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Psychopathy and Identification of Facial Expressions of Emotion

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Abstract

The authors examined the association between psychopathy and identification of facial expressions of emotion. Previous research in this area is scant and has produced contradictory findings (Blair et. al., 2001, 2004; Glass & Newman, 2006; Kosson et al., 2002). One hundred and forty-five male jail inmates, rated using the Hare Psychopathy Checklist: Screening Version participated in a facial affect recognition task. Participants were shown faces containing one of five emotions (happiness, sadness, fear, anger, or shame) displayed at one of two different levels of intensity of expression (100% or 60%). The authors predicted that psychopathy would be associated with decreased affect recognition, particularly for sad and fearful emotional expressions, and decreased recognition of less intense displays of facial affect. Results were largely consistent with expectations in that psychopathy was negatively correlated with overall facial recognition of affect, sad facial affect, and recognition of less intense displays of affect. An unexpected negative correlation with recognition of happy facial affect was also found. These results suggest that psychopathy may be associated with a general deficit in affect recognition.

Introduction

Psychopathy is a disorder comprised of a unique confluence of affective, interpersonal, and behavioral traits (Cleckley, 1941; Hare, 1991). Deficient or abnormal emotional experience has long been considered a hallmark of psychopathy (Cleckley, 1941). Research has demonstrated that psychopathic individuals experience emotions differently, showing qualitative and/or quantitative differences in their ability to experience emotion (Hare, 1993, 1998; Steuerwald & Kosson, 2000) and process affective language (Gillstrom & Hare, 1988; Hare & McPherson, 1984; Williamson, Harpur, & Hare, 1991). Significant abnormalities have also been found in physiological responses to affective material (Hare, 1978; Patrick, Bradley, & Lang, 1993) and memory for emotional events (Christianson et al., 1996).

Recently, researchers have begun to examine the relationship between psychopathy and identification of emotional states in others. Stevens, Charman, and Blair (2001) examined psychopathic children's ability to recognize both facial expressions of emotion and vocal tone. Children with psychopathic traits evidenced an impairment in their recognition for sad and fearful facial expressions and for sad vocal tone. Blair, Colledge, Murray, and Mitchell

(2001) presented children with facial expressions of emotion that slowly evolved through 20 successive frames of increasing intensity. They found that children with psychopathic traits needed greater intensity of emotional expression in order to accurately identify sad facial expressions, and they were more likely than children without psychopathic traits to misidentify fearful facial expressions even when at the highest level of intensity of expression.

Studies examining the relationship between psychopathy and recognition of facial affect in adults have resulted in conflicting findings. Kosson, Suchy, Mayer, and Libby (2002) examined facial affect recognition in a sample of 77 male inmates and found that psychopathic men were less accurate than non-psychopathic men in identifying facial expressions of disgust. Blair et al. (2004), employing a paradigm similar to Blair et al. (2001), found that psychopathic men evidenced a significant impairment in their ability to identify fearful facial expressions. However, their sample size was quite small (i.e., 19 psychopathic men and 19 controls). Similar deficits in fear recognition were associated with psychopathic personality characteristics in a male college sample (Montagne et al., 2005). Dolan and Fullam (2006) found significantly lower accuracy recognition for sad faces among psychopaths relative to controls. However, most recently, Glass and Newman (2006) examined recognition of facial affect in a sample of 111 male prison inmates and found that psychopathic offenders performed as well as nonpsychopathic offenders in identifying facial expressions of emotion. While most studies investigating facial affect recognition and psychopathy have found some deficit(s), the specific type of deficit has varied across studies and samples.

A relatively new emotion-based theory of psychopathy is Blair's (1995) and Blair's et al. (2001) Violence Inhibition Mechanism, which posits that the emotional deficits associated with psychopathy are the result of empathy dysfunction, which leads to poor moral socialization. According to this model, psychopathic individuals fail to experience the fear and sadness of others as aversive and therefore fail to learn how to avoid acting and behaving in ways that result in others' sadness and fear. The neurological basis for this deficit is believed to lie within the limbic system and more specifically, the amygdala. Consistent with this notion, Gordon, Baird, and End (2004) found that college students (n=22) who scored low on the emotional-interpersonal domain of psychopathy evidenced significantly greater activation in the frontal cortex and amygdala during an affect recognition task compared to their high-scoring counterparts who evidenced greater activation in the visual cortex. The authors concluded that individuals scoring low on emotional-interpersonal features of psychopathy utilized areas of the brain typically associated with emotion interpretation and response when engaged in decoding facial expressions of affect, whereas high-scoring participants relied mostly on areas of the brain associated with visual perception.

The current study adds to the burgeoning literature on psychopathy and emotion recognition in two respects. First, the study draws on the largest sample of male inmates to date (n=145). Many studies in the literature have employed samples of less than 50. Second, the current study considered a broader array of facial expressions than most studies. Of special note, this is the first study to consider facial expressions of shame, which is generally regarded as a quintessential "moral emotion" (Tangney, Stuewig & Mashek, 2007), and thus is of special relevance to the study of psychopathy. (Guilt was not included because there is no clearly definable facial expression associated with feelings of guilt.) Consistent with the Violence Inhibition Mechanism (VIM) model, we hypothesized that inmates high in psychopathy would evidence impaired recognition of sad and fearful facial expressions. Although not specifically addressed by VIM, the theory implicitly suggests that such difficulties in affect recognition would extend to shame. We also predicted that inmates high

in psychopathy would have greater difficulty recognizing less intense facial expressions of emotion. Lastly, we predicted that the interpersonal and affective features of psychopathy (i.e., Part 1) would contribute most to the ability to identify facial expressions of emotion compared to the social deviance/antisocial lifestyle features (i.e., Part 2), as suggested by Gordon, et al.'s (2004) study of undergraduates.

Method

Participants

The sample consisted of 154 male inmates who were incarcerated at a large urban jail in Northern Virginia. A total of 145 participants were utilized in data analyses. Two participants' data were removed due to random responding on the facial recognition task, and seven participants' data were removed due to very low intelligence scores (i.e., 70 or less). The Wonderlic Personnel Test (1999), a 12-minute pencil and paper test, was used to provide an estimate of general intelligence. The Wide Range Achievement Test: Revision 3 Reading subtest (WRAT-3, Wilkinson, 1993) was used to provide an estimate of reading achievement. Psychopathy was not significantly correlated with either intelligence or reading achievement. All participants were charged or convicted of at least one felony offense and were assigned to the jail's medium- or maximum-security general population. The mean age of the participants was 30.94 years (SD = 9.53, range 18 to 60 years). Forty-eight percent were African American, 32.4% were Caucasian, 5.5% were Asian/Pacific Islander, 5.5% were Mexican American/Other Hispanic, 3.4% were of Mixed race, 3.4% were of Other race, and less than 2% were Middle Eastern and Native American. These demographic characteristics are consistent with those found in other large urban jail samples. The mean Wonderlic IQ Score was 93.50 (SD = 12.97, range 71 to 123). The mean Wide Range Achievement Test: Revision 3 Reading subtest standard score was 92.24 (SD = 14.91, range 60 to 120).

Measures

Hare Psychopathy Checklist: Screening Version (PCL:SV)—The PCL:SV is a 12-item screening measure for psychopathy (Hart, Cox, & Hare, 1995) designed to be conceptually and empirically related to the Psychopathy Checklist-Revised (PCL-R; Hare, 1991), the current "gold standard" for assessing psychopathy. The factor structure of the PCL:SV is similar to that of the PCL-R. Part 1 scores range from 0 to 12 and reflect the affective and interpersonal symptoms of psychopathy, such as "manipulative" and "lacks empathy." Part 2 scores range from 0 to 12 and reflect the socially deviant aspects of psychopathy, such as "impulsive," "irresponsible," and "adult antisocial behavior." Studies have shown the PCL:SV to be reliable and valid (Hart, Hare, & Forth, 1993). Psychopathy was used as a dimensional variable in the current study for two main reasons. First, findings from recent taxonomic research convincingly argues against the notion of psychopathy as a discrete entity or taxon (Edens, Marcus, & Lilienfeld, 2006; Guay, Ruscio, Knight, 2007; Marcus, John, & Edens, 2004). Second, the high cost of dichotomizing continuous variables in terms of statistical power (Cohen, 1983; MacCallum, Zhang, Preacher, & Rucker, 2002) is well known. Given the small effect sizes found in previous studies, it is especially important to preserve valid variance inherent in the continuous variable.

Participants were rated on the PCL:SV on the basis of an in-depth, psychosocial interview and review of criminal and jail records. Interviews and scoring were completed by advanced graduate students who had completed a course on the theory, research, and assessment of psychopathy, including intensive supervised training in the administration and scoring of the PCL-R and PCL:SV using a standardized set of ten videotaped interviews and case files. A randomly selected set of 22 cases were double-coded by the first author who has ten years of

professional experience conducting forensic psychological evaluations, as well as advanced training and experience in the administration and scoring of the PCL-R and PCL:SV. Means and alpha reliability data for the Hare Psychopathy Checklist: Screening Version (PCL:SV) Total and Part scores are shown in Table 1. Twenty-three percent of the sample scored in the psychopathic range (i.e., 18 or above). Single measure intra-class correlations, using a one-way random effects model, were .85, .88. and .87 for Part 1, Part 2, and Total PCL:SV scores, respectively, showed a high degree of inter-rater reliability.

Facial Affect Recognition Emotion Task—A computerized facial affect recognition task was created using stimuli taken from an established set of photographs that have demonstrated adequate validity and reliability (Hess & Blairy, 1995). The task stimuli consisted of 60 photographs of faces depicting one of five emotions (happiness, anger, sadness, shame, and fear) at one of two levels of emotional intensity (60% and 100%). The order of presentation was randomized across the participants.

Participants were instructed that a series of faces expressing emotion would be presented on the computer screen. They were asked to rate each photo for how much it displayed each of six different emotions (happiness, fear, anger, surprise, sadness, and shame) on a seven-point Likert scale. The decision to add “surprise” as an additional response option was made to provide participants with more of an open choice and not restrain them to choices limited to the five target emotions (Kornreich et al., 2001). The scale was anchored with “not at all” on one end and “very intensely” at the other. Participants were provided unlimited time to complete the task and were not informed as to how many photographs there were from each emotional category. Once a participant completed the six ratings per photograph, a new photograph was presented.

Scoring of the Facial Affect Recognition Task—The dependent variable was the number of correct classifications made in each of five different emotional expressions (happiness, sadness, anger, fear or shame) and two different intensity levels of the expression (100% or 60%). Accuracy for each slide was coded by determining whether the participant’s highest rated emotion of the six emotional ratings per slide was the corresponding emotion displayed in the slide. For slides displaying fearful facial expressions, accuracy was coded without “surprise” as a response option, as it was noted that participants overwhelmingly misidentified fearful expressions as surprised expressions (i.e., in roughly 10 out of the fearful 12 slides). Removing surprise as a response option in determining accuracy of fear slides brought accuracy rates in line with the other emotional expressions.

Procedure

To gather information for scoring of the PCL:SV, participants were interviewed individually in a small, sound-proof interview room within the institution. The interview session, including some supplemental questions, lasted approximately 1.5–3 hours. In a subsequent session, participants completed the facial affect recognition task using a touch-screen computer tablet with keyboard. The computer session lasted approximately 20–30 minutes.

Results

There was a significant negative correlation between overall accuracy in emotion identification and PCL:SV Total psychopathy score. As the level of psychopathy increased, accuracy in identifying facial expressions of emotion decreased (see Table 2). With regard to specific emotional expressions, significant negative correlations were observed between PCL:SV Total score and identification of both happy facial expressions and sad facial

expressions. Although the correlations between psychopathy and accuracy in identifying other types of emotional expressions were not significant, the direction of all correlations were negative, suggesting that psychopathy is at least modestly associated with difficulty in identifying several different types of facial expressions of emotion. As underscored by meta-analytic methods (Hunter & Schmidt, 1990), given a particular population value, observed correlations are likely to vary considerably, owing to sampling error. It is exceedingly unlikely that all observed values would be negative in sign, given a true value of zero or greater.

Despite a significant negative correlation between PCL:SV Total score and overall accuracy in identifying facial expressions of emotion, neither PCL:SV Part 1 nor Part 2 alone were significantly correlated with overall accuracy. Regarding accuracy in identifying specific emotions, PCL:SV Part 2 scores were significantly negatively correlated with accuracy in identifying sad and happy facial expressions. The only significant correlation between PCL:SV Part 1 score and accuracy in identifying facial expressions of specific emotions was for sad faces. A series of t-tests comparing dependent correlations revealed no significant difference between the accuracy correlates of PCL:SV Part 1 versus PCL:SV Part 2.

A series of simultaneous regressions was performed to evaluate the degree to which the PCL:SV Part scores uniquely add to the prediction of accuracy in emotion recognition. As seen in Table 3, the PCL:SV Part scores did not account for a significant amount of unique variance in the accuracy of identification of facial expressions overall or any specific emotional expression.

Table 4 shows the correlations between PCL:SV scores and accuracy of identification in 100% and 60% expressed emotion slides. The PCL:SV Total score was significantly negatively correlated with accuracy in identifying 60% expressed facial expressions of emotion, but the negative correlation between PCL:SV Total score and accuracy in identifying 100% expressed facial expressions of emotion did not reach statistical significance. A t-test between the correlations for PCL:SV Total score and accuracy in identifying 60% and 100% expressed facial expressions of emotion was not significant. PCL:SV Part 2 scores were significantly negatively correlated with accuracy in identifying 60% expressed emotion slides, which was not significantly different from the correlation involving PCL:SV Part 1 scores and accuracy of identification at 60% intensity.

A series of regression equations were also performed to evaluate the joint contribution of the PCL:SV Part scores to the prediction of accuracy of identification of emotion in 100% and 60% expressed emotion slides, respectively. Results, shown in Table 5, indicate that the two parts of the PSL:SV measure of psychopathy did not account for significant unique variance in the accuracy of identification of emotion in the 60% expressed emotion slides, nor for the 100% expressed emotion slides.

Discussion

In the current study, psychopathy was associated with overall difficulty identifying facial expressions of emotion, as well as with a specific deficit in identifying happy and sad facial expressions. In addition, psychopathy was associated with difficulty identifying less intense facial displays of emotion. Lastly, we found that neither the affective/interpersonal features nor the antisocial lifestyle features of psychopathy were uniquely related to these deficits above and beyond that of psychopathy as a whole.

In trying to understand the current results, we turn to emotion-based explanations of psychopathy in the literature. One emotion-based model of psychopathy is the low-fear model, which posits that psychopaths fail to effectively process threat or punishment cues

and are thus poorly socialized (Lykken, 1957). Since expressions of anger and fear have been considered cues of threat (Whalen, 1998), this model would suggest that psychopathy should be associated with reduced recognition of facial expressions of anger and fear, specifically. The current findings are inconsistent with the low-fear model in that psychopathy was not significantly associated with decreased recognition for either anger or fear in particular.

A more recent model, the Violence Inhibition Mechanism (VIM) model (Blair, 1995; Blair et al., 2001), suggests that psychopathy results from a failure to develop appropriate responses to submission cues, owing to a lack of empathy and associated socialization deficits. According to this model, psychopathic individuals should have particular difficulty identifying fearful, sad, and shame facial expressions of emotion. The current findings are partially supportive of the VIM model in finding significant deficits in identifying sad facial expressions. However, no such deficits were found for angry and shame expressions and the observed deficits in identifying happy expressions are not expected in this model. Results of the current study are consistent with previous work by Blair et al. (2001, 2004) in finding deficits in identifying less intense displays of emotion.

Lastly, a long-held clinical account of psychopathy is that psychopathic individuals have a general poverty or absence of affect in general. Such a belief might lead to the prediction that psychopathy would be associated with a deficit in identifying affect across the board. The results of this study are in line with this position in that significant deficits in identification were found for happy and sad facial expressions. Furthermore, while not all of the correlations between psychopathy and identification of other emotional expressions were significant, they were all negative, and in the direction of decreased ability to identify facial expressions of emotion. A similar pattern of non-significant findings in the same direction is evident in previous research (Blair et al., 2004; Kosson et al., 2002). Notably, no study has yet found that psychopathy is associated with improved recognition of any type of emotion.

Limitations in the current study include significant participant confusion concerning fearful versus surprised facial expressions. Participants overwhelmingly misidentified fearful facial expressions with surprised facial expressions. Thus, it is not clear what deficits may or may not have been found had “surprised” not been included as a response option. A previous study had similar problems with fearful facial expressions (Blair et al., 2001). In addition, the current study utilized only male incarcerated felons. Thus, the generalizability to female offenders, non-offenders, and sub-clinical manifestations of psychopathy is unknown.

Continued research is needed in this area, as the current results add to an ever complex and somewhat divergent pattern of results. It may be that previous studies that failed to find significant results used facial expressions of emotion that were too simple or obvious. Given that three of the four studies that have found significant deficits in identifying facial expressions of emotion have employed stimuli of varying display intensity levels, future researchers may be most likely to find significant deficits employing less intense facial expressions of emotion. This would also result in greater ecological validity since emotions as displayed in the real world are often varied in intensity and/or content.

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Table 1

Means and Alpha Reliabilities of Psychopathy Checklist Screening Version (PCL:SV) Scales

Scale	Mean	SD	Possible Range	Actual Range	Alpha (Items)	Skew	Kurtosis
PCL:SV							
Total Score	13.33	4.99	0–24	1–22	.80 (12)	−.307	−.256
Part 1 Score	6.21	3.09	0–12	0–12	.76 (6)	.006	−.869
Part 2 Score	7.12	2.69	0–12	1–12	.70 (6)	−.554	−.369

Note. $N = 145$.

Table 2

Correlations Between Psychopathy and Facial Affect Recognition

	Psychopathy Checklist: Screening Version		
	Total	**Part 1**	**Part 2**
Total Faces	−.141*	−.129	−.113
Happy Faces	−.162*	−.132	−.149*
Sad Faces	−.167*	−.144*	−.144*
Anger Faces	−.073	−.096	−.024
Fear Faces	.005	−.037	.053
Shame Faces	−.077	−.022	−.118

Note. $N = 145$.

* $p < .05$, one-tailed

Table 3

Regression Analyses Predicting Facial Affect Recognition From PCL:SV Part 1 and Part 2 Scores

Variable	B	SE-B	β	R^2 Total
Total Faces				.020
PCL:SV Part 1	−.311	.302	−.098	
PCL:SV Part 2	−.239	.346	−.069	
Happy Faces				.027
PCL:SV Part 1	−.072	.086	−079	
PCL:SV Part 2	−.115	.098	−.110	
Sad Faces				.028
PCL:SV Part 1	−.096	.094	−.097	
PCL:SV Part 2	−.111	.108	−.097	
Anger Faces				.010
PCL:SV Part 1	−.100	.086	−.111	
PCL:SV Part 2	.031	.099	.029	
Fear Faces				.008
PCL:SV Part 1	−.088	.103	−.082	
PCL:SV Part 2	.115	.118	.093	
Shame Faces				.015
PCL:SV Part 1	.045	.094	.046	
PCL:SV Part 2	−.159	.108	−.140	

Note. $N = 145$.

* $p < .05$.

Table 4

Correlations Between Psychopathy and Facial Affect Recognition By Intensity

	Psychopathy Checklist: Screening Version		
	Total	**Part 1**	**Part 2**
100% Expressed Faces	−.115	−.124	−.070
60% Expressed Faces	−.158*	−.123	−.151*

Note. $N = 145$.

* $p < .05$, one-tailed.

Table 5

Regression Analyses Predicting Facial Affect Recognition By Intensity From PCL:SV Part 1 and Part 2 Scores

Variable	B	SE-B	β	R^2 Total
100% Expressed Faces				.015
PCL:SV Part 1	−.210	.170	−.117	
PCL:SV Part 2	−.028	.195	−.013	
60% Expressed Faces				.026
PCL:SV Part 1	−.101	.146	−.065	
PCL:SV Part 2	−.212	.167	−.120	

Note. $N = 145$.

* $p < .05$.