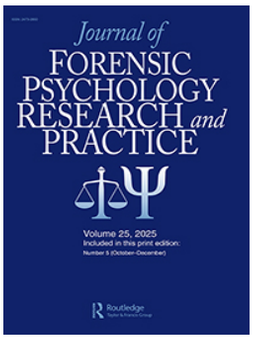

Routledge
Taylor & Francis Group

Journal of Forensic Psychology Research and Practice

ISSN: 2473-2850 (Print) 2473-2842 (Online) Journal homepage: www.tandfonline.com/journals/wfpp21

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To cite this article: Bruno Bonfá-Araujo, Makilim Nunes Baptista, Pedro Pechorro, João Maroco, Víthor Rosa Franco, Cristina Nunes & Peter K. Jonason (19 Dec 2025): The Interplay of Personality Traits and Early Life Experiences in Predicting Delinquent Behaviors, Journal of Forensic Psychology Research and Practice, DOI: 10.1080/24732850.2025.2605646

To link to this article: https://doi.org/10.1080/24732850.2025.2605646

Published online: 19 Dec 2025.

JOURNAL OF FORENSIC PSYCHOLOGY RESEARCH AND PRACTICE
https://doi.org/10.1080/24732850.2025.2605646

The Interplay of Personality Traits and Early Life Experiences in Predicting Delinquent Behaviors

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ABSTRACT

This study explores the interplay between family bonds, attachment styles, emotional regulation, dark personality traits, and delinquent behaviors. We assessed 336 Brazilians (M = 24.61, SD = 8.30), using network analysis. Participants were assessed using the Proposed Specifiers for Conduct Disorder, Parental Bonding Instrument, Difficulties in Emotion Regulation Scale, The Brazilian Adult Attachment Scale, The Short Dark Tetrad, and the Self-Report Delinquency Scale. Our findings suggest that attachment and family bonds influence emotional regulation, affecting delinquent behaviors. Dark personality traits are strong predictors of delinquent behaviors. We highlight the importance of early life experiences and personality in understanding delinquent and antisocial behaviors.

KEYWORDS

Attachment styles; emotional regulation; personality

Literature shows that family ties, as well as attachment styles, are associated with personality traits and violent behavior, including personality disorders (Levy et al., 2015; Schorr et al., 2021), and may be associated with traumatic events in childhood, such as family violence and violent crimes (i.e., murder, rape, child sexual abuse, armed robbery, assault causing bodily harm; Gao et al., 2010). For example, emotion dysregulation is associated with maladaptive outcomes that have intensified during the COVID-19, particularly in individuals facing psychosocial stressors, social isolation, and disrupted access to care. These conditions have increased vulnerability to emotional instability and suicidal behavior across at-risk groups (Amerio et al., 2020). Thus, the assessment of explanatory models between these constructs (i.e., bonds, attachment, personality, and delinquent behavior) is sparse in the literature. Yendell et al. (2022) evaluated how much the Dark Triad and parenting styles

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are associated with violent behavior. However, the role of attachment in this relationship was not assessed; in addition, we did not find a study with these variables in Latin American samples, that is, non-WEIRD (i.e., Western, Educated, Industrialized, Rich, and Democratic) individuals. Thus, this study aimed to explore the associations between bonds and family environment, emotional regulation, attachment styles, antagonistic personality traits, and delinquent behavior through network analysis.

Aversive personality and delinquency

Personality is perhaps one of the main variables that can explain violent behavior; however, social and cultural variables are also fundamental for explaining delinquency. Delinquency, which can be expressed by violent and nonviolent behavior, is a prominent problem in societies. Like most phenomena, it encompasses biological and psychosociocultural variables, which are interrelated in various ways, generating complex models in their understanding (Allen et al., 2018; Bannon et al., 2015). Furthermore, distal and proximal variables are part of possible explanations for this issue (Smith-Marek et al., 2015). Among the psychosociocultural variables, some seem to be fundamental in understanding how young people show higher levels of violent behavior, such as relationships and family environment (bonds and previous experiences), development of attachment, and personality/dark personality traits (Bonfá-Araujo et al., 2022; Geerlings et al., 2020; Shek & Lin, 2016). For example, aversive traits have also been associated with treatment nonadherence and poor clinical outcomes, particularly among individuals with mood disorders. In this context, nonadherence was linked to illness severity, comorbid substance use, and treatment side effects, factors that are relevant in some disorders (Pompili et al., 2009).

The Dark Triad was first introduced by Paulhus and Williams (2002), highlighting three personality traits associated with a common callous core. The triad is composed of Machiavellianism, subclinical narcissism, and psychopathy. Machiavellianism involves manipulative behaviors, exploiting others, disrespect, cynicism for morality, and focusing on self-interest and personal gain. Narcissism is characterized by grandiosity, a sense of superior rights to others, selfishness, dominance, and superiority, and the pursuit of vanity gratification or selfish admiration of one's own attributes. Finally, psychopathy is a trait modulated by antisocial behaviors, impulsivity, diminished feelings of remorse and empathy, and daring behavior (Muris et al., 2017; Paulhus & Williams, 2002).

When Paulhus and Williams (2002) presented the Dark Triad model, the number of studies on the combination of psychopathy, Machiavellianism, and narcissism accelerated. The Dark Triad model (Paulhus & Williams, 2002) was expanded by adding a dimension of everyday sadism to create the Dark Tetrad (Paulhus, 2014). Sadism, or everyday sadism, can be seen when people enjoy watching violent movies or even playing violent games as a social escape to

manifest their sadistic traits (Paulhus, 2014). The Dark Tetrad is related to several characteristics, such as genetic, social, and psychological aspects, and is associated with deviant behavior. For example, it may increase the probability of the individual engaging in violent acts and possibly be associated with contradictions in social norms, rules, or minor misdemeanors, which may culminate in violent acts subject to arrest (Thomas & Egan, 2022).

Attachment and development

Initial family relationships and attachment styles are acquired during early childhood and continue to develop, generally starting with parental figures (or caregivers) and encompassing security, avoidance, and anxiety profiles, i.e., relational behavior modes that can be generalized for relationships during life, including being influenced by different family configurations (Howard et al., 2017; Sutton, 2019). Despite some variability in the nomenclature and subdivisions of the attachment types, the secure style is associated with personal security and a feeling of comfort in relationships with others. In contrast, the fearful style is associated with the perception of little affective, critical care, or a feeling of rejection, and fear of intimacy. The disinvested one avoids close relationships, focusing on exploring the environment. The third style is the worried one, the individual needs to guarantee the attention of others, there is an exaggerated expression of emotions, but low autonomy and exploitation of the environment, with excessive fear of abandonment and rejection. The secure type is the only one that can be considered the most adapted in social relationships (Bartholomew & Horowitz, 1991; Bowlby, 1969). Although separating family relationships from the attachment process is complex, there are indications that the first family relationships can predict future attachment processes (Fraley & Roisman, 2019).

The association between attachment styles and dark personality traits was studied by Nickisch et al. (2020) in an attempt to associate these constructs. As a result, the authors found that the Dark Tetrad was associated with an insecure attachment style. Thus, grandiose narcissism decreases the likelihood of insecure attachment but increases the likelihood of association with psychopathy and sadism, in addition to which the tetrad explained 20% of the variance of attachment styles. Bloxsom et al. (2021) found that parental avoidance (i.e., avoidant attachment style) predicted dark personality traits (i.e., Machiavellianism and psychopathy), whereas anxious attachment predicted psychopathy. In addition, secure attachment was related to narcissism, as it tends to reduce anxiety in affective relationships. Bloxsom et al. (2021) also showed that psychopathy tends to predict avoidant attachment toward best friends and partners and that empathy plays an important mediating role between secure and insecure attachment and psychopathy.

Likewise, social (family) bonds are also directly related to violent behavior, as well as attachment styles (Savage, 2014), and have been shown to act as

protective factors against violent behavior (Lösel & Farrington, 2012). More specifically, Maniglio (2012), through a theoretical review, hypothesized that parental bonds would be associated with the development of attachment styles and, for example, in the case of sex offenders, family relationships can develop feelings of inferiority, low self-esteem, lack of trust and low social skills in consensual intimate relationships, leading to low levels of intimacy and satisfaction in romantic relationships and severe and chronic emotional loneliness, withdrawal, and possible negative attitudes (such as anger and hostility). Otherwise, Craig et al. (2013) reported that attachment may represent a potential mechanism by which parenting practices contribute to the emergence of traits related to psychopathy. It is also well documented in the literature that children who have suffered or witnessed violence have a greater tendency to be violent in adult life and that, in addition to modeling/modeling processes, violent behaviors also suffer cultural influences (Akers, 1985; Cohen, 1955).

Tajmirriyahi et al. (2021), using a sample different from those surveyed by the WEIRD parameter, found very similar results to samples from developed countries. Thus, dark traits are related to dysfunctional attachment styles, especially anxious attachment. That means insecure attachment styles and dysfunctional relationships with parents, both together, would increase the chances of developing aversive personality traits. Lastly, dark personality traits are also associated with nonviolent and violent delinquent behaviors (Jain et al., 2022). Pineda et al. (2021) evaluated the relationship between the Dark Tetrad and cyberbullying, reporting that this non-physically violent behavior is directly associated with the four traits of the Tetrad.

Tetreault et al. (2021) found a direct relationship between dark traits and physical and verbal violent behavior, also being higher in men. Yendell et al. (2022) carried out a study associating parental bonds with the Dark Triad and violent behavior, finding a positive association between the experience of parental rejection by both parents and punishment, as well as parental control and overprotection and Machiavellianism, narcissism, and psychopathy. Parental emotional warmth was negatively associated with Machiavellianism and psychopathy, while no significant association with narcissism was observed. Thus, parental relationships, the Dark Triad traits, and observation of peer violence significantly contributed to the propensity for violence. Finally, emotional regulation is directly linked to family patterns, personality traits, and the expression of delinquent behaviors. According to Haslam et al. (2019), the family plays an important role in the development of emotion regulation, such as anger control, linked to delinquent behaviors. Furthermore, some personality characteristics can be expressed in individuals' self-regulating ability (Hoyle & Gallagher, 2015).

Taken together, previous evidence suggests a developmental cascade linking early family experiences, personality, and behavior. Supportive parental bonds create secure attachment, which promotes adaptive emotional regulation and

prosociality. In contrast, dysfunctional family environments and insecure attachment styles contribute to emotional dysregulation and the presence of aversive personality traits. These traits, characterized by callousness and impulsivity, in turn increase vulnerability to delinquent and antisocial behaviors. Thus, bonding and attachment represent distant influences, emotional regulation a nearby mechanism, and dark personality traits amplifiers in the pathway toward delinquency.

Current study

Building on the above synthesis, we use network modeling to test whether (a) bonding/attachment predicts dysregulation, and (b) dysregulation and dark traits predict conduct-relevant outcomes, while (c) acknowledging correlational equivalence between certain domains. Therefore, this article explores the associations between bonds and family environment, emotional regulation, attachment styles, antagonistic personality traits, and delinquent behavior. Previous research on these associations has been conducted in WEIRD populations, limiting the generalizability of these findings. The present study addresses this gap by examining how family bonds, attachment styles, and emotion regulation interact with aversive personality traits to predict delinquent behaviors in a Brazilian community sample.

For this study, we had the following hypothesis. (H1) Parental bonding (higher care, lower overprotection) and secure attachment will be associated with lower emotion dysregulation; fearful and dismissing styles with higher dysregulation; (H2) Greater dysregulation will predict higher conduct-relevant outcomes; and (H3) The Dark Tetrad traits will show positive associations with conduct disorder factors beyond dysregulation and delinquency.

Method

Participants and procedures

Our sample consisted of 336 Brazilians, with a mean age of 24.61 ($SD = 8.30$, with a minimum of 18 and a maximum of 67). The majority were women ($n = 287$; 85.41%), single ($n = 280$; 83.3%), or married ($n = 43$; 12.8%). Regarding race, most identified themselves as white ($n = 223$; 66.4%) or brown ($n = 81$; 24.1%). Living mainly in the Southeast ($n = 152$; 45.2%) or South ($n = 93$; 27.7%) regions of Brazil, respectively in the capitals of their states ($n = 135$; 40.2%) or medium-sized cities (i.e., between one hundred and five hundred inhabitants; $n = 104$; 31%). During data collection, participants were mostly unemployed ($n = 105$; 31.25%) or had worked for private companies ($n = 73$; 21.72%), their income varied mainly from one to three minimum wages ($n = 149$; 44.3%; from US$ 240.0 to US$ 720.0) and less than one minimum wage ($n = 137$; 40.8%; approximately $240.00). Our study followed the ethical research procedures proposed by the Declaration of Helsinki.

We collected the data online using the Google Forms platform and shared the research link on Facebook and other social media, inviting volunteers to participate. Participants were offered no incentive for participation (i.e., monetary or privileges). The average time for test completion was approximately 40 minutes.

Instruments

The Proposed Specifiers for Conduct Disorder (PSCD; Salekin & Hare, 2016) is a scale that assesses Conduct Disorder and antagonistic behavior. It consists of 24 items (six for each factor) answered on a 3-point Likert-type scale and assesses four dimensions: conduct disorder (CD) symptoms, grandiose-manipulative, callous-unemotional, and daring-impulsive. The PSCD has already been adapted to Brazilian Portuguese among adults by Pechorro et al. (2025), with sound psychometric results.

The Parental Bonding Instrument (PBI) (Parker et al., 1979) is a scale that assesses parental bonds. It consists of 25 items answered on a 4-point Likert-type scale that assesses two dimensions: care and overprotection from the individual's perception up to their 16th birthday. The PBI has already been adapted to several languages, and in Brazil, Hauck et al. (2006) carried out the adaptation, finding sound psychometric results.

Difficulties in Emotion Regulation Scale (DERS) (Gratz & Roemer, 2004) is a scale that assesses emotional regulation. It consists of 41 items answered on a 5-point Likert scale and assesses six dimensions: nonacceptance of emotional responses, difficulties engaging in goal-directed behavior, impulse control difficulties, lack of emotional awareness, limited access to emotion regulation strategies, and lack of emotional clarity. The measure has already been adapted to Brazilian Portuguese by Cancian et al. (2018), with adequate psychometric results.

The Brazilian Adult Attachment Scale (EBRAPEG) (Baptista & Tartaro, 2021) was developed based on Bowlby's theory (1969) and Bartholomew and Horowitz's (1991) model. It assesses attachment styles in four dimensions: secure, fearful, disengaged, and concerned. The measure contains 34 items, and responses are scored on a 4-point Likert-type scale.

The Short Dark Tetrad (SD4) (Paulhus et al., 2021) is a scale designed to assess dark variables: narcissism, Machiavellianism, psychopathy, and sadism. The scale has 28 items, 7 for each dimension, answered on a 5-point Likert scale. The instrument has been adapted to Brazilian Portuguese by Guilhermino et al. (2025). The results suggest adequate psychometric properties in Brazilian people.

Self-Report Delinquency Scale (SRD) (Elliott et al., 1985) is a scale that assesses delinquent behavior divided into two dimensions, namely violent and nonviolent behavior. The scale has 17 items, answered on a 4-point Likert-type scale. It was adapted to Portuguese by Pechorro et al. (2019) with adequate psychometric results.

Data analysis

The first step of the analysis involved estimating factor scores for all factors measured by the scales. To this end, exploratory factor analyses were performed with the polychoric correlation matrix and ULS estimator for each subscale. Then, the factor scores were extracted using the regression method (DiStefano et al., 2009). For EBRAPEG, the Secure Attachment factor scores present negative correlations with the other factors and, therefore, it was reversed. Then, the scores were aggregated by scale using factor scores estimated from the regression method based on exploratory factor analysis, using the Pearson correlation matrices of the scores and the ULS estimator.

The need to reverse the direction of the scores was due to the possibility of applying the causal discovery procedure by reducing chain graphs proposed by Franco et al. (2022). This procedure works in two steps. First, which variables can be grouped as "proxy" measures of a general factor is identified. Then, the causal discovery PC-algorithm is applied to discover how these groups of variables can exert some type of causal influence on each other. Heuristically, causal discovery algorithms can function as an "exploratory" version of path analysis (Fei & Yang, 2019). This means that the algorithm tries to discover, from the patterns of correlations between data, what would be the most likely causal direction in correlational data.

After applying the causal discovery procedure by reducing chain graphs, two path analysis models were adjusted to evaluate the significance of the directional (i.e., causal) and non-directional (i.e., correlational) relationships proposed by the algorithm. The weighted least square mean and variance adjusted (WLSMV) estimator was used for both models. The first model considered the reduced graph generated by the graph reduction procedure. The second model considered the general graph, which includes directional relationships equivalent to the reduced graph. For example, if the algorithm establishes a directional relationship from SD4 to EBRAPEG, all SD4 variables would be inserted as predictors of all EBRAPEG variables in the second model. All analyses were performed in the R software (R Core Team, 2024), using the packages PCG version 0.2.0 (Franco, 2021), bifactor version 0.1.0 (Jimenez et al., 2022), and lavaan version 0.6–16 (Rosseel et al., 2025).

Results

The causal structure discovered by the power chain graph reduction algorithm is represented in Figure 1. It is possible to observe that the Parental Bonding Instrument (PBI) and the Brazilian Adult Attachment Scale (EBRAPEG) did not establish a causal direction between them. However, both were identified as predictors of the Difficulties in Emotion Regulation Scale (DERS). Similarly,

the Short Dark Tetrad (SD4) and the Self-Report Delinquency Scale (SRD) did not have an established causal direction between them. However, both were identified as predictors of Proposed Conduct Disorder Specifiers (PSCD). Furthermore, the algorithm also identified that DERS would be best estimated as a predictor of PSCD.

Table 1 presents the estimates for the path analysis with the aggregated variables. All the relationships identified in Figure 1 were statistically significant. In particular, SD4, SRD, and DERS explained 62.1% of the PSCD variance. In the case of the DERS, 30% of the variance was explained by EBRAPEG and PBI. Furthermore, all relationships were positive, except those with EBRAPEG: the correlation with PBI and the regression coefficient with DERS.

Table 2 presents the estimates for the path analysis with the DERS variables. Significant predictors are in bold. The Fearful and Dismissing attachment types were systematically good predictors of all DERS dimensions.

The estimates for the path analysis with the PSCD variables are presented in Table 3. Significant predictors are presented in bold. It is possible to observe that the Dark Tetrad factors were, more consistently, predictors of the PSCD measures. Furthermore, no DERS facet predicted any of the PSCD factors by itself. From the SRD, only the Non-Violent Offenses dimension had predictive capacity in two PSCD dimensions.

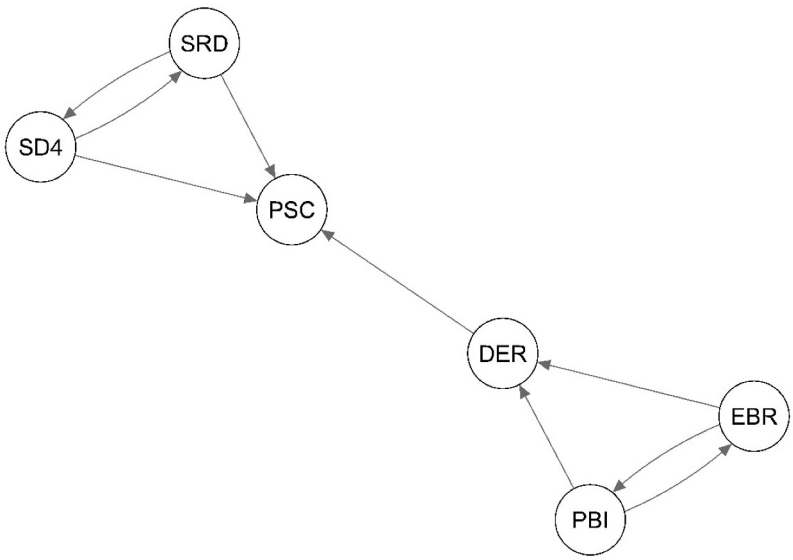

Figure 1. Causal structure discovered by power chain graph reduction algorithm. SD4: Short Dark Tetrad. SRD: Self-Report Delinquency Scale. PSC: Proposed Specifiers for Conduct Disorder. DER: Difficulties in Emotion Regulation Scale. PBI: Parental Bonding Instrument. EBR: Brazilian Adult Attachment Scale.

Table 1. Estimates for path analysis with aggregated variables.

DV	IV	Est	*SE*	*z*	*p*	R^2
PSCD						0.665
	SD4	0.580	0.039	14.682	<0.0001	
	SRD	0.255	0.046	5.515	<0.0001	
	DERS	0.389	0.054	7.263	<0.0001	
DERS					<0.0001	0.300
	EBRAPEG	−0.410	0.054	7.643	<0.0001	
	PBI	0.235	0.062	3.822	<0.0001	
Correlations						
SD4	SRD	0.381	0.056	6.838	<0.0001	
EBRAPEG	PBI	−0.397	0.051	7.742	<0.0001	

Note: DV: Dependent variable. IV: Independent variable. Est: Estimated parameter, which, in the case of regressions, is the standardized regression coefficient. SE: standard error. SD4: Short Dark Tetrad. SRD: Self-Report Delinquency Scale. PSCD: Proposed Specifiers for Conduct Disorder. DERS: Difficulties in Emotion Regulation Scale. PBI: Parental Bonding Instrument. EBRAPEG: Brazilian Adult Attachment Scale.

Table 4 presents the exogenous and residual correlations. Exogenous correlations are the relationships between the predictor variables, which allow multicollinearity to be modeled, and the regression estimates are not biased because of this. Residual correlations represent the part of the shared variance between the dependent variables that cannot be explained by the predictor variables. It is interesting to note that none of the PSCD factors showed residual correlations, indicating that the shared variance between them can be explained by the predictor variables.

The results presented in Table 2 seem contradictory to those in Tables 3 and 4, given that all relationships were significant when the factors were aggregated. Thus, for completeness, we present in Table 5 the factor loadings of the specific factors with the general factors of each scale. For example, in Table 4, none of the DERS factors showed a significant relationship with the PSCD factors. In Table 5, the factor loadings of the DERS factors indicate which part of the variance of each factor would impact the overall DERS score. For example, for Lack of Emotional Awareness, the observed loading was 0.274, which implies that only around 7% of the variance of this factor is explained by the common factor of the DERS dimensions. Thus, it would be expected (as observed) that the Lack of Emotional Awareness factor would have a lower predictive capacity for other dependent variables.

Discussion

This research aimed to explore the relationship between family aspects, such as bonds and attachment, emotional dysregulation, dark aspects of personality, and delinquent behaviors, in a network analysis. Although the literature points to the relationship between some of these constructs, such as personality traits, attachment, and delinquent behaviors (Levy et al., 2015; Schorr et al., 2021), no previous research tested a model relating them all. Furthermore, the sample used in the study is Latin Americans, that is, participants from a non-WEIRD culture. As stated by Apicella et al. (2020), the scientific community must face

Table 2. Estimates for path analysis with DERS variables.

DV	IV	Est	*SE*	*z*	*p*	R^2
NER						0.397
	Secure	−0.170	0.097	1.756	7.91E-02	
	Fearful	**0.425**	**0.054**	**7.846**	**4.22E-15**	
	Dismissing	**0.237**	**0.082**	**2.888**	**3.88E-03**	
	Preoccupied	−0.161	0.088	1.843	6.54E-02	
	Caring	−0.053	0.054	0.971	3.32E-01	
	Overprotective	−0.083	0.058	1.417	1.56E-01	
DEG						0.249
	Secure	**−0.206**	**0.104**	**1.982**	**4.75E-02**	
	Fearful	**0.336**	**0.055**	**6.095**	**1.10E-09**	
	Dismissing	**0.166**	**0.084**	**1.970**	**4.89E-02**	
	Preoccupied	**−0.235**	**0.103**	**2.285**	**2.23E-02**	
	Caring	−0.089	0.053	1.678	9.34E-02	
	Overprotective	−0.083	0.058	1.418	1.56E-01	
ICD						0.295
	Secure	**−0.236**	**0.106**	**2.234**	**2.55E-02**	
	Fearful	**0.330**	**0.054**	**6.156**	**7.45E-10**	
	Dismissing	**0.189**	**0.083**	**2.272**	**2.31E-02**	
	Preoccupied	**−0.251**	**0.102**	**2.469**	**1.35E-02**	
	Caring	**-0.108**	**0.053**	**2.050**	**4.03E-02**	
	Overprotective	−0.106	0.058	1.827	6.78E-02	
LEA						0.181
	Secure	0.083	0.113	0.735	4.63E-01	
	Fearful	**0.260**	**0.057**	**4.541**	**5.60E-06**	
	Dismissing	**0.221**	**0.083**	**2.656**	**7.92E-03**	
	Preoccupied	0.094	0.103	0.915	3.60E-01	
	Caring	−0.048	0.055	0.867	3.86E-01	
	Overprotective	0.041	0.053	0.771	4.41E-01	
LAE						0.35
	Secure	**−0.275**	**0.111**	**2.490**	**1.28E-02**	
	Fearful	**0.354**	**0.052**	**6.751**	**1.47E-11**	
	Dismissing	0.152	0.079	1.911	5.60E-02	
	Preoccupied	**−0.267**	**0.106**	**2.518**	**1.18E-02**	
	Caring	**−0.132**	**0.052**	**2.540**	**1.11E-02**	
	Overprotective	**−0.147**	**0.058**	**2.525**	**1.16E-02**	
LEC						0.355
	Secure	−0.057	0.100	0.576	5.65E-01	
	Fearful	**0.422**	**0.051**	**8.337**	**1.00E-37**	
	Dismissing	**0.217**	**0.074**	**2.927**	**3.42E-03**	
	Preoccupied	−0.037	0.095	0.387	6.99E-01	
	Caring	−0.056	0.053	1.055	2.91E-01	
	Overprotective	−0.036	0.053	0.688	4.91E-01	

Note: NER: Nonacceptance of Emotional Responses. DEG: Difficulties Engaging in Goal-Directed Behavior. ICD: Impulse Control Difficulties. LEA: Lack of Emotional Awareness. LAE: Limited Access to Emotion Regulation Strategies. LEC: Lack of Emotional Clarity.

the great challenge of the diversity of different cultures in the search for regularities in human behavior.

Regarding our results, our main findings support a developmental cascade model in which parental bonding and attachment influence emotion dysregulation, which in turn contributes to the expression of antagonistic traits and conduct-related behaviors. Insecure attachment was linked to increased dysregulation across various domains, while dark traits heightened the likelihood of conduct disorder features. Additionally, as shown in Figure 1, attachment and bonding processes are positioned as distal antecedents of emotion dysregulation, while dark traits and delinquency serve as proximal determinants of

Table 3. Estimates for path analysis with PSCD variables.

DV	IV	Est	*SE*	*z*	*p*	R^2
GM						0.564
	NER	−0.103	0.837	0.123	9.02E-01	
	DEG	5.237	5.875	0.891	3.73E-01	
	ICD	−7.044	7.555	0.932	3.51E-01	
	LEA	−0.013	0.227	0.056	9.55E-01	
	LAE	1.871	2.441	0.766	4.44E-01	
	LEC	0.247	0.385	0.641	5.21E-01	
	NVO	0.057	0.046	1.237	2.16E-01	
	VO	−0.039	0.051	0.765	4.44E-01	
	Machiavellianism	**0.263**	**0.045**	**5.895**	**3.75E-09**	
	Narcissism	**0.345**	**0.043**	**8.089**	**6.66E-16**	
	Psychopathy	**0.096**	**0.049**	**1.968**	**4.91E-02**	
	Sadism	**0.219**	**0.053**	**4.124**	**3.73E-05**	
CU						0.812
	NER	−1.706	2.645	0.645	5.19E-01	
	DEG	17.128	18.277	0.937	3.49E-01	
	ICD	−22.286	23.523	0.947	3.43E-01	
	LEA	−0.061	0.696	0.088	9.30E-01	
	LAE	6.973	7.626	0.914	3.60E-01	
	LEC	0.813	1.241	0.655	5.12E-01	
	NVO	0.088	0.066	1.319	1.87E-01	
	VO	0.092	0.066	1.388	1.65E-01	
	Machiavellianism	**0.170**	**0.055**	**3.099**	**1.94E-03**	
	Narcissism	−0.005	0.054	0.085	9.32E-01	
	Psychopathy	0.070	0.079	0.890	3.74E-01	
	Sadism	**0.268**	**0.062**	**4.335**	**1.46E-05**	
DI						0.528
	NER	−0.149	0.686	0.218	8.28E-01	
	DEG	4.280	4.785	0.895	3.71E-01	
	ICD	−5.799	6.164	0.941	3.47E-01	
	LEA	−0.039	0.186	0.212	8.32E-01	
	LAE	1.432	2.001	0.715	4.74E-01	
	LEC	0.211	0.325	0.649	5.17E-01	
	NVO	**0.166**	**0.048**	**3.441**	**5.80E-04**	
	VO	−0.103	0.057	1.815	6.96E-02	
	Machiavellianism	**0.106**	**0.048**	**2.217**	**2.66E-02**	
	Narcissism	**0.112**	**0.048**	**2.315**	**2.06E-02**	
	Psychopathy	**0.474**	**0.057**	**8.374**	**0.00E + 00**	
	Sadism	0.040	0.054	0.742	4.58E-01	
CD						0.685
	NER	−0.316	0.805	0.392	6.95E-01	
	DEG	5.207	5.647	0.922	3.57E-01	
	ICD	−7.033	7.271	0.967	3.33E-01	
	LEA	−0.122	0.220	0.554	5.80E-01	
	LAE	1.861	2.346	0.793	4.28E-01	
	LEC	0.273	0.389	0.704	4.82E-01	
	NVO	**0.235**	**0.065**	**3.635**	**2.78E-04**	
	VO	−0.018	0.073	0.245	8.06E-01	
	Machiavellianism	0.047	0.045	1.047	2.95E-01	
	Narcissism	0.022	0.046	0.480	6.31E-01	
	Psychopathy	**0.455**	**0.069**	**6.579**	**4.73E-11**	
	Sadism	**0.168**	**0.055**	**3.057**	**2.24E-03**	

Note: GM: Grandiose-Manipulative. CU: Callous-Unemotional. DI: Daring-Impulsive. CD: Conduct Disorder. NER: Nonacceptance of Emotional Responses. DEG: Difficulties Engaging in Goal-Directed Behavior. ICD: Impulse Control Difficulties. LEA: Lack of Emotional Awareness. LAE: Limited Access to Emotion Regulation Strategies. LEC: Lack of Emotional Clarity. NVO: Non-violent offenses. VO: Violent offenses.

Table 4. Exogenous and residual correlations.

	Secure	Fearful	Dismissing	Preoccupied	Caring	Overprotective
Secure		**1.00E-20**	**1.00E-20**	**1.00E-20**	**1.48E-11**	**4.64E-07**
Fearful	0.486		**1.00E-20**	**1.00E-20**	**2.83E-03**	**4.66E-07**
Dismissing	0.758	0.431		**1.00E-20**	**4.96E-10**	**4.57E-04**
Preoccupied	0.842	0.468	0.778		**2.61E-08**	**4.03E-06**
Caring	−0.361	−0.176	−0.338	−0.292		**1.60E-04**
Overprotective	−0.281	−0.277	−0.191	−0.237	0.219	
	NER	DEG	ICD	LEA	LAE	LEC
NER		**1.00E-20**	**1.00E-20**	**0.04933**	**1.00E-20**	**4.63E-10**
DEG	0.625		**1.00E-20**	0.09076	**1.00E-20**	**2.83E-09**
ICD	0.665	0.981		0.09637	**1.00E-20**	**8.39E-13**
LEA	0.116	−0.104	−0.096		0.3832	**2.66E-15**
LAE	0.758	0.724	0.836	−0.051		**1.51E-14**
LEC	0.360	0.297	0.363	0.391	0.384	
	Machiavellianism	Narcissism	Psychopathy	Sadism	NVO	VO
Machiavellianism		**5.26E-05**	**8.22E-03**	**1.00E-20**	**1.14E-06**	**5.6E-05**
Narcissism	0.234		**4.83E-06**	**1.85E-04**	**5.91E-06**	**2.1E-05**
Psychopathy	0.160	0.253		**1.00E-20**	**1.90E-07**	**1.8E-13**
Sadism	0.410	0.220	0.514		**2.13E-07**	**2.6E-06**
NVO	0.234	0.224	0.350	0.245		**1.3E-06**
VO	0.184	0.1971	0.42695	0.27656	0.47537	
	GM	CU	DI	CD		
GM		0.9706	0.6269	0.3300		
CU	−0.021		0.6476	0.6920		
DI	−0.069	−0.150		0.5336		
CD	−0.085	−0.148	−0.122			

Note: NER: Nonacceptance of Emotional Responses. DEG: Difficulties Engaging in Goal-Directed Behavior. ICD: Impulse Control Difficulties. LEA: Lack of Emotional Awareness. LAE: Limited Access to Emotion Regulation Strategies. LEC: Lack of Emotional Clarity. NVO: Non-violent offenses. VO: Violent offenses. GM: Grandiose-Manipulative. CU: Callous-Unemotional. DI: Daring-Impulsive. CD: Conduct Disorder.

conduct disorder features. Our network supports the idea that emotion dysregulation is a central mechanism connecting early experiences and personality development to antisocial and delinquent behaviors.

The relationship between personality and violence, one of the main social problems in several countries, cannot be explained only by individual variables, such as personality traits or their relationship with the regulation of emotions, but also by biological and sociocultural variables, such as the characteristics bonds and upbringing within the family, in addition to the cultural rules of each society, probably resulting in complex interaction models (Allen et al., 2018; Bannon et al., 2015).

As shown in our results, attachment and family bonds, which involve security, affection, and protection, are fundamental for developing and regulating emotions. Attachment relationships can be considered stable throughout the developmental process and are crucial for understanding how people experience and regulate their emotions (Mikulincer & Shaver, 2019). Secure family relationships would assist in internalizing effective emotional regulation strategies, generating the ability to use adaptive emotional regulation strategies outside the attachment relationship, even when the attachment figure is absent (Brumariu, 2015).

Table 5. Factor loadings of specific factors with general factors.

Factors	SD4	PSCD	DERS	EBRAPEG	PBI	SRD
Machiavellianism	0.452					
Narcissism	0.346					
Psychopathy	0.555					
Sadism	0.864					
GM		0.610				
CU		0.507				
DI		0.669				
CD		0.688				
NER			0.856			
DEG			0.866			
ICD			0.914			
LEA			0.274			
LAE			0.910			
LEC			0.648			
Secure				−0.918		
Fearful				0.519		
Dismissing				0.840		
Preoccupied				0.919		
Caring					0.489	
Overprotective					0.489	
Nonviolent offenses						0.690
Violent offenses						0.690

Note: SD4: Short Dark Tetrad. SRD: Self-Report Delinquency Scale. PSC: Proposed Specifiers for Conduct Disorder. DER: Difficulties in Emotion Regulation Scale. PBI: Parental Bonding Instrument. EBRAPEG: Brazilian Adult Attachment Scale. GM: Grandiose-Manipulative. CU: Callous-Unemotional. DI: Daring-Impulsive. CD: Conduct Disorder. NER: Nonacceptance of Emotional Responses. DEG: Difficulties Engaging in Goal-Directed Behavior. ICD: Impulse Control Difficulties. LEA: Lack of Emotional Awareness. LAE: Limited Access to Emotion Regulation Strategies. LEC: Lack of Emotional Clarity.

As pointed out by Delgado et al. (2023) and Díaz-Mosquera et al. (2022), inadequate regulation styles such as rumination or catastrophizing can be related to various mental problems and deviant behaviors, while positive strategies such as positively refocusing or putting the problem in another perspective can help in problem-solving. Appropriate strategies can be crucial for preserving psychological adjustment, both for psychopathologies and inappropriate behaviors, including the presence of antagonistic traits. Furthermore, attachment anxiety and intimacy avoidance were related to emotional dysregulation because the ability to perceive one's own emotions and those of others, capturing the emotional context in a given situation, may be related to increased social bonds, facilitating coexistence.

Conduct disorder is a disorder whose main characteristics are related to low control and regulation of behavior that violates social norms and/or other people's rights. Therefore, the very meaning of emotion dysregulation is part of this disorder, which has a pattern of disproportionate aggressive reactions without justified causes. Regulating emotions and behavior is a continuous process that specifically depends on social relationships (Balart et al., 2021).

Finally, the Dark Tetrad was associated with delinquent behaviors and conduct disorder. Our findings align with previous research, including Figueredo et al. (2021), which proposed that early adversity could lead to interpersonal aggression

through a cascade of maladaptive behaviors and other traits. People with high levels of the Dark Tetrad are more prone to engaging in such antisocial and aggressive behaviors. The exploitative tendencies of Machiavellianism, the entitlement of narcissism, the impulsivity of psychopathy, and the enjoyment of cruelty in sadism jointly contribute to a higher propensity for these delinquent actions. As such, these traits undermine social bonds and emotional regulation, leading to behaviors that violate social norms and the rights of others.

Final considerations and limitations

Our study elucidates the relationships between early life experiences, personality traits, and delinquent behaviors. However, it is nonetheless limited. First, the use of self-report measures may introduce response biases such as social desirability. Incorporating behavioral tasks, informant reports, or multimethod assessments could strengthen the validity of future findings. Second, the predominantly female sample limits generalizability to more diverse populations and to individuals with clinical or forensic profiles. Given that community participants are less likely to exhibit severe antisocial or criminal behaviors, future research should replicate these analyses in correctional or forensic samples. Third, cultural factors specific to Brazil and Latin America may influence how family bonds, attachment, and emotional regulation are expressed, which calls for further cross-cultural comparisons using matched WEIRD and non-WEIRD samples. Bailly et al. (2023) found differences in emotional regulation expression between genders and age groups. Future studies should use more equitable samples in these respects to enable comparisons between the constructs studied.

In conclusion, our findings underscore the importance of early interventions that target emotional regulation and maladaptive personality traits in preventing the cascade of antisocial and aggressive behaviors. By enhancing our understanding of these interactions, we can devise effective strategies to foster positive developmental outcomes and reduce the prevalence of delinquency and antisocial behavior in populations.

Furthermore, our findings indicate that family bonding, attachment security, and emotion regulation are protective factors against the development of dark traits and delinquent behaviors. On the other hand, dysfunctional family environments and poor regulation contribute to the development of aversive personality traits that strengthen antisocial tendencies. Our results emphasize the value of preventive interventions that enhance parent-child relationships and teach regulation strategies, especially in vulnerable contexts. Although derived from a Brazilian community sample, the observed cascade likely reflects a cross-cultural mechanism relevant across populations. Future studies should test these pathways longitudinally and across diverse cultural and forensic settings to refine prevention and intervention models.

Disclosure statement

No relevant financial or non-financial competing interests to report.

Funding

No funding was received.

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