.13	.11	.10	.53**	.71**	-														
8. Happy faces	.11	-.04	-.12	.05	-.70**	-.62**	-.57**	-													
SAM-Stories: Valence ratings[a]																					
9. Sad stories	-.05	-.01	.16	-.11	.45**	.38**	.30**	-.46**	-												
10. Anger stories	.06	.17	.37**	.08	.28**	.29**	.25*	-.32**	.52**	-											
11. Happy stories	.16	.00	-.08	.14	-.40**	-.44**	-.30**	.55**	-.53**	-.33**	-										
12. QCAE: Affective empathy[a]	.23*	.07	.07	.17	-.43**	-.24*	-.18	.33**	-.34**	-.23*	.38**	-									
13. IRI: Empathic concern[a]	.11	.22*	.11	.14	-.23*	-.20*	-.12	.36**	-.36**	-.16	.37**	.62**	-								
Moral Emotions task: Ratings																					
14. Compassion[a]	.09	.20*	.02	.10	-.38**	-.26**	-.13	.31**	-.37**	-.24*	.20*	.48**	.49**	-							
15. Guilt[b]	.25*	.07	-.01	.12	-.20*	-.09	.00	.22*	-.23*	-.31**	.09	.31**	.31**	.53**	-						
16. Self Anger[a]	-.05	-.15	-.02	.11	-.12	-.10	-.07	.11	-.24*	-.28**	-.01	.14	.01	.19	.43**	-					
17. Other Anger[a]	.00	-.25*	-.12	-.12	-.14	-.09	-.07	.16	-.20*	-.30**	.05	.02	-.05	.15	.33**	.74**	-				
Moral dilemmas: Action endorsement[b]																					
18. Impersonal dilemmas	.08	-.09	-.22*	-.01	-.02	-.11	.07	.04	-.09	-.13	.06	-.10	-.08	.03	.02	.04	.14	-			
19. Personal dilemmas	-.05	.02	.01	-.01	.02	-.03	-.02	-.05	.08	-.05	.03	-.03	-.07	-.05	.02	-.09	-.11	.19	-		
Moral dilemmas: Difficulty ratings[a]																					
20. Impersonal dilemmas	.11	.25*	.11	.09	-.18	-.08	-.19	.16	-.27**	-.21*	.22*	.32**	.32**	.40**	.17	.04	.13	-.07	-.07	-	
21. Personal dilemmas	.12	.06	-.06	.08	-.233*	-.12	-.19	.247*	-.42**	-.26**	.42**	.30**	.25*	.26**	.13	.03	.07	.13	.26*	.62**	-
Mean	9.73	11.84	11.05	14.0	18.03	25.09	26.93	58.19	7.17	13.86	30.18	36.60	20.60	30.45	36.68	30.50	29.97	3.17	0.92	7.14	6.09
SD	4.15	2.78	3.30	3.74	7.32	8.04	8.84	7.50	2.97	3.36	3.72	5.66	4.84	5.65	4.44	6.17	6.31	1.09	0.85	2.29	2.08

[a] Pearson correlation coefficients are reported. * p<.05, ** p<.01 (2-tailed)

[b] Spearman correlation coefficients are reported. * p<.05, ** p<.01 (2-tailed)