Primary and secondary psychopathic traits

Primary and Secondary psychopathic traits:

The role of Attachment and Cognitive Emotion Regulation Strategies

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Abstract

Insecure attachment has been linked with psychopathic traits however, the precise relationship between the avoidance and anxiety attachment dimensions and primary and secondary psychopathic traits needs further research. Furthermore, the use of cognitive emotion regulation strategies (CERS) in individuals with psychopathic traits has been increasing, however, little is known about the unique association of adaptive and maladaptive CERS in relation to primary and secondary psychopathic traits. This study aimed to explore the relationship between adult insecure attachment dimensions and CERS with both primary and secondary traits in a non-clinical sample of 338 adults ranging between 18 and 70 years of age (231 of which were females). Findings indicated that having an avoidant attachment, blaming others and positively reappraising situations contributed to the prediction of primary psychopathic traits, while putting into perspective was identified as a protective factor. In contrast, having an anxious attachment and catastrophizing arose as risk factors for secondary psychopathic traits. Findings highlight the need to evaluate psychopathic variants as heterogeneous constructs, as both attachment dimensions and CERS uniquely relate to primary and secondary psychopathic traits.

Keywords: primary psychopathy, secondary psychopathy, attachment, cognitive emotion regulation strategies

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Psychopathy is a complex, multifaceted personality construct characterized by a constellation of affective, behavioural and psychological disturbances (Anderson & Kieh, 2014; Karpman, 1948; Levenson et al., 1995) with many researchers disagreeing on the number of sub-dimensions the construct has. Psychopathic traits can been found in non-clinical populations as studies have shown that 1 to 2 % of the general population exhibit high levels of psychopathic traits, comparable with those displayed in forensic samples (Coid et al., 2009; Sethi et al., 2018). Research on the gender prevalence of psychopathy in community samples argue that psychopathic traits manifest equally across genders (Blanchard & Lyons, 2016) but differ in their behavioural manifestations (Coid et al., 2009), while other studies argue that they are more prevalent in males (e.g., Warren et al., 2003).

A body of research portrayed psychopathy as comprising of two distinct but correlated dimensions; primary and secondary psychopathy (Falkenbach et al., 2008; Hicks et al., 2004; Karpman, 1948; Levenson et al., 1995). Primary psychopathy, is thought to be encompassed by the affective and interpersonal psychopathic features and describes people who have superficial charm, grandiosity, lack of guilt, emotional detachment and manipulative attitudes while secondary psychopathy, portrays individuals engaged in an impulsive and irresponsible lifestyle, who are incapable of long-term goal planning and antisociality (Falkenbach et al., 2008; Levenson et al., 1995). Research into the heterogeneity of psychopathy, argued that primary and secondary psychopathic traits have distinct formation processes and etiological backgrounds. Primary psychopathic traits are thought to emerge due to a congenital affective deficiency, whereas secondary psychopathic traits as stemming from childhood environmental adversities, such as parental abuse and rejection resulting in hostile behaviours and heightened emotional reactivity (Falkenbach et al., 2008;

Hong et al., 2016; Sethi et al., 2018). Due to their affective deficiencies and limited emotional range, individuals with psychopathic traits have a difficulty forming and maintaining interpersonal relationships and meaningful attachments to others (Hong et al., 2016) and show deficits with regards to the emotion regulation strategies that they use (Donahue et al., 2014; Garofalo et al., 2018; Heinzen et al., 2011). The current study examines the importance of attachment relationships and cognitive emotion regulation strategies in distinguishing between primary versus secondary psychopathic features in an adult community sample. In addition because much on the literature has been done on psychopathy in general and sometimes separately in male and female participants, this study also examines the comparability of primary and secondary features while taking gender into account.

Attachment

Early childhood experiences with the primary caregiving figures form long-lasting working models of beliefs and expectations regarding one's view of self (e.g., deserving of love) and others (e.g., likely to be supportive) for guiding behaviour in future adult interactions (Christian et al., 2017). Securely attached adults exhibit trust in the availability and responsiveness of their attachment figures and they seek and value intimate relationships with others while insecure attachments are characterised by two distinct attachment dimensions: anxiety and avoidance (Brennan & Shaver, 1998). Avoidant individuals view others as undependable and tend to rely on themselves for personal needs, avoid forming intimate relationships or they appear to be emotionally uninvolved in their interpersonal relationships, preferring distance and independence (Christian et al., 2017; Schimmenti et al., 2014). In contrast, individuals high on the anxiety dimension have a negative view of self and because of the fear of abandonment the main attachment goal is proximity, closeness, while demonstrating high levels of anxiety regarding other's availability and maintaining intimacy with others (Christian et al., 2017; Schimmenti et al., 2014).

The attachment framework has been adopted by a variety of researchers in an effort to understand the developmental and environmental risk factors as well as the etiological origins of psychopathic traits (Conradi et al., 2016; Hong et al., 2016; Kyranides et al., 2021; Saltaris, 2002; Schimmenti et al., 2014). Studies have proposed that early maladaptive and insecure child-parent attachment (resulting from maternal deprivation, adverse childhood experiences) give rise to dysfunctional internal working models characterized by mistrust, lack of empathy and affect, which in turn increase the likelihood of the emergence of psychopathic traits (Blanchard & Lyons 2016; Kyranides et al., 2021; Saltaris, 2002; Schimmenti et al., 2014). However some studies have found no relationship between psychopathy and attachment (Brennan & Shaver, 1998). Furthermore findings seem to differ regarding the specific association with primary and secondary psychopathic traits and avoidant and anxiety attachment in clinical and non-clinical populations due to the different conceptualizations of psychopathy and insecure attachment dimensions (Brewer et al., 2018; Conradi et al., 2016; Kyranides et al., 2021; Mack et al., 2011; Schimmenti et al., 2014). Avoidant attachment is more prevalent in individuals who also exhibit high levels of primary and secondary psychopathic traits while secondary psychopathic traits were associated with attachment anxiety (Blanchard & Lyons, 2016; Brewer et al., 2018). In contrast Mack and colleagues (2011) found that individuals with a combination of both attachment avoidance and anxiety had higher primary scores while individuals high in both attachment dimensions were independently associated with secondary scores. The findings regarding the associations between attachment, primary and secondary psychopathic traits are far from conclusive, suggesting that further research is needed.

Cognitive Emotion Regulation Strategies

Cognitive emotion regulation also known as ‘cognitive coping’, refers to the cognitive and conscious way of ‘handling’ the intake of emotionally arousing information, through the

use of cognitive emotion regulation strategies (CERS) (Garnefski & Kraaij, 2006). CERS can be categorized as adaptive or maladaptive, depending on their efficacy in altering one's negative emotional state. Adaptive CERS (i.e. "positive refocusing") are considered to be strategies which are successful in minimizing aversive emotions and function as protective factors against psychopathology while maladaptive CERS (e.g. "rumination", "catastrophizing") are unsuccessful in reducing negative emotions (Aldao et al., 2014). The use of maladaptive CERS has been associated with negative long-term psychological consequences, vulnerability to emotional problems and increased risk of psychopathology (Garnefski & Kraaij, 2006) while adaptive CERS have been associated with well-being (Balzarotti et al., 2016).

A number of studies provide evidence regarding the link between emotion regulation difficulties and psychopathic features (Donahue et al., 2014; Garofalo et al., 2018; Heinzen et al., 2011). With regard to maladaptive strategies individuals with psychopathic traits often suppress negative thoughts and emotions and use less adaptive strategies like reappraisal (Kyranides et al., 2017). More specifically secondary psychopathic traits are associated with high levels of emotion dysregulation while primary psychopathic traits were linked with dysfunctional affective processing; a core component of emotion regulation (Garofalo et al., 2018). Individuals with primary psychopathic traits are associated with less capacity for emotion (less likely to experience feelings of distress), they are associated with more emotional stability than secondary traits (Gill & Stickle, 2016; Hicks et al., 2004). In contrast individuals with secondary psychopathic traits are associated with amplified emotions, maladaptive emotion regulation as indicated by their poor emotional control and high levels of psychopathology (Del Gaizo & Falkenbach, 2008; Donahue et al., 2014; Gill & Stickle, 2016; Hicks et al., 2004). According to the above literature, a relationship between psychopathic traits and the utilization of maladaptive CERS to manage negative affect would

be expected. However, the direct link between both primary and secondary psychopathic traits with different adaptive (e.g., positive reappraisal, refocus on planning) and maladaptive (e.g., catastrophizing, ruminating) CERS has not yet been assessed and thus further research identifying the specific underlying CERS that sustain these traits is warranted.

The current research study explores the relationship between primary and secondary psychopathic traits with attachment dimensions of avoidance and anxiety, as well as with adaptive and maladaptive CERS. This is the first study to our knowledge to examine the relationship between attachment dimensions and different CERS with primary and secondary psychopathic features specifically. Based on previous research it can be hypothesised that primary and secondary psychopathic traits will be positively correlated with insecure attachment dimensions. According to the distinction between the primary and secondary psychopathy facets, it is hypothesized that primary psychopathic traits will be positively associated with avoidance given that individuals high in attachment avoidance view others as undependable, rely on self for personal needs and supress thoughts and feelings of vulnerability to others. Secondary psychopathic traits on the other hand will be positively associated with anxiety attachment, given that that individuals with high anxiety attachment have a negative view of self, overly engage in proximity seeking behaviours and have a hyper accessibility to negative emotions. Additionally since secondary psychopathic features are thought to stem from environmental adversities, these are expected to be associated more strongly with the attachment dimensions. With regard to CERS, it can be hypothesised that both primary and secondary psychopathic traits will be positively associated to maladaptive and negatively associated with adaptive CERS however, it is not clear which strategies will be more prevalent in individuals with high levels of primary as oppose to secondary psychopathic traits. Since individuals with elevated levels of primary traits are emotional detach, less distressed and more in control of their emotions than individuals with secondary

psychopathic traits, it is expected that ‘catastrophizing’, ‘ruminating’ and ‘self-blame’ will be strategies associated more with secondary psychopathic traits.

Method

Participants

Initially a sample of 351 participants was recruited, however 13 participants data were removed due to providing incomplete responses, resulting in a final sample of 338 participants. Participants age ranged from 18 to 70 years old (M= 35.11, SD= 13.49) and included both males (n=107) and females (n=231). The majority of the participants were employed full time (41%) or part time (14.3%), while 33.8% were studying, 5.7% were retired and 5.2% unemployed. With regards to education, the majority of participants had received an undergraduate degree (38.5%) or a postgraduate degree (29.3%), a college or university diploma (14.4%) or secondary/high school diploma (14.9%), while a smaller percentage (2.9%) had a doctorate (PhD).

Procedure

To take part in the study participants had to be over the age of 18 and be fluent in English and were recruited from the community. The study was approved by the Ethics Research Committee of the University of XXX. Participants were asked to provide consent before proceeding to complete the battery of questionnaires which were administered through the Bristol Online Survey a secure web-based tool. The link was shared via a poster which was advertised through social media platforms, which provided the participants with a free and easier access to the questionnaires from their private devices (smartphones, computers, iPads). Participants provided some demographic information (age, gender), followed by the questionnaires accessing psychopathic traits, attachment and cognitive emotion regulation strategies, which were administered in the same order for all participants. The survey took

about 15-20 minutes to complete and participation was voluntary. At the end of the study, participants were debriefed and thanked for their time.

Measures

Levenson Self-Report Psychopathy Scale (LSRP; Levenson et al., 1995)**.** The LSRP scale is a validated 26-item self-report questionnaire which assesses both primary and secondary psychopathic traits. The primary subscale assess the interpersonal and affective characteristics of psychopathy (α= .85; e.g., "I enjoy manipulating other people's feelings"). The secondary psychopathy subscale examines behaviours related to impulsivity and antisocial lifestyle (α= .66; e.g. "When I get frustrated I often let off steam by blowing my top"). The items are scored on a 4-point Likert scale from 1 (*Disagree Strongly*) to 4 (*Agree strongly*). The LSRP has good validity; high test-retest reliability and internal reliability (Alzeer et al., 2019; Levenson et al., 1995).

Relationship Scale Questionnaire (RSQ; Griffin & Bartholomew, 1994**).** The RSQ is 30-item self-report questionnaire designed to measure adult attachment in terms of general orientations to close and interpersonal relationships. The RSQ's subscales can be used to obtain the two-category model of adult attachment which underlie the two dimensions of anxiety (α= .86; e.g., "I worry about being abandoned") and avoidance (α= .77; e.g. "I prefer not to have other people depend on me"). Participants using a 5-point Likert scale; 1 (*not at all like me*) to 5 (*very much like me*), to rate how well each statement. The RSQ supports the two-factor model (Kurdek, 2002) and has good reliability (Alzeer et al., 2019; Kurdek, 2002).

Cognitive Emotion Regulation Questionnaire (CERQ; Garnefski et al., 2002)**.** The CERQ is a 36-item self-report questionnaire developed to examine the self-regulating and cognitive components of emotion regulation. It examines specific cognitive coping strategies individuals apply after experiencing a negative or stressful situation (Garnefski & Kraaij,

2006). The instrument consists of nine theoretically discrete scales which can be categorized as adaptive or maladaptive CERS. There are four maladaptive CERS: "self-blame" (α =.83, e.g. "I feel that I am the one to blame for it"), "other-blame" (α =.89, e.g. "I feel that others are to blame for it"), "catastrophizing" (α =.77, e.g. "I keep thinking about how terrible it is what I have experience") and "rumination" (α =.80, e.g. "I often think about how I feel about what I have experienced"). There are also five adaptive CERS: "putting into perspective" (α= .85, e.g. "I think that other people go through much worse experiences" "), "positive refocusing" (α =.89, e.g. "I think of nicer things than what I have experienced"), "positive reappraisal" (α =.89, e.g. "I think I can learn something from the situation), "refocus on planning" (α =.79, e.g. "I think about how I can best cope with the situation"), "acceptance" (α=.74, e.g. "I think that I have to accept the situation"). Participants were asked to rate each statement in terms of how they feel or act in response to stressful or threating life events on a 5-point Likert scale ranging from 1 (*Almost never*) to 5 (*Almost always*). The CERQ was shown to have good factorial validity and high reliability in different languages and cultures (Garnefski et al., 2002).

Results

Preliminary analyses included checking for missing data, outliers and normality of distribution. Demographic characteristics of participants were explored followed by independent t-tests to examine gender differences on psychopathic traits, attachment dimensions and cognitive emotion regulation strategies (table 1). Differences in levels of primary and secondary psychopathic traits were identified between male and female participants, with men reporting higher levels in both cases. Additionally male and female participants showed differences in the frequency of ruminating, with female participants

reporting ruminating more often than men. No other differences were identified between male and females.

Table 1. *Means, Standard Deviations (SD), for men and women including Psychopathic Traits, Attachment and Cognitive Emotion Regulation Strategies*

	Total (N = 338)	Men (n = 104)	Women (n = 234)	
	Mean (*SD*)	Mean (*SD*)	Mean (*SD*)	*t*
Primary Psychopathic Traits	26.31 (7.21)	29.86 (7.38)	24.74 (6.57)	6.37*
Secondary Psychopathic Traits	19.71 (4.26)	20.98 (4.05)	19.15 (4.24)	3.71*
Attachment Avoidance	3.17 (.66)	3.23 (.59)	3.14 (.69)	1.13
Attachment Anxiety	2.83 (.77)	2.74 (.70)	2.87 (.80)	1.46
Self blame	12.70 (3.04)	12.61 (2.75)	12.73 (3.17)	.32
Other-blame	9.59 (3.20)	9.44 (3.21)	9.66 (3.20)	.56
Rumination	14.11 (3.29)	13.12 (3.33)	14.55 (3.18)	3.78*
Catastrophizing	9.01 (3.20)	8.54 (2.91)	9.22 (3.31)	1.81
Positive Refocusing	12.42 (3.51)	11.94 (3.67)	12.63 (3.42)	1.66
Positive Reappraisal	15.20 (3.53)	15.27 (3.77)	15.18 (3.43)	.23
Refocus on Planning	15.43 (2.90)	15.72 (2.80)	15.29 (2.94)	1.25
Putting in Perspective	14.66 (3.24)	14.69 (3.27)	14.65 (3.24)	.12
Acceptance	14.18 (2.79)	14.35 (2.84)	14.10 (2.77)	.74

*$p < .01$

Pearson's correlations were conducted to examine the relationship between psychopathic traits (primary and secondary) amongst attachment dimensions and CERS (table 2). A significant positive correlation was found between secondary psychopathic traits and the avoidance and anxiety dimensions, but this was not the case for primary psychopathic traits. With regards to CERS, 'catastrophizing' was the only significant maladaptive strategy

that was positively correlated with primary psychopathic traits, while secondary psychopathic traits were positively correlated with all the maladaptive CERS although some of these correlations were low (e.g., ‘blaming others’, ‘rumination’). ‘Positive reappraisal’ was the only adaptive CERS that was positively correlated to primary psychopathic traits, while secondary psychopathic traits were negatively correlated to all the adaptive CERS although some of these correlations were low (e.g., ‘refocus on planning’, ‘putting into perspective’). ‘Acceptance’ was the only CERS which showed no correlation with either primary or secondary psychopathic traits.

Table 2. *Correlations for the main study variables*

	1	2	3	4	5	6	7	8	9	10	11	12
1. Primary Psychopathic Traits	-											
2. Secondary Psychopathic Traits	.45**	-										
3. Attachment Avoidance	.09	.11*	-									
4. Attachment Anxiety	.10	.33**	.12*	-								
5. Self blame	-.02	.21**	-.06	.31**	-							
6. Other-blame	.09	.13*	.07	.18**	-.00	-						
7. Rumination	-.04	.13*	-.10	.34**	.47**	.18**	-					
8. Catastrophizing	.11*	.30**	-.01	.34**	.32**	.35**	.33**	-				
9. Positive Refocusing	-.10	-.21**	-.12*	-.17**	-.16**	.03	-.13*	-.20*	-			
10. Positive Reappraisal	.13*	-.15**	-.03	-.11*	-.12*	-.10	-.06	-.24**	.34**	-		
11. Refocus on Planning	.08	-.11*	.02	-.11*	-.04	-.04	-.11*	-.13*	.30**	.52**	-	
12. Putting in Perspective	-.09	-.11*	.07	-.12*	-.07	-.01	-.10	-.22**	.30**	.34**	.21**	-
13. Acceptance	.05	.04	.02	.12*	.07	.02	.10	-.00	.03	.08	-.02	.16**

*$p < .05$. **$p < .01$.

Multiple hierarchical linear regression analyses, were carried out to examine the degree to which gender and age, attachment dimensions and CERS contribute to the prediction of the two factors of psychopathy (primary and secondary psychopathic traits). This approach was used, to identify the strongest predictors for the two psychopathic facets and if different independent predictors emerge. To control for the demographics' effect on the prediction of both primary and secondary psychopathic traits, age and gender were entered at step one. The dimensions of avoidance and anxiety were entered at step two, while maladaptive CERS ('self-blame', 'other-blame', 'rumination' and 'catastrophizing') were entered at step three. The remaining adaptive CERS ('positive refocusing', 'positive reappraisal', 'refocus on planning', 'putting into perspective' and 'acceptance') were entered at the final step. The same method for entering the different variables was conducted for both primary and secondary psychopathic traits.

The hierarchical multiple regression for primary psychopathic traits (table 3) revealed that the demographics (age and gender), contributed significantly $F(2, 337)=51.72$; $p<.001$ and accounted for 24% of the variance of primary psychopathic traits. Introducing the attachment variables at step two explained an additional 2% of variation, *F Change* = (2, 333) =4.25, p =.02 while adding maladaptive CERS at step three explained an additional 2% of the variation in primary psychopathic traits, which was also significant, *F Change* = (4, 329)=2.88, p =.02. For the final step, the addition of the adaptive CERS explained an additional 3% of the variance *F Change* (5, 324) = 2.76, p =.02. In the final model which explained 31% of the variation in primary psychopathic traits, $F(13, 337) = 11.17$, $p<.001$, age was a negative predictor, while gender was also identified as a predictor suggesting that males were more likely to display primary psychopathic traits. With regards to the attachment dimensions, avoidance was a positive predictor for primary psychopathic traits while anxiety was not. 'Blaming others' was the only maladaptive CERS that arose as a significant

predictor for primary psychopathic traits while 'putting into perspective' was identified as significant negative predictor. Surprisingly 'positive reappraisal' an adaptive CERS arose as a positive predictor for primary psychopathic traits.

Table 3. *Hierarchical Regression Analysis predicting primary psychopathic traits*

Variable	*B*	*SE*	*β*	*p*	*95% CI*		R^2	ΔR^2
					LL	*UL*		
Step 1					37.23	43.04	.24**	.24**
Age	-.20	.03	**-.36**	<.001	-.25	-.14		
Gender[a]	-4.12	.76	**-.26**	<.001	-5.61	-2.63		
Step 2					29.74	39.36	.26**	.02*
Age	-.20	.03	**-.37**	<.001	-.25	-.15		
Gender[a]	-4.03	.76	**-.26**	<.001	-5.53	-2.54		
Attachment Avoidance	1.35	.53	**.12**	.01	.31	2.40		
Attachment Anxiety	.47	.46	.05	.30	-.43	1.37		
Step 3					29.79	41.17	.28**	.02*
Age	-.20	.03	**-.39**	<.001	-.26	-.16		
Gender[a]	-4.03	.77	**-.26**	<.001	-5.54	-2.51		
Attachment Avoidance	1.23	.53	**.11**	.02	.19	2.27		
Attachment Anxiety	.43	.50	.05	.39	-.56	1.42		
Self blame	-.21	.13	-.09	.11	-.47	.05		
Other-blame	.20	.12	.09	.08	-.03	.43		
Rumination	-.09	.13	-.04	.50	-.33	.16		
Catastrophizing	.20	.12	.09	.11	-.04	.44		
Step 4					25.25	41.18	.31**	.03*
Age	-.20	.03	**-.36**	<.001	-.25	-.14		
Gender[a]	-4.01	.77	**-.26**	<.001	-.5.52	-2.50		
Attachment Avoidance	1.29	.53	**.12**	.02	.24	2.34		
Attachment Anxiety	-.36	.50	-.04	.48	-.63	1.35		
Self blame	-.17	.13	-.07	.19	-.43	.09		
Other-blame	.23	.12	**.11**	.05	.01	.46		
Rumination	-.11	.13	-.05	.39	-.36	.14		

Catastrophizing	.22	.13	.10	.08	-.03	.47
Positive Refocusing	-.06	.11	-.03	.58	-.28	.16
Positive Reappraisal	.38	.12	**.19**	.001	.15	.62
Refocus on Planning	-.05	.14	-.02	.75	-.32	.24
Putting in Perspective	-.26	.12	**-.12**	.03	-.49	-.03
Acceptance	.04	.12	.02	.73	-.20	.29

Note. *CI* = Confidence Interval; *LL* = Lower Limit; *UL* = Upper Limit; [a]1= male; 2=female; *p< .05, ** p< .01

For secondary psychopathic traits (table 4), the hierarchical multiple regression revealed that age and gender contributed significantly $F(2, 337) = 12.26$ $p<.001$ and accounted for 7% of the variance. Adding the attachment variables explained an additional 10% of variation, *F Change* (2, 333) = 21.37, $p<.001$ which is higher compared to the variance explained when the same variables were added for primary psychopathic traits. The inclusion of maladaptive CERS explained an additional 5% of the variation, *F Change* (4, 329) = 5.02, $p = .001$ for secondary psychopathic traits. In the final model all the predictor variables accounted for 23% of the variance in secondary psychopathic traits $F(13, 337) = 7.46$, $p < .001$, however the addition of the adaptive CERS did not contribute to any additional variance *F Change* (5, 324) = .73, $p = .60$. In the final model, similarly to primary psychopathic traits, age was a negative predictor and gender also arose as a significant predictor suggesting that males are more likely to display secondary psychopathic traits. From the attachment dimensions, only anxiety was a positive predictor, while avoidance was not while from the maladaptive CERS 'catastrophizing' was the only positive predictor identified for secondary psychopathic traits, self-blame and rumination were not.

Table 4. *Hierarchical Regression Analysis predicting secondary psychopathic traits*

Variable	*B*	*SE*	*β*	*p*	*95% CI*		R^2	ΔR^2
					LL	*UL*		
Step 1					22.36	26.15	.07**	.07**

Age	-.06	.02	**-.17**	.001	-.09	-.02		
Gender[a]	-1.55	.50	**-.17**	.002	-2.52	-.57		
Step 2					14.62	20.61	.17**	.10**
Age	-.0.4	.02	**-.13**	.01	-.07	-.01		
Gender[a]	-1.79	.47	**-.19**	<.001	-2.72	-.86		
Attachment Avoidance	.56	.33	.09	.09	-.09	1.21		
Attachment Anxiety	1.71	.28	**.31**	<.001	1.15	2.26		
Step 3					11.87	18.86	.22**	.05**
Age	-.04	.02	**-.12**	.02	-.07	-.01		
Gender[a]	-1.90	.47	**-.21**	<.001	-2.83	-.97		
Attachment Avoidance	.60	.32	.09	.06	-.03	1.24		
Attachment Anxiety	1.23	.31	**.22**	<.001	.62	1.83		
Self blame	.09	.08	.07	.25	-.07	.25		
Other-blame	.03	.07	.02	.70	-.11	.17		
Rumination	-.03	.08	-.02	.71	-.18	.12		
Catastrophizing	.28	.08	**.21**	<.001	.13	.43		
Step 4					13.24	23.17	.23**	.01
Age	-.04	.02	**-.12**	.02	-.07	-.01		
Gender[a]	-1.86	.48	**-.20**	<.001	-.2.81	-.92		
Attachment Avoidance	.58	.33	.09	.08	-.08	1.23		
Attachment Anxiety	1.17	.31	**.21**	<.001	.55	1.78		
Self blame	.09	.08	.06	.30	-.08	.25		
Other-blame	.04	.07	.03	.60	-.10	.18		
Rumination	-.02	.08	-.02	.80	-.18	.14		
Catastrophizing	.24	.08	**.18**	.002	.09	.40		
Positive Refocusing	-.07	.07	-.06	.32	-.21	.07		
Positive Reappraisal	-.04	.07	-.03	.60	-.19	.11		
Refocus on Planning	-.05	.09	-.03	.58	-.22	.13		
Putting in Perspective	-.01	.07	-.01	.90	-.15	.13		
Acceptance	-.01	.08	-.01	.92	-.16	.14		

Note. *CI* = Confidence Interval; *LL* = Lower Limit; *UL* = Upper Limit; [a]1= male; 2=female;

*p< .05, ** p< .01

Discussion

The purpose of the present study was to further elucidate the relationship between primary and secondary psychopathic traits and attachment representations of avoidance and anxiety attachment but also to examine the relationship with adaptive and maladaptive CERS. Findings of the current study showed that men and younger individuals are more likely to display both primary and secondary psychopathic traits. The anxiety dimension made a unique contribution to secondary psychopathic traits while avoidance made a unique contribution for primary psychopathic traits. Additionally, and most importantly, our study aimed to fill a gap in the literature by exploring the association adaptive and maladaptive CERS, and primary and secondary psychopathic traits. 'Catastrophizing' arose as the only risk factor associated with secondary psychopathic traits. 'Blaming others' and 'positive reappraisal' arose as risk factors for primary psychopathic traits, while 'putting into perspective' was a protective factor. The present study highlights the importance of assessing psychopathic traits as a heterogeneous concept, in order to have a more profound understanding of the distinct attachment behaviours and the application of specific CERS in individuals with primary and secondary psychopathic traits.

The dimension of avoidant attachment arose as a significant predictor for primary psychopathic traits which is aligned with prior studies (Brewer et al., 2018; Conradi et al., 2016; Mack et al., 2011) while the anxiety dimension was a risk factor for secondary psychopathic traits (Blanchard & Lyons, 2016). Brewer and colleagues (2018) also found that primary psychopathic traits were predicted by attachment avoidance, whereby women high on primary psychopathic traits reported avoiding any kind of interpersonal closeness and intimacy with partners. The findings are also in line with the conceptualization that primary psychopathy whereby an individual with these traits is described as emotional detached, shows shallow emotions, affective deficiencies and is unable to form and sustain long lasting

interpersonal relationships (Karpman, 1941). On the other hand, secondary psychopathic traits have often been associated with elevated levels of trait anxiety and negative affect (Gill & Stickle, 2016; Hong et al., 2016). Studies have shown that impulsive traits and irresponsible behaviour of the secondary psychopathy facet have been associated with anxious experiences relating to fear of abandonment and rejection in close relationships (e.g., Conradi et al., 2016). High trait anxiety and emotional disturbances exhibited by individuals with secondary psychopathic traits are thought to be influenced by dysfunctional environments in early childhood e.g., parental rejection, neglect, abuse (Hong et al., 2016) which may explain the higher variance explained by the attachment variables for the secondary psychopathic traits found in our study. In contrast the largest influence explaining primary psychopathic traits were the demographic variables (gender and age), while the attachment dimensions seem to have less of an influence. These findings are alighted to Karpman's (1941) differentiation of primary and secondary profiles with the 'primary' profile resulting from a genetically based deficit in emotion processing while the 'secondary' profile is thought to produced by pathogenic environmental factors.

Another aim of this study was to examine how different CERS adaptive and maladaptive, relate to primary vs secondary psychopathic traits. To our knowledge this is the first study to do this separately for primary and secondary psychopathic traits with the results yielding rather interesting findings. Overall results closely resemble previous findings regarding the quality of emotion regulation and psychopathic traits (Garofalo et al., 2018). From the maladaptive CERS 'catastrophizing' was the only risk factor identified for secondary psychopathic traits while no protective factors for these traits were found. Although both primary and secondary psychopathic traits were expected to be associated with maladaptive CERS, catastrophizing was associated with secondary psychopathic traits. This finding is alighted with prior work (Durand & Plata, 2017) showing a positive association

when using the pain catastrophizing scale and the Impulsive Antisociality facet of the Psychopathic Personality Inventory (PPI-II), that is more closely related to secondary psychopathic traits. Our study extends prior work (Durand & Plata, 2017) showing that individuals with secondary psychopathic traits catastrophize their pain, but they also use this maladaptive strategy more generally and not only in relation to pain but also when dealing with unfortunate situations and negative events. Catastrophizing has been linked to higher levels of negative mood and reduced personal growth (Balzarotti et al., 2016; Sturgeon &Zautra, 2013), as individuals who catastrophize use a "narrowing focus" on the potential signals of danger and pain which contribute to a more rigid and less effective style of copying. Individuals that tent to catastrophize are less able to disengage from signals of pain and are more vigilant and fearful of pain-related cues (Kyranides et al., 2020) further exacerbating and reinforcing maladaptive beliefs.

In contrast 'blaming others' was the only maladaptive CERS that arose as a risk factor for primary psychopathic traits, which is alighted with prior work (e.g., DeLisi et al., 2014). Delisi and colleagues (2014) found that the psychopathic feature that was most strongly and consistently associated with career criminality, was blame externalization. Our study adds to the current literature showing that this maladaptive strategy of refusing to accept responsibility for one's antisocial conduct is accomplished by deflecting blame outward and seems to be contributing to the maintenance of primary psychopathic traits specifically. Surprisingly 'positive reappraisal' an adaptive strategy was also found to be a risk factor for primary psychopathic traits whereby a negative or stressful event is attributed a positive meaning in order to enable one to adapt to the current negative situation. This is the first study to our knowledge to show that individuals with high primary psychopathic traits use positive reappraisal more frequently to deal with negative events and this seems to be associated specifically to the primary psychopathic features as oppose to secondary and might

be contributing to the sustainability of these personality traits. Individuals using positive reappraisal in response to stressful events showed reduced distressed which is alighted with the profile of individuals with primary psychopathic traits (Karpman, 1941; Levenson et al., 1995). This finding is in contrast to prior work (Kyranides et al., 2017), that found a negative association between the affective facet of psychopathy and cognitive reappraisal. The difference in findings between the Kyranides and colleagues (2017) study might be due to the different measures used to access psychopathic traits and reappraisal (positive vs cognitive). Although a positive moderate correlation (r = .37) was found between *positive* reappraisal and *cognitive* reappraisal in Balzarotti and colleagues study (2016) this suggests that these two constructs might not be the same. Future studies should replicate these findings. The current study also found that the adaptive CERS 'putting into perspective' acted as a protective factor for primary psychopathic traits. This is the first study to show that individuals who are able to 'put things into perspective' when faced with difficult situations are less likely to show elevated primary psychopathic traits. This is not surprising considering that this adaptive strategy has been associated with wellbeing (Balzarotti et al., 2016).

The current research's importance lies in its practical implications for treatment. Many have argued that individuals with psychopathic traits cannot benefit from treatment (Reidy et al., 2013). The reason for this might be that the treatments currently available are not targeting specific deficits or not taking into account the profile of the individual (specific deficits and personality traits). The findings of the current study indicate that insecure dimensions of attachment significantly contribute to the emergence of both primary (with a focus on avoidance) and secondary psychopathic traits (with a focus on anxiety). This suggests that attachment-based interventions will be especially beneficial for individuals with secondary psychopathic traits that should focus on addressing anxiety that steams from maladaptive attachment relationships (parental, peer or romantic). In contrast our findings

suggest that interventions for individuals with primary psychopathic traits should be focused on addressing avoidance behaviors/patterns. However it should be highlighted that psychopathic traits can be treated, if individuals are identified early when these insecure attachments are formed, ideally in childhood, while community based prevention programs (e.g. Kyranides et al., 2018) can be used to avoid stigmatization associated with these traits.

The utilization of either adaptive or maladaptive CERS may determine the origin or the endurance of psychopathic traits, and serve as a vital indicator of the psychopathic individual's significant emotional disturbances and how these may be treated (Heinzen et al., 2011). An increasing number of evidence-based treatments focus on enhancing adaptive emotion regulation strategies, with cognitive behavioural therapy trying to minimizing maladaptive emotion regulation strategies (e.g. "avoidance") (Barlow et al., 2010), while increasing the use of adaptive emotion regulation strategies (e.g. "positive reappraisal") (Barlow et al., 2004). Treatments focusing on the utilization of adaptive emotion regulation strategies have shown to be effective at post-treatment, and to significantly minimize a wide range of emotional symptoms, such as anxiety (Aldao et al., 2014). Individuals with secondary psychopathic traits may benefit from such interventions as they exhibit elevated emotional symptoms including feelings of distress and anxiety (Heinzen et al., 2011) which might also help with reducing the frequency by which they catastrophize. The broaden-and-built theory of positive emotion (Algoe, & Fredrickson, 2011) suggests that positive affect may aid to counter the cognitively narrowing effects of catastrophizing. However this might not be the best course of treatment for individuals with primary psychopathic traits who, based on the current findings, tend to blame others and this dysfunctional strategy might be related to their avoidant behaviour. During times of increased pain (whether that is physical or emotional) individuals may lose their ability to appreciate the complex nature of their social relationships and become more prone to classifying their relationships as entirely

positive or negative. Individuals with elevated primary psychopathic traits might benefit from interventions that focus on addressing this maladaptive copying strategy (blaming others) that affects their behaviour and social interactions and increase the use of strategies like putting things into perspective. This study suggests that to aid the formation of interventions for individuals with primary and secondary psychopathic traits we need to target specific skills and mechanisms related to different attachment dimensions and CERS.

Limitations and Future Research

There are some methodological limitations in the current study that should be addressed. The cross-sectional nature of this study does not allow inferring causal relationships between psychopathic traits, attachment and CERS. Longitudinal studies are required to truly understand the direction of the relationship between these variables and to establish the causal chain of effects by assessing psychopathic traits, attachment and CERS over multiple occasions. Additionally psychopathic traits, attachment and CERS were assessed exclusively via self-reports, subject to social desirability bias. The use of alternative methods, such as observational methods or semi-structured interviews, along with self-reports will provide a more in-depth and more accurate representation of the measures under study.

Conclusion

The current study examined the relationship between attachment and CERS with primary and secondary psychopathic traits in a non-clinical population. Distinct patterns of effects for attachment dimensions and CERS emerged highlighting the differences between the two psychopathic constructs. Attachment avoidance was shown to be a risk factor for primary while attachment anxiety was a risk factor for secondary psychopathic traits and different CERS were identified to be associated with primary and secondary psychopathic traits. Understanding the dynamic role of adaptive and maladaptive CERS and their

relationship to psychopathic traits is essential in terms of understanding a range of emotional, behavioural and cognitive deficits associated with these traits. The findings of the current study hold important implications that can help clinicians identify specific therapeutic targets.

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