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Callous and emotional: exploring the variants of psychopathic personality in community adolescents

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Título: Insensibles y emocionales: Explorando las variantes de la personalidad psicopática en adolescentes comunitarios.
Resumen: Este estudio examinó variantes de la personalidad psicopática en adolescentes a partir de la combinación entre dureza emocional (DE) y afecto negativo (AN). Participaron 902 adolescentes escolarizados (52.2 % chicas; edad: 12-19 años, *M* = 14.89, *DT* = 1.67), evaluados en dos momentos con un intervalo de un año. Se utilizó un diseño longitudinal. Los perfiles se identificaron mediante Análisis de Perfiles Latentes a partir de la subescala de dureza del *Inventory of Callous-Unemotional Traits* (ICU) y la subescala de afecto negativo del *Positive and Negative Affect Schedule* (PANAS). El resto de variables se evaluaron mediante autoinformes que medían personalidad, apego, desajuste conductual, bienestar socioemocional y conductas de riesgo. El análisis reveló cinco perfiles diferenciados, incluidos uno con alta DE y baja AN (variante primaria) y dos perfiles emocionalmente desregulados (variantes secundarias): uno con predominancia de DE y otro con predominancia de AN. Los perfiles mostraron diferencias en múltiples constructos al inicio y un año después. Las variantes secundarias mostraron mayor desajuste emocional, social y conductual. Los resultados respaldan empíricamente la distinción entre variantes primarias y secundarias de la psicopatía juvenil, y contribuyen a comprender su heterogeneidad.
Palabras clave. Dureza emocional. Personalidad psicopática. Afecto negativo. Adolescentes. Análisis de Perfiles Latentes.

Abstract: This study examined variants of psychopathic personality in adolescents based on the combination of callousness (CU) and negative affect (NA). A total of 902 school-attending adolescents participated (52.2% girls; age range: 12–19 years, *M* = 14.89, *SD* = 1.67), assessed at two time points with a one-year interval using a longitudinal design. Profiles were identified through Latent Profile Analysis based on the callousness subscale of the *Inventory of Callous–Unemotional Traits* (ICU) and the negative affect subscale of the *Positive and Negative Affect Schedule* (PANAS). Additional variables were assessed through self-reports measuring personality traits, attachment styles, behavioral maladjustment, socioemotional well-being, and risk behaviors. The analysis identified five distinct profiles, including one with high CU and low NA (primary variant) and two emotionally dysregulated profiles (secondary variants): one predominantly high in CU, the other in NA. Profiles showed differences across multiple constructs at baseline and one year later, with secondary variants exhibiting greater emotional, social, and behavioral maladjustment. The findings provide empirical support for the distinction between primary and secondary variants of youth psychopathy and contribute to understanding its heterogeneity.
Keywords. Callous-unemotional traits. Psychopathic personality. Negative affect. Adolescents. Latent Profile Analysis.

Introduction

A large body of research in recent years has focused on callous-unemotional (CU) traits, which reflect a tendency to display a lack of empathy, emotional insensitivity, and indifference toward others' feelings (Frick & Ellis, 1999). This construct is particularly relevant in the study of externalizing problems in youth (Molinuevo et al., 2020; Servera et al., 2020). In fact, in the last decade, it was included in clinical diagnostic manuals (e.g., DSM-5) as a specifier ("with limited prosocial emotions") within conduct disorders. In this regard, the presence of CU traits is associated with a more severe and stable pattern of antisocial behavior (Frick & White, 2008), analogous to the concept of "psychopathy" commonly used in adult populations (Cleckley, 1976).

Although adolescents with CU traits were initially viewed as a homogeneous group, more recent research supports the distinction of CU into two variants: primary and secondary. This distinction parallels Karpman's (1941) differentiation between primary (innate, characterized by lack of guilt) and secondary (acquired, environmentally influenced) psychopathy. Specifically, it has been proposed that anxiety and other negative emotions may distinguish between these variants (Craig et al., 2021): the primary variant is characterized by low emotional dysregulation, while the secondary variant exhibits high levels of emotional dysregulation.

One of the most significant contributions in this area is the model proposed by Kimonis et al. (2012), which has explained the differences between primary and secondary variants and their implications for intervention. The primary variant is marked by a lack of emotional response to others' suffering, low anxiety, and a genetic predisposition toward emotional coldness and insensitivity. In contrast, the secondary variant is characterized by high levels of emotional dysregulation, a history of early adverse experiences, and heightened emotional sensitivity. When combined with chronic stress, these factors can disrupt the individual's stress regulation system, contributing to the development of CU traits and antisocial behavior (Kimonis, 2023).

Personality and CU Variants

In an attempt to explore the nomological network of CU, various studies have investigated its associations with general personality models and attachment patterns. Several studies have examined the relationship between CU and the

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Big Five personality dimensions. Adolescents with high CU levels tend to exhibit low agreeableness and conscientiousness (Colins et al., 2017; Derefinko & Widiger, 2016) and high extraversion (Derefinko & Widiger, 2016; Lynam et al., 2005). However, findings regarding neuroticism are less consistent: while some studies do not directly associate it with adolescent psychopathy (Frick et al., 2000; Lynam et al., 2005), others suggest a link with the secondary variant (Miller & Lynam, 2001). Regarding openness, studies have generally not found significant associations with CU traits (Colins et al., 2017; Kimonis et al., 2008).

With respect to attachment, several studies have concluded that insecure or disorganized attachment patterns are significantly related to CU in children and adolescents (Craig et al., 2024; Kohlhoff et al., 2020). Other studies have investigated how different variants of CU traits relate to attachment styles. It has been proposed that the primary variant of CU traits is associated with inherently low emotional reactivity and limited early affective responses (Craig et al., 2024; Lee & Lee, 2025). This reduced emotional expressiveness can interfere with the formation of secure attachments because caregivers may find it difficult to recognize and appropriately respond to the child's emotional needs during early development. Meanwhile, the secondary variant is associated with experiences of early adversity or maltreatment, promoting the development of disorganized attachment in response to caregivers who are both a source of protection and threat (Craig et al., 2024).

Behavioral and Emotional Implications of CU Variants

The behavioral and emotional implications of CU in youth have been extensively studied, with some work specifically addressing the differences between the primary and secondary variants. For example, research focusing on the relationship between CU traits and types of aggressive behavior found that secondary variants show higher levels of reactive aggression, while proactive aggression levels are like those of primary variants (Fanti et al., 2013). However, findings are mixed; in a study of girls, no significant differences were found between primary and secondary CU traits in self-reported proactive and reactive relational aggression (Goulter et al., 2017).

CU has also been identified as a significant predictor of bullying (Fanti & Kimonis, 2013; Orue & Calvete, 2016; Viding et al., 2009) and cyberbullying (Goodboy & Martin, 2015; Orue & Calvete, 2016; Van Geel et al., 2017) in community samples. However, less is known about how these behaviors differ across CU variants. Adolescents with primary psychopathic traits tend to engage in more severe and persistent bullying, likely due to their lack of empathy and remorse (Fanti & Kimonis, 2013). However, some research has not found significant differences between psychopathy variants in bullying behavior (Michielsen et al., 2022). It has also been proposed that adolescents with secondary psychopathy may bully or cyberbully as a way to externalize emotional distress, displaying behavior that is less premeditated and more impulsive compared to primary variants (Kimonis et al., 2012).

Although CU has been studied in relation to cyberbullying, fewer studies have examined its association with other problematic internet behaviors. Some research has explored the link between CU and sexting and internet addiction (Marinho et al., 2022; Trumello et al., 2018). Marinho et al. (2022) found that adolescents engaging in sexting displayed higher levels of CU traits, and that CU traits mediated the relationship between childhood maltreatment and sexting. Among the dimensions of CU traits, callousness appears to be the strongest predictor of internet addiction (Trumello et al., 2018). In the context of video game addiction, adolescents characterized by high CU traits combined with low anxiety seem particularly vulnerable to developing problematic gaming behaviors (Michielsen et al., 2022).

Other risk behaviors such as substance use have also been studied in relation to CU variants. Some findings suggest that adolescents with secondary psychopathy are at greater risk for substance abuse, particularly alcohol and cannabis use (Estrada et al., 2023; Kimonis et al., 2012). However, other studies have not found significant differences between primary and secondary variants in terms of drug use (Bégin et al., 2024; Vaughn et al., 2009). Overall, adolescents with psychopathic traits—regardless of variant—appear more likely to engage in substance use compared to those with low CU traits.

Other domains explored to distinguish primary and secondary psychopathy include emotional and social functioning. CU traits have been associated with increased feelings of loneliness (Zhang et al., 2015) and peer relationship problems (Haas et al., 2018). Studies focusing on CU variants indicate that secondary CU traits are linked to more impaired global functioning (Ezpeleta et al., 2017; Viding & McCrory, 2012). Moreover, secondary variants are often associated with lower self-esteem, greater susceptibility to peer pressure, and a stronger desire for popularity compared to primary variants (Fanti et al., 2013).

The Present Study

Previous research has examined the relationships between CU and personality and psychosocial functioning. However, little is known about how these associations vary based on different CU profiles. Additionally, the classification of CU into primary and secondary variants has not always been supported by prior literature (Craig et al., 2021), despite theoretical advances in the field. Thus, this is an area that requires further clarification.

The present study aims to explore the personal and psychosocial correlates of primary and secondary CU variants. In response to calls for research beyond forensic

contexts and using diverse cultural settings (Craig et al., 2021), this study draws on a sample of Spanish community adolescents. To address inconsistencies in previous research and ensure accurate assessment of the CU variants, we employed the callousness dimension as the measure of CU and negative affect (NA) as the indicator of emotional dysregulation. This choice aligns with prior research suggesting that the most widely used CU measure (the ICU) includes peripheral elements inconsistent with the core construct (Cardinale & Marsh, 2017), and that callousness represents its central component (Deng et al., 2021). Further studies using network analysis have highlighted that callousness (defined as a lack of empathy and indifference toward others' needs) is the most central and influential CU dimension compared to uncaring or unemotional traits, showing higher connectivity and stronger associations with severe behavioral problems (Goulter & Moretti, 2021).

In this study, we chose NA—not simply anxiety—as the indicator of emotional distress presumed to be elevated in the "secondary" variant of CU. Previous work has emphasized the difficulty of specifying the most appropriate indicator of the secondary variant (Craig et al., 2021). Through NA, this study aims to capture a broader domain of dysregulated emotional experiences (e.g., sadness, anxiety, hostility, alienation) potentially linked to adverse socialization environments and more closely aligned with the original conceptualization of secondary psychopathy (Blackburn, 1975; Gill & Stickle, 2016; Karpman, 1941; Skeem et al., 2003).

Based on these considerations, this study aimed to examine whether profiles of primary and secondary CU can be empirically identified in a community sample of Spanish adolescents. Additionally, it sought to investigate how these variants are associated with: (1) the Big Five personality dimensions; (2) attachment styles; (3) behavioral maladjustment indicators (bullying–cyberbullying, victimization–cybervictimization, proactive and reactive aggression), socioemotional well-being (loneliness, self-esteem, life satisfaction, and peer trust), and risk behaviors (problematic internet use, sexting, and substance use).

Drawing on previous literature, we expected to identify different adolescent subgroups based on CU traits and NA levels, distinguishing those with high CU and low NA (primary variant) from those with high CU and high NA (secondary variant). Adolescents with high CU and low NA were expected to exhibit lower agreeableness and conscientiousness, while those with high NA (secondary variant) were expected to show higher neuroticism compared to the primary variant. Adolescents with high CU were also expected to demonstrate more insecure attachment patterns compared to normative peers. Based on the hypothesis that secondary CU is more closely linked to early family adversity (Kimonis et al., 2008), we also expected this variant to be associated with more dysfunctional attachment patterns. Regarding psychosocial well-being, it was hypothesized that adolescents with high CU—particularly the secondary variant—would report higher loneliness, lower self-esteem, and lower life satisfaction. Finally, adolescents with high CU were expected to exhibit more internet-related risk behaviors (problematic internet use, cyberbullying, and sexting). Due to inconsistencies in the literature, no specific hypotheses were proposed regarding differences between primary and secondary variants in terms of aggressive behavior and substance use.

Method

Design

The study employed a longitudinal design: CU, NA, personality, and attachment were measured at Time 1 (T1), while behavioral and emotional outcomes were measured at both T1 and one year later (T2) to evaluate the predictive value of CU variants over time.

Participants

The sample consisted of 902 adolescents (52.2% girls and 47.8% boys), aged between 12 and 19 years (M = 14.89, SD = 1.67), from eight secondary schools in Galicia, Spain. Participants were followed up one year later, and 69% or the original sample could be reassessed, meaning that 31% of participants were lost between T1 and T2. This attrition was mainly due to two reasons: 1) the exclusion of one academic group due to logistical difficulties that prevented data collection in their classroom, and 2) the absence of some students at T2, either due to absenteeism on the assessment day, transfer to another school, or grade repetition. Comparisons between participants who remained in the study and those who dropped out revealed that those who continued were, on average, younger (F = 38.28, df = 1/905, $p < .001$), and a higher proportion of them were girls (χ^2 = 5.88, df = 1, $p < .01$). To examine the nature of the missing data, Little's MCAR test (Little, 1988) was conducted. The result was significant, $\chi^2(2065) = 2502.04$, $p < .001$, indicating that the data were not missing completely at random (MCAR). However, the normed chi-square (χ^2/df = 1.21) was below the commonly accepted threshold of 2 (Ullman et al., 2001), suggesting that the data were likely missing at random (MAR).

Instruments

Measures at T1

Measures Used for Profile Identification

CU. To assess CU traits, the Inventory of Callous-Unemotional Traits (ICU; Frick, 2004) was used, which has been widely used and validated in adolescent populations (Kemp et al., 2022). Specifically, the 11 items corresponding to the callousness factor were administered (e.g., "I do not

care who I hurt to get what I want"; α = .75), using a 4-point Likert scale (0 = not at all true; 3 = definitely true).

NA. To assess NA, the 10 items from the Negative Affect subscale of the Positive and Negative Affect Schedule (PANAS; Watson et al., 1988) were administered (e.g., "Irritable," "Nervous"; α = .88). Items were rated on a 5-point Likert scale (1 = very slightly or not at all; 5 = extremely), referring to experiences over the past year.

Measures Used for Profile Validation at T1

Big Five Personality Traits. The JS NEO-S (Ortet et al., 2010) was used to assess the Big Five personality traits. Each dimension consists of 30 items: (1) Neuroticism (e.g., "I am a calm person"; α = .87), (2) Extraversion (e.g., "I am a cheerful and lively person"; α = .86), (3) Openness (e.g., "I have a lot of imagination"; α = .81), (4) Agreeableness (e.g., "I think most people I deal with are honest and trustworthy"; α = .82), and (5) Conscientiousness (e.g., "I try to carry out all tasks I'm assigned with diligence"; α = .90). Items were rated on a 5-point Likert scale (1 = strongly disagree; 5 = strongly agree). The JS NEO-S was developed as a youth adaptation of the NEO PI-R (Ortet et al., 2012), and both the short and full versions have shown good psychometric properties in previous studies (Ortet et al., 2010).

Attachment Styles. Attachment styles were assessed using the Adolescent Relationship Scales Questionnaire (ARSQ; Scharfe, 1999), Spanish adaptation by Magaz et al. (2011). The ARSQ is a youth version of the Relationship Scales Questionnaire (RSQ; Griffin & Bartholomew, 1994). It measures three attachment dimensions: Secure (e.g., "Do you feel good when other boys or girls help you?"; α = .50), Fearful/Preoccupied (e.g., "Do you find it difficult to trust others and tell them everything that happens to you?"; α = .52), and Avoidant (e.g., "Is it very important for you not to need help (to be independent)?" α = .41;). The Spanish version consists of 12 items (four per dimension), rated on a 3-point frequency scale (1 = never; 3 = often). Given that alpha is highly sensitive to scale length (McNeish, 2018), average inter-item correlations were also computed: .20 for Secure, .21 for Fearful/Preoccupied, and .15 for Avoidant. These values, while modest, fall within an acceptable range according to established standards for personality construct measurement (Clark & Watson, 1995).

Measures Administered at T1 and T2

Indicators of Behavioral Maladjustment

Bullying. To assess bullying behavior, the Spanish adaptation of the European Bullying Intervention Project Questionnaire (EBIPQ; Ortega-Ruiz et al., 2016) was used. In this study, the 14 items were rated based on frequency of occurrence over the past 6 months: Never (0), once or twice (1), once or twice a month (2), once a week (3), and more than once a week (4). Items include behaviors such as hitting, insulting, threatening, stealing, cursing, excluding, or spreading rumors (e.g., "I threatened someone"; "Someone insulted me"). The questionnaire assesses two main dimensions: victimization and bullying. Cronbach's alphas were .87 and .86 at T1, and .84 and .84 at T2, respectively.

Cyberbullying. To assess cyberbullying, the Spanish version of the European Cyberbullying Intervention Project Questionnaire (ECIPQ; Del Rey et al., 2015) was used. The 22 items were rated on the same 5-point frequency scale as the EBIPQ, referencing the previous 6 months. Both dimensions—cybervictimization and cyberaggression—include behaviors such as insults, exclusion, rumor spreading, impersonation, etc., all through electronic devices (e.g., "I excluded or ignored someone on a social network or chat", "Someone posted personal information about me online"). Cronbach's alphas were .90 and .92 at T1, and .86 and .89 at T2, respectively.

Proactive and Reactive Aggression. The Reactive-Proactive Aggression Questionnaire (RPQ; Raine et al., 2006), Spanish adaptation by Andreu et al. (2009), was used to assess aggressive behavior. This 23-item scale uses a 3-point Likert format (0 = never; 2 = often). Twelve items measure proactive aggression (e.g., "You yelled at others to take advantage of them"), and eleven measure reactive aggression (e.g., "You got angry when others threatened you"). In this study, Cronbach's alphas were .87 (T1) and .83 (T2) for proactive aggression, and .84 (T1) and .83 (T2) for reactive aggression.

Socioemotional Well-being

Loneliness. The Spanish version of the Three-Item Loneliness Scale (Hughes et al., 2004) was used. Items include: "How often do you feel that you lack companionship?", and "How often do you feel isolated from others?" (α = .87 at T1 and T2). Responses were rated on a 5-point Likert scale (1 = never; 5 = always).

Self-Esteem. The Self-Esteem Scale (Rosenberg, 1965) was used, consisting of 10 items (e.g., "I am convinced that I have good qualities," "I have a positive attitude toward myself"; α = .84 at T1 and T2), rated on a 4-point scale (1 = strongly agree; 4 = strongly disagree).

Life Satisfaction. Life satisfaction was measured using the Satisfaction with Life Scale (SWLS; Diener et al., 1985), which includes five items rated on a 5-point Likert scale (1 = strongly disagree; 5 = strongly agree) (e.g., "I am satisfied with my life," "If I could live my life over, I would change almost nothing"; α = .84 at T1 and .86 at T2).

Trust in Friends. This variable was assessed using the Inventory of Parent and Peer Attachment (IPPA; Armsden & Greenberg, 1987). The peer trust subscale includes 10 items (e.g., "I think my friends are good friends," "It is easy for me to talk to my friends"; α = .90 at T1, and .92 at T2), rated on a 5-point scale (1 = almost never true; 5 = almost always or always true).

Risk Behaviors

Problematic Internet Use (PIU). The Internet Addiction Test (IAT; Young, 1998) was used to assess PIU. This instrument consists of 20 items (e.g., "How often does the Internet help you escape or block out disturbing

thoughts about your life?"; α = .91 at T1 and T2), rated on a 5-point Likert scale (1 = never or rarely; 5 = always).

Sexting. Sexting was assessed using the Frequency of Sexting questionnaire (Weisskirch & Delevi, 2011), which includes 5 items rated on a 5-point Likert scale (0 = never; 4 = frequently). Items assess behaviors such as sending provocative photos or videos of oneself (clothed or nude) and sexually suggestive text messages (e.g., WhatsApp, SMS) with the intent of initiating sexual relations. One example is: "How often have you sent a nude photo or video of yourself via mobile phone?". In this study, Cronbach's alpha was .84 at both T1 and T2.

Substance Use. The Drug Use Questionnaire (Cuestionario de Consumo de Drogas, CCD; Luengo et al., 1995) was used. Specifically, the section assessing monthly use was administered, consisting of three items on tobacco, alcohol, and cannabis use, with response options ranging from 0 (never) to 5 (more than 20 days per month) (e.g., "How many days have you smoked cigarettes in the past month?").

Procedure

A total of 14 educational centers in Galicia were contacted, of which eight agreed to participate in the study. The questionnaires were administered in classroom settings during 50-minute sessions. Assessment data were collected from adolescents aged 12 to 19 at two time points: the first wave (T1) between Winter 2015 and Spring 2016, and the second wave (T2) between Winter 2016 and Spring 2017. The entire process was conducted under the supervision of a member of the research team and after obtaining informed consent from both the parents and the adolescent participants. Confidentiality and anonymity of the data were always ensured. A self-generated identification code created by each participant allowed for the matching of questionnaires from both phases (T1 and T2, one year apart) without the need to include personal names on the forms. The procedures for this study were approved by the Bioethics Committee of the University of Santiago de Compostela.

Data Analysis

A Latent Profile Analysis (LPA) was conducted to examine profiles of callousness and NA. The selection of the optimal number of profiles followed established guidelines (Hickendorff et al., 2018; Nylund et al., 2007), incorporating multiple criteria: (1) the lower value of information criteria values, including the Akaike Information Criterion (AIC), Bayesian Information Criterion (BIC), and Sample-Size Adjusted BIC (SSABIC); (2) statistical significance of the Lo-Mendell-Rubin (LMR) test, the LMR adjusted (LMRt) test and the Bootstrapped Likelihood Ratio Test (BLRT); and (3) the theoretical interpretability of the identified profiles. In instances where these indicators yielded conflicting results, precedence was assigned to theoretical interpretability (Weller et al., 2020), the significance of the BLRT and the lowest BIC and SSABIC values (Nylund et al., 2007). Additionally, we ensured that each profile represented at least 5% of the total sample, in line with common recommendations to avoid retaining spurious or unstable profiles (Nylund-Gibson & Choi, 2018).

A Multivariate Analysis of Covariance (MANCOVA) was conducted to assess differences between profiles across multiple dependent variables, including personality dimensions, attachment types, and various indicators of behavioral maladjustment, socioemotional well-being, and risk behaviors. Pairwise comparisons were performed in each MANCOVA using Tukey's post hoc tests with a significance level set at alpha = .05.

LPA was performed using Mplus7 software (Muthén & Muthén, 1998-2012). All other analyses were performed using IBM SPSS Statistics 22.

Results

Latent Profile Analysis

Table 1 shows the LPA fit indices. The five-profile model was selected over models with fewer profiles based on its lower AIC, and SSABIC values, comparable BIC, statistically significant BLRT, and superior theoretical interpretability. In addition, the five-profile model was preferred over the six-profile model because of its greater theoretical coherence. The six-profile model included a profile representing only 0.4% of the sample with scores very similar to another profile, compromising the discriminability and parsimony of the model. Therefore, the five-profile model was chosen, which showed robust classification accuracy with an entropy value of .76. Furthermore, the average posterior membership probabilities for the primary profiles ranged from .66 to .91, reflecting a high degree of reliability in profile classification.

Table 1
Latent Profile Analysis Fit Indices.

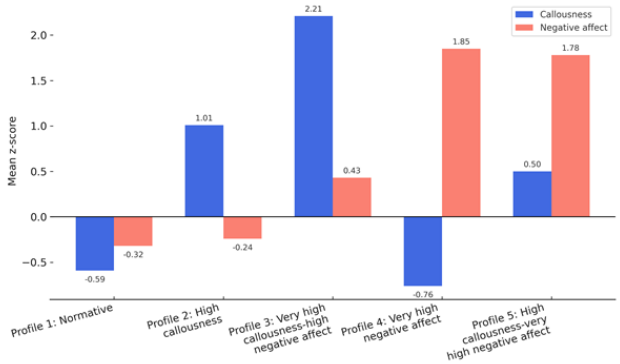
k	AIC	BIC	SSABIC	Entropy	LMR	LMRt	BLRT	SP (%)
1	4992.34	5011.56	4998.85					
2	4825.36	4858.99	4836.76	.81	<.001	<.001	<.001	24.8%
3	4779.88	4827.92	4796.17	.76	<.001	<.001	<.001	9.3%
4	4757.67	4820.13	4778.85	.76	.120	.131	<.001	5.7%
5	4745.55	4822.42	4771.61	.76	.118	.129	<.001	5.1%
6	4732.50	4823.78	4763.44	.77	.078	.083	<.001	0.4%

Note. Bold indicates the final solution. k = number of profiles; AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion; SSABIC = Sample-size adjusted BIC; LMR = Lo, Mendell and Rubin likelihood ratio test; LMRt = LMR adjusted; BLRT = Bootstrap Likelihood Ratio Test; SP = Smallest Profile.

Figure 1 depicts the estimated latent profiles, based on CU and NA scores. Profile 1, representing 59.8% of the sample (n = 539), is characterized by average scores on

callousness and negative affect. Consequently, it is referred to as the *Normative* profile. Profile 2 (*High callousness: +CU*; *n* = 200, 22.2%) is distinguished by high scores on callousness and mean scores on negative affect. Profile 3 (*Very high callousness-high negative affect: ++CU+NA*; *n* = 60, 6.6%) is characterized by very high callousness scores and mean negative affect scores. Profile 4 (*Very high negative affect: ++NA*; *n* = 57, 6.3%) is characterized by medium callousness scores and very high negative affect scores. Finally, Profile 5 (*High callousness-very high negative affect: +CU++NA*; *n* = 46, 5.1%) is marked by high scores in callousness and very high scores in negative affect.

Figure 1
Latent Profiles of Callousness and Negative Affect.



ANOVA analysis revealed statistically significant differences among profiles in the compositional variables: callousness ($F(4, 892) = 962.83$, $p < .001$; $\eta^2 = .81$) and negative affect ($F(4, 855) = 200.88$, $p < .001$; $\eta^2 = .48$). Post hoc Bonferroni tests indicated that most pairwise comparisons were statistically significant ($p < .05$). However, there were exceptions: for callousness, no significant differences were found between the *Normative* and the *Very high negative affect profiles* ($p = .055$). For NA, no significant differences were found between the *Normative* and the *+CU* profile ($p = 1$) nor between the ++NA and +CU++NA ($p = 1$) profiles.

Chi-square tests revealed significant differences in gender distribution across profiles ($\chi^2(4) = 79.75$, $p < .001$; $\varphi = .30$). Specifically, girls were more likely to belong to the *Normative* ($\chi^2(1) = 21.08$, $p < .001$; $\varphi = .15$; 41.4% vs. 58.6%), the ++NA ($\chi^2(1) = 17.35$, $p < .001$; $\varphi = .14$; 21.1% vs. 78.9%) and the +CU++NA ($\chi^2(1) = 4.44$, $p = .035$; $\varphi = .07$; 32.6% vs. 67.4%) profiles. Boys were more likely to belong to the +CU ($\chi^2(1) = 36.32$, $p < .001$; $\varphi = -.20$; 66.5% vs. 33.5%) and ++CU+NA ($\chi^2(1) = 24.14$, $p < .001$; $\varphi = -.16$; 78.3% vs. 21.7%) profiles. Given these differences across profiles, subsequent analyses were conducted while statistically controlling for the gender variable.

No statistically significant differences in age were found across the profiles ($F(4, 894) = 1.78$, $p = .131$).

Table 2 presents the comparison of profiles across different personality variables and attachment styles. MANCOVA analyses controlling for gender indicated statistically significant differences between profiles across the Big Five personality traits. Post hoc analyses showed that in the neuroticism dimension, the +CU++NA and ++NA profiles had higher scores than the other CU and normative groups. For extraversion, the +CU++NA profile had lower scores than the other CU profiles and the normative group. Additionally, the ++NA profile scored lower than the normative profile. Regarding openness, the ++CU+NA and +CU profiles scored lower than the other three profiles. Furthermore, all three high-CU profiles scored lower than both the normative and ++NA profiles on agreeableness. Finally, in the conscientiousness dimension, all three CU profiles had lower scores than the normative profile.

Table 2
Comparison of CU and NA Profiles across Different Attachment Styles and Personality Variables, Controlling for the Effect of Gender.

	Normative	+CU	++CU+NA	++NA	+CU++NA				
	Mean (SD)	*Mean (SD)*	*Mean (SD)*	*Mean (SD)*	*Mean (SD)*	*Λ*	*F (df)*	*p*	*η²*
BIG FIVE						.69	16.88 (20, 2949)	.001	.09
Neuroticism	57.19 (14.57)$_a$	56.42 (13.32)$_a$	58.85 (12.94)$_a$	78.47 (15.76)$_b$	76.74 (14.86)$_b$		42.77 (4, 899)	.001	.16
Extraversion	77.96 (14.40)$_a$	74.87 (14.98)$_{ab}$	75.22 (11.89)$_{ab}$	70.50 (16.99)$_{bc}$	64.96 (18.43)$_c$		11.07 (4, 899)	.001	.05
Openness	75.95 (12.24)$_a$	67.89 (12.44)$_b$	66.56 (11.88)$_b$	83.79 (11.84)$_c$	78.48 (14.38)$_{ac}$		19.56 (4, 899)	.001	.08
Agreeableness	77.22 (11.69)$_a$	68.75 (12.55)$_b$	65.07 (12.95)$_b$	77.19 (12.96)$_a$	65.59 (13.93)$_b$		27.37 (4, 899)	.001	.11
Conscientiousness	74.45 (15.51)$_a$	65.87 (16.58)$_{bc}$	60.19 (14.65)$_c$	68.71 (17.32)$_{ab}$	61.37 (16.47)$_c$		20.93 (4, 899)	.001	.09
ATTACHMENT STYLES						.86	11.57 (12, 2344)	.001	.05
Secure attachment	9.68 (1.52)$_a$	8.60 (1.72)$_b$	8.44 (1.86)$_b$	9.69 (1.53)$_a$	9.03 (1.81)$_{ab}$		17.51 (4, 894)	.001	.07
Fearful/preoccupied attachment	7.18 (1.63)$_a$	7.56 (1.63)$_{ab}$	7.68 (1.77)$_{ab}$	8.27 (1.78)$_{bc}$	8.69 (1.89)$_c$		14.14 (4, 894	.001	.06
Avoidant attachment	6.86 (1.62)$_a$	7.43 (1.52)$_{ab}$	7.84 (1.52)$_b$	7.02 (1.46)$_a$	7.79 (1.87)$_b$		10.66 (4, 894)	.001	.05

Note. The means with different subscripts (a, b, c) were significantly different ($p \leq .05$) in pairwise comparisons using Tukey's LSD post-hoc test.

Regarding attachment styles, the +CU and ++CU+NA profiles showed lower scores on secure attachment compared to the ++NA and normative profiles. On fearful/preoccupied attachment, the +CU++NA profile clearly differed from the other high CU profiles and the normative group, presenting higher scores. Moreover, the ++NA profile also had higher scores than the normative group. Finally, in avoidant attachment, the profiles

combining CU and NA (++CU+NA and +CU++NA) presented higher scores than both the normative and ++NA profiles.

Table 3 presents the comparison of profiles across indicators of behavioral maladjustment, socioemotional well-being, and risk behaviors, controlling for gender. MANCOVA analyses, again controlling for gender, revealed significant differences between profiles in various aggression-related behavioral variables. Post hoc tests indicated that in bullying at T1, all three high-CU profiles had higher scores than the normative profile. Among the high-CU profiles, ++CU+NA had the highest scores. At T2, the ++CU+NA and +CU++NA profiles remained the highest-scoring groups compared to the normative group. In terms of cyberbullying at T1, the ++CU+NA and +CU profiles scored higher than both the normative and ++NA profiles. Among CU profiles, ++CU+NA had the highest scores. At T2, the two combined profiles (++CU+NA and +CU++NA) had higher scores than all other profiles.

Table 3

Comparison of CU and NA Profiles across Different Indicators of Behavioral Maladjustment, Socio-Emotional Well-Being, and Risk Behaviors, Controlling for the Effect of Gender.

	Normative	+CU	++CU+NA	++NA	+CU++NA	Λ	F (*df*)	p	η^2
	Mean (SD)	*Mean (SD)*	*Mean (SD)*	*Mean (SD)*	*Mean (SD)*				
BEHAVIORAL MALADJUSTMENT									
T1						.60	29.66 (16, 2591)	.001	.12
T2						.85	6.51 (16, 1833)	.001	.04
Bullying T1	3.10 (3.55)$_a$	6.63 (5.99)$_b$	11.78 (6.85)$_c$	5.12 (4.79)$_{ab}$	6.02 (5.71)$_b$		54.07 (4, 857)	.001	.20
Bullying T2	2.83 (3.42)$_a$	4.97 (5.32)$_{abc}$	6.11 (6.08)$_c$	3.65 (3.85)$_{ab}$	5.68 (5.61)$_{bc}$		9.71 (4, 609)	.001	.06
Cyberbullying T1	1.10 (1.89)$_a$	4.95 (7.84)$_b$	13.81 (11.11)$_c$	2.40 (3.56)$_a$	3.03 (3.79)$_{ab}$		86.84 (4, 857)	.001	.29
Cyberbullying T2	1.48 (2.98)$_a$	2.38 (5.03)$_a$	4.88 (6.01)$_b$	1.75 (2.30)$_a$	4.69 (7.35)$_b$		8.65 (4, 609)	.001	.05
Victimization T1	5.47 (5.06)$_a$	8.44 (6.78)$_b$	10.72 (6.37)$_b$	10.29 (6.89)$_b$	8.98 (7.18)$_b$		23.90 (4, 873)	.001	.10
Victimization T2	4.94 (5.01)$_a$	6.87 (6.12)$_{ab}$	6.93 (5.66)$_{ab}$	8.24 (5.62)$_b$	8.46 (6.37)$_b$		7.79 (4, 616)	.001	.05
Cybervictimization T1	2.10 (3.26)$_a$	5.74 (7.26)$_b$	13.10 (10.03)$_c$	4.95 (6.08)$_b$	4.56 (5.79)$_b$		64.92 (4, 873)	.001	.23
Cybervictimization T2	2.06 (3.61)$_a$	3.06 (5.12)$_{abc}$	5.45 (5.77)$_c$	2.74 (3.78)$_{ab}$	5.07 (8.74)$_{bc}$		6.84 (4, 616)	.001	.04
Proactive aggression T2	2.01 (2.35)$_a$	3.65 (4.50)$_a$	5.97 (5.19)$_b$	2.09 (2.41)$_a$	3.45 (3.46)$_a$		12.51 (4, 609)	.001	.08
Reactive aggression T1	6.74 (3.77)$_a$	8.01 (4.63)$_{ab}$	11.03 (5.25)$_c$	9.22 (4.19)$_{bc}$	10.71 (4.97)$_c$		24.72 (4, 857)	.001	.10
Reactive aggression T2	7.07 (3.81)$_a$	7.33 (4.91)$_a$	7.94 (4.54)$_a$	8.02 (4.19)$_a$	10.48 (4.25)$_b$		4.68 (4, 609)	.001	.03

	Normative	+CU	++CU+NA	++NA	+CU++NA	Λ	F (*df*)	p	η^2
	Mean (SD)	*Mean (SD)*	*Mean (SD)*	*Mean (SD)*	*Mean (SD)*				
SOCIO-EMOTIONAL WELL-BEING									
T1						.78	13.64(16, 2576)	.001	.06
T2						.88	4.93 (16, 1809)	.001	.03
Loneliness T1	5.83 (2.45)$_a$	6.04 (2.69)$_a$	6.88 (2.65)$_a$	8.93 (3.02)$_b$	8.87 (3.61)$_b$		29.06 (4, 852)	.001	.12
Loneliness T2	5.74 (2.59)$_a$	6.08 (2.71)$_a$	6.29 (2.81)$_a$	8.28 (3.23)$_b$	8.29 (2.51)$_b$		12.35 (4, 601)	.001	.08
Self-esteem T1	30.24 (4.91)$_a$	28.59 (5.61)$_a$	28.73 (5.11)$_a$	25.39 (6.01)$_b$	24.50 (5.06)$_b$		23.29 (4, 852)	.001	.10
Self-esteem T2	31.27 (5.56)$_a$	29.98 (5.17)$_{ab}$	28.07 (3.76)$_{bc}$	27.87 (6.41)$_{bc}$	26.18 (6.05)$_c$		11.17 (4, 601)	.001	.07
Life satisfaction T1	17.49 (4.09)$_a$	14.71 (5.07)$_{bc}$	14.39 (4.42)$_{bc}$	15.29 (4.57)$_b$	13.24 (4.49)$_c$		24.20 (4, 852)	.001	.10
Life satisfaction T2	17.43 (4.30)$_a$	16.89 (4.86)$_a$	15.81 (5.08)$_a$	16.67 (4.60)$_{ab}$	13.63 (4.57)$_b$		5.68 (4, 601)	.001	.04
Trust in friends T1	38.71 (8.21)$_a$	34.61 (9.10)$_{bc}$	32.68 (7.74)$_c$	37.86 (9.42)$_{ab}$	35.35 (9.61)$_{abc}$		9.94 (4, 852)	.001	.05
Trust in friends T2	40.17 (8.78)	16.89 (4.86)	15.81 (5.08)	16.67 (4.60)	13.63 (4.57)		1.52 (4, 601)	.20	.01

	Normative	+CU	++CU+NA	++NA	+CU++NA	Λ	F (*df*)	p	η^2
	Mean (SD)	*Mean (SD)*	*Mean (SD)*	*Mean (SD)*	*Mean (SD)*				
RISK BEHAVIORS									
T1						.75	12.83 (20, 2823)	.001	.06
T2						.86	4.55 (20, 1990)	.001	.04
PIU T1	37.82 (11.71)$_a$	48.84 (14.08)$_b$	59.43 (11.79)$_c$	41.37 (12.32)$_a$	49.10 (15.36)$_b$		55.14 (4, 861)	.001	.21
PIU T2	35.59 (11.23)$_a$	43.34 (14.23)$_{bc}$	47.62 (16.80)$_c$	39.14 (12.53)$_{ab}$	43.42 (14.06)$_{bc}$		13.06 (4, 610)	.001	.08
Sexting T1	1.28 (2.49)$_{ab}$	2.69 (4.26)$_b$	5.18 (4.92)$_c$	1.23 (2.49)$_a$	2.30 (3.75)$_{ab}$		19.56 (4, 861)	.001	.08
Sexting T2	1.91 (3.31)	2.04 (3.49)	2.91 (4.22)	2.07 (3.98)	3.22 (3.11)		1.41 (4, 610)	.23	.01
Cigarette use T1	0.34 (1.15)$_a$	0.72 (1.60)$_{ab}$	0.93 (1.52)$_b$	0.45 (1.23)$_{ab}$	0.85 (1.71)$_{ab}$		5.55 (4, 861)	.001	.03
Cigarette use T2	0.56 (1.40)$_a$	0.76 (1.67)$_{ab}$	1.47 (2.03)$_b$	0.80 (1.62)$_{ab}$	0.52 (1.19)$_a$		3.65 (4, 610)	.01	.02
Alcohol use T1	0.54 (1.03)$_a$	1.11 (1.53)$_{bc}$	1.28 (1.67)$_c$	0.69 (1.11)$_{ab}$	1.02 (1.57)$_{abc}$		9.46 (4, 861)	.001	.04
Alcohol use T2	0.75 (1.22)	1.02 (1.53)	1.34 (1.82)	0.73 (1.07)	1.26 (1.68)		1.95 (4, 610)	.10	.01
Cannabis use T1	0.10 (.55)$_a$	0.43 (1.23)$_{ab}$	0.55 (1.31)$_b$	0.09 (0.55)$_a$	0.52 (1.28)$_b$		8.06 (4, 861)	.001	.04
Cannabis use T2	0.20 (.76)$_a$	0.52 (1.39)$_a$	0.28 (0.89)$_a$	0.17 (0.70)$_a$	0.22 (0.58)$_a$		2.61 (4, 610)	.04	.02

Note. The means with different subscripts (a, b, c) were significantly different ($p \leq .05$) in pairwise comparisons using Tukey's LSD post-hoc test.

For victimization variables, MANCOVA analyses also revealed significant differences across profiles. Post hoc comparisons showed that at T1, all profiles had higher victimization scores than the normative group. At T2, the

+CU++NA and ++NA profiles had higher scores than the normative group. In terms of cybervictimization at T1, results mirrored those of victimization, with all profiles scoring higher than the normative group. However, the ++CU+NA profile showed the most clearly elevated scores among CU profiles. At T2, both combined profiles (++CU+NA and +CU++NA) continued to score higher than the normative group.

Regarding proactive aggression at T1, all three CU profiles scored higher than the normative group. Within the high CU profiles, ++CU+NA scored higher than the others. At T2, ++CU+NA continued to show the highest scores compared to other CU profiles and the normative group. In terms of reactive aggression at T1, the combined profiles (++CU+NA and +CU++NA) had higher scores than the normative group. The ++NA profile also scored higher than the normative group. However, at T2, only the +CU++NA profile had higher scores than the other CU profiles and the normative group. As for socioemotional well-being variables, MANCOVA analyses revealed significant differences among profiles on all variables measured at both T1 and T2, except for trust in friends at T2. Post hoc results showed that the +CU++NA and ++NA profiles had higher loneliness scores than the normative and other high CU groups at both time points. For self-esteem at T1, the +CU++NA and ++NA profiles had lower scores than the normative group and other high-CU groups. At T2, in addition to these two profiles, the ++CU+NA profile also had lower self-esteem scores than the normative group. On life satisfaction at T1, all four profiles differed from the normative profile with lower scores, while at T2, the +CU++NA profile had significantly lower scores than the normative, +CU, and ++CU+NA profiles. Lastly, on trust in friends, the +CU and ++CU+NA profiles had lower scores than the normative group at T1; these differences were no longer significant at T2.

Finally, regarding risk behaviors, MANCOVA analyses indicated significant differences between profiles in PIU, cigarette use, and cannabis use at both T1 and T2. For sexting and alcohol use, significant differences emerged only at T1. Post hoc analyses revealed that at T1, all three high-CU profiles had higher PIU scores than both the normative and ++NA profiles. However, at T2, the high CU groups demonstrated only a difference in comparison to the normative group, and only the ++CU+NA group exhibited statistically higher scores than the ++NA group. Among CU profiles, ++CU+NA had the highest scores. In sexting at T1, the +CU and ++CU+NA profiles scored higher than the ++NA profile, with ++CU+NA scoring higher than +CU. These differences disappeared at T2. The ++CU+NA profile also had higher cigarette use scores than the normative group at both T1 and T2. Regarding alcohol use, the ++CU+NA and +CU profiles scored higher than the normative group at T1, with ++CU+NA showing higher scores than +CU; these differences were not observed at T2. Lastly, for cannabis use at T1, the ++CU+NA and +CU++NA profiles had higher scores than both the normative and ++NA profiles, while at T2, all five profiles grouped similarly.

Discussion

The first objective of this study was to empirically identify subgroups of adolescents based on the core component of CU traits and levels of NA. Using a person-centered analytical approach (i.e., LPA), our results identified five distinct adolescent profiles. According to our hypothesis, this study identified high-CU variants with different levels of NA, consistent with theoretical models of primary and secondary psychopathy (Karpman, 1941; Kimonis et al., 2012). However, two profiles in our study were characterized by relatively high emotional dysregulation: one where CU predominates over NA (++CU+NA) and another where NA predominates over CU (+CU++NA).

Gender differences emerged across the identified profiles. Previous studies have reported inconsistent findings regarding gender differences between CU variants (Craig et al., 2021). One limitation frequently noted is that most research uses justice-involved samples, which are predominantly male, hindering generalizability (Pusch & Holtfreter, 2018). Our community-based study found that profiles with elevated CU traits (+CU and ++CU+NA) included more boys, while those with higher NA (++NA and +CU++NA) included more girls. These findings align with previous research reporting a higher proportion of boys in the primary variant (Craig & Moretti, 2019; Huang et al., 2020). However, regarding secondary variants, our results suggest that gender differences may depend on the predominant trait: when CU predominates, boys are more represented; when NA predominates, girls are more represented. Thus, both genders may show secondary traits, but boys express more emotional coldness and girls more affective distress. These gender-related patterns are consistent with previous research suggesting that boys exhibit higher levels of emotional insensitivity (Essau, et al., 2006), whereas girls tend to internalize distress and may present higher levels of anxiety and emotional dysregulation (Gutman & Codiroli McMaster, 2020).

Once the profiles were identified, another aim was to examine how these profiles differed in terms of personality variables. Unlike previous studies, this work explored not only general personality traits (Big Five) but also attachment styles, thereby addressing both trait and contextualized personality domains, as proposed by multi-level personality models (McAdams & Olson, 2010; McCrae & Costa, 2021).

The two profiles with the highest CU (+CU and ++CU+NA) showed high extraversion and low neuroticism, openness, agreeableness, and conscientiousness. In contrast, the +CU++NA profile was characterized by high neuroticism, high openness, and low extraversion, along with similarly low agreeableness and conscientiousness. Thus, two distinct profiles emerged from a common base of low

agreeableness and conscientiousness: when CU predominates, the personality pattern appears extraverted, emotionally stable, and low in openness to experience; when NA predominates, the pattern is more emotionally unstable, open to experience, and introverted.

Moreover, our findings support the hypothesis that high CU is associated with insecure attachment patterns. Specifically, the two highest-CU profiles showed low levels of secure and fearful/preoccupied attachment. The combined profiles exhibited high levels of avoidant attachment, and notably, the +CU++NA profile also had elevated fearful/preoccupied attachment. Therefore, the secondary variant, particularly the one with the highest levels of NA (+CU++NA), is distinguished by a more dysregulated attachment profile (higher avoidant and fearful/preoccupied attachment), consistent with the model of Kimonis et al. (2008). According to this model, early adverse experiences affect emotional development, promoting the emergence of insecure or disorganized attachment styles. This, in turn, increases emotional dysregulation and interpersonal difficulties, potentially leading to CU traits and lack of empathy. In this way, a hostile childhood environment may shape socioemotional patterns that predispose individuals to antisocial and psychopathic behavior.

This study also aimed to delineate behavioral and emotional criteria associated with the identified profiles. Using measures collected at both T1 and T2, we were able to examine associations both cross-sectionally and longitudinally. Some differences were only significant at the cross-sectional level (e.g., sexting and alcohol use) and did not persist one year later. The stronger predictive power in concurrent, compared to longitudinal associations, is not unexpected (Valkenburt et al., 2017). This is particularly relevant in adolescence, a developmental phase marked by rapid changes, during which patterns of risk behaviors may fluctuate considerably (Guo et al., 2023). As a result, cross-sectional associations often emerge more clearly than prospective ones. For this reason, we chose to focus specifically on the most robust relations—those that remained significant both at T1 and T2, thus capturing how psychopathic profiles can predict consistent tendencies in behavioral and emotional outcomes over time.

Regarding behavioral maladjustment, our findings indicate that the combined profiles (++CU+NA and +CU++NA) are more likely to engage in face-to-face bullying and to be victims of cyberbullying. However, cyberaggression was more frequent in the ++CU+NA profile, while face-to-face victimization was more pronounced in the +CU++NA profile. These results suggest that the ++CU+NA profile is more aggressive in both physical and digital contexts—especially the latter—while the +CU++NA profile is more frequently victimized in both, particularly in-person bullying. The increased involvement in cyberaggression observed in the ++CU+NA profile may be explained by high CU levels, characterized by low empathy, guilt, and concern for others. Prior studies have shown that CU traits predict cyberbullying perpetration by reducing moral inhibition (Kokkinos & Voulgaridou, 2017). Similarly, the greater vulnerability of the +CU++NA profile to face-to-face victimization may stem from elevated NA—manifested as anxiety, sadness, or distress—which is well-documented as a predictor of victimization (Christina et al., 2021). Adolescents displaying these emotions may be perceived as weaker and more vulnerable, making them likelier targets of bullying. These emotional characteristics are easily recognized by aggressors (Forbes et al., 2019).

Our results also indicate that the ++CU+NA profile exhibits higher levels of proactive aggression, while the +CU++NA profile shows higher reactive aggression. Thus, the ++CU+NA profile uses aggression as a means to an end, while in the +CU++NA profile, aggression is more emotionally driven—often in response to threats or frustration (Fanti et al., 2013). In summary, the profile in which CU predominates is more aggressive overall, while the profile in which NA predominates tends to be more victimized, although capable of reactive aggression. As no previous research has examined these specific combinations of CU traits and negative affect in relation to different types of aggression, further investigation is warranted to assess the robustness of our findings.

Regarding socioemotional well-being, the highest-CU profiles displayed lower levels of loneliness, while the +CU++NA profile showed greater loneliness, lower self-esteem, and lower life satisfaction. These results suggest that CU traits may be associated with a less negative perception of loneliness, which could be explained by reduced emotional sensitivity to negative social situations (Kimonis et al., 2008). However, when CU traits are combined with high levels of NA, individuals may exhibit increased emotional vulnerability, self-criticism, and hypervigilance, which can impair their ability to form meaningful interpersonal relationships (Fanti et al., 2013).

Results on risk behaviors showed that all three high-CU profiles (+CU, ++CU+NA, and +CU++NA) had higher levels of PIU, congruent with our initial hypothesis. However, results were inconsistent across T1 and T2 for sexting, alcohol, and cannabis use. The PIU findings are consistent with prior studies (Trumello et al., 2018), which found that callousness was a strong predictor of internet addiction. Regarding substance use, unlike previous studies that did not find significant associations with CU (Bégin et al., 2024), our results indicate that the ++CU+NA profile had higher levels of cigarette use. This association may reflect difficulties in emotional regulation and the use of smoking as a coping strategy (Scales et al., 2009).

In sum, the personal, emotional, behavioral, and psychosocial measures in this study allowed us to characterize a more "primary" CU variant (+CU). This variant was defined by high extraversion and low neuroticism, openness, agreeableness, and conscientiousness, along with low levels of secure and fearful/preoccupied

attachment. Behaviorally and emotionally, this profile showed higher PIU and lower loneliness. Two distinct secondary variants were identified: the CU-dominant secondary variant showed the same traits as the primary one but additionally had higher avoidant attachment, more face-to-face bullying, greater cybervictimization and cyberaggression, more proactive aggression, and greater cigarette use. The NA-dominant secondary variant, by contrast, was characterized by high neuroticism, high openness, low extraversion, and high fearful/preoccupied attachment. It also showed higher levels of face-to-face victimization, reactive aggression, loneliness, low self-esteem, and low life satisfaction. Overall, secondary variants exhibited higher levels of emotional, social, and behavioral maladjustment than the primary variant, suggesting that CU-NA combinations may lead to more detrimental outcomes. These findings are consistent with some previous research suggesting that secondary variants present more internalizing and externalizing symptoms than primary variants (Bégin et al., 2024; Docherty et al., 2015).

This study has several limitations to consider. First, the exclusive use of self-report measures increases the risk of shared method variance (Podsakoff et al., 2012). Although anonymous self-reports are the standard method for assessing aggressive and risk behaviors in adolescents (Brener et al., 2003; Molcho et al., 2025), the value of complementing this approach with multi-informant strategies and additional methodologies is well recognized (De los Reyes et al., 2015). These alternatives might help reduce potential biases inherent to self-reporting, such as underreporting or exaggeration of socially undesirable behaviors, denial or lack of awareness of unhealthy behavioral patterns, or disengagement when completing questionnaires. Thus, future studies should consider incorporating other types of data, such as parent, teacher, or peer reports, as well as qualitative narratives, to better capture adolescents' subjective experiences. Additionally, further measures of "dark" traits (e.g., narcissism, manipulativeness), adapted for adolescent populations, could help enrich the nomological network of the profiles identified in our study. Second, profiles were identified based on cross-sectional data, so further research should examine the stability and development of these profiles over time. Third, a limitation of this study concerns the internal consistency of the attachment scales used. Although the MIIC values fell within acceptable ranges, some Cronbach's α coefficients were low. This is not uncommon in short scales, where alpha may provide distorted estimates of reliability due to its sensitivity to the number of items and assumptions of unidimensionality (McNeish, 2018). In the specific field of adolescent attachment, previous research has shown that most existing instruments display limited psychometric robustness, pointing to a broader issue in the field rather than a flaw unique to our study (Jewell et al., 2019). Despite these limitations, we retained the attachment measures given their theoretical importance in differentiating between primary and secondary psychopathy variants. Attachment disruptions have been associated with the development of secondary psychopathic traits, providing a developmental framework for understanding emotional dysregulation and impulsivity (Kimonis, 2023). Our findings underscore the importance of this relational dimension and highlight the need for further research, which should include the development of stronger measures to assess attachment in young people. Fourth, although distinct primary and secondary variants were identified, the validation of these typologies would benefit from incorporating background information on personal, psychobiological, and family histories, consistent with etiological models of psychopathic traits. Fifth, future longitudinal studies will also help clarify the long-term consequences of these profiles across the life course. Sixth, although data were collected from socio-demographically diverse areas (e.g., urban and rural), replication in other cultural contexts is recommended to strengthen the generalizability of our findings. Moreover, as some of the profiles identified include relatively few individuals, further studies in different populations will also help confirm their consistency and interpretative value.

Finally, it is important to emphasize that, although we have used terms associated with primary and secondary psychopathy, our analysis is based on dimensional and subclinical traits present in the general population, rather than on formal clinical diagnostic categories. This means that the identified profiles represent personality configurations with theoretical and practical relevance, but they should not be interpreted as clinical diagnoses. Future research could complement these findings by incorporating more detailed clinical assessments to validate the correspondence between dimensional profiles and diagnostic categories.

From a practical standpoint, these findings suggest that CU is a relevant component for identifying adolescents at risk for psychosocial maladjustment. When CU is combined with high emotional dysregulation—as in secondary variants—a particularly maladaptive constellation of behavioral, emotional, and social adjustment difficulties emerges. Therefore, prevention efforts during adolescence should consider these results and implement more intensive interventions for individuals with high CU, targeting empathy and interpersonal sensitivity. When NA is also present, it becomes especially important to include components focused on emotion regulation and impulse control. Our results also highlight the need for multicomponent prevention programs that integrate work on emotional, social, and attachment skills, along with targeted actions to reduce risk behaviors such as bullying, aggression, or substance use.

Conclusions

This study provides evidence for heterogeneity among adolescents with CU traits. The results revealed distinct and theoretically coherent profiles, largely consistent with

existing conceptualizations of psychopathic subtypes. Furthermore, the study connected CU variants to broader personality models, in line with current psychopathology frameworks (Allen et al., 2019; Watts et al., 2019). Through its longitudinal design and comprehensive analysis of emotional and behavioral correlates, the study offers valuable insights for designing preventive strategies tailored to the psychological patterns of different adolescent profiles.

Complementary information

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