








Research Article

Temperament and character differences in psychopathic and non-psychopathic antisocial adolescents

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ABSTRACT

The present study tested the possibility of distinguishing between different types of antisocial adolescents based on psychopathic characteristics, and the differences between antisocial adolescents of different ages and subtypes in relation to the Cloninger's personality dimension. The sample included 101 antisocial male adolescents, divided into two age groups (71 respondents in the 13-17 age group and 30 in the 18-25 age group). After conducting model-based cluster analyses, non-psychopathic type (without pronounced signs of psychopathy) and psychopathic type (with pronounced antisocial, lifestyle and interpersonal facet) (Hare's model) were singled out in the whole sample. Within the psychopathic type, in comparison with juveniles, older adolescents showed a significantly lower expression of character dimensions of Self-directedness and Cooperativeness, which are key in determining all personality disorders. Within the group of juvenile offenders, members of the two subtypes did not differ significantly in temperament and character, which indicates that juveniles are in the process of personality development, especially when it comes to their character, so they are more susceptible to treatment and their outcomes are uncertain. The results suggest that

the inflation of psychopathic scores may occur in juveniles due to the identification of developmental features of adolescence (impulsivity, immaturity) as psychopathic, which implies the need to apply basic personality models in the assessment of antisocial adolescent.

Keywords: antisocial behavior, personality traits, youth psychopathy, juvenile offenders, psychopathy assessment

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Introduction

Antisocial behavior and psychopathic traits in adolescence

Antisocial behavior is usually defined as a behavior that violates social norms and harms the rights of others (Álvarez-García et al., 2019). Developmental changes during adolescence, which are reflected in the increased risk-taking and sensation seeking, still-developing self-control, weakening ties with parents and strengthening peer influences are important for the emergence and increase of antisocial behavior of some adolescents (Álvarez-García et al., 2019; Romer et al., 2017; Rudolph et al., 2017; Taylor et al., 2015). Adolescents with conduct disorders (CD) represent a heterogeneous group with respect to the different outcomes of their antisocial behavior (Bevilacqua et al., 2018). Although most adolescents show a cessation or decline in the rate of antisocial behavior in adulthood (Kazemian, 2021; Steinberg et al., 2015), the subtype of children and adolescents with psychopathic traits was separated within the population of children and adolescents with CD, associated with a special path of antisocial behavior characterized by early onset, more serious, diverse, and persistent antisocial behavior. This psychopathic subtype in youth has poorer prognosis, as a tendency to develop antisocial personality disorder (APD), substance related disorders and chronic crime in adulthood (Asscher et al., 2011; Goulter et al., 2018; Hemphälä & Hodgins, 2014). Early psychopathic traits can most likely be identified within the developmental path of delinquency with an early onset and throughout the entire life cycle (Moffitt, 2018; Moffitt et al., 2008).

Psychopathy refers to a specific construct of antisocial personality that has a long history in psychological and biomedical sciences. Although it is not part of existing diagnostic classifications, DSM-5 recognized psychopathy as a “specifier” of clinical APD (Conti, 2016; Drislane et al., 2019). Robert Hare developed a model according to which psychopathy represents a personality disorder consisting of affective, interpersonal and behavioral characteristics and defines four-facet model of psychopathy (Hare & Neuman, 2008, 2010). Interpersonal (e.g., glibness/superficial charm) and Affective facets (e.g., callousness/lack of empathy), refer to personality traits and together form a

higher order factor, called Interpersonal/affective, while Lifestyle (e.g., impulsivity/irresponsibility) and Antisocial facets (e.g., criminal tendencies) make up another higher order factor – Socially deviant lifestyle, which refers to antisocial behavior patterns (Newman et al., 2014).

In the last three decades there has been a growing interest in adapting and expanding the concept of psychopathy to children and adolescents (Pisano et al., 2017). The research singles out a subgroup of children and adolescent called psychopathic, who have pronounced callous-unemotional traits, extreme behavioral problems, special neurocognitive profile, higher genetic risk, poor prognosis and serious criminal career (Andershed et al., 2018; Byrd et al., 2018; González Moraga et al., 2019; Frick, 2009; Frick et al., 2014; McCuish et al., 2015; Moore et al., 2019; Soma et al., 2018; Viding et al., 2008). Callous-unemotional (CU) traits, related to lack of empathy and remorse, insensitivity to others' feelings, and shallow and deficient affect, are considered a key factor in psychopathy in young people (Baskin-Somers et al., 2015; Frick et al., 2014; Squillaci & Benoit, 2021). DSM-5 added a "limited prosocial emotions" (LPE) specifier for the CD, which is based on CU traits (Colins et al., 2020).

Questionnaires for assessing psychopathy in children and young people are mostly a modified version of the Hare's scale for adults (Psychopathy Check List-Youth Version (PCL-YV; Forth, Kosson & Hare, 2003) (Forth & Brazil, 2019; Neumann et al., 2006). The results of previous research confirm that child and adolescent psychopathy have structural homogeneity and a similar factor structure as psychopathy in adults, but with some developmental differences (Andershed et al., 2018; Frick & Morris, 2004; Hawes et al., 2014; Luo et al., 2021; Lynam et al., 2008; Salekin et al., 2006).

Previous studies suggest reduction in maladaptive psychopathic personality traits from adolescence to adulthood, which is consistent with the well-documented decrease in offending that occur during early adulthood (Hawes et al., 2014; McCuish & Lussier, 2018). Also, studies show that levels of psychopathic traits have the potential to change over time under the influence of certain predictors (e.g., delinquent peer association, parental warmth, exposure to violence) (Kerr et al., 2012; Pauli et al., 2020; Ray et al., 2018; Viding &

McCrory, 2018; Waller et al., 2016). These results are consistent with the understanding of some authors that perceived psychopathic traits in youth are subject to change and may reflect typical developmental characteristics in adolescence (immature behavioral controls, sensation seeking, impulsivity) which usually improve with time and guidance (Seagrave & Grisso, 2002; Simões & Conçalves, 2017). Callous-unemotional traits appear to show greater stability over time and relate to primary emotional deficits underlying psychopathy, whereas poor behavioral control and even social deviance are likely more natural developmental stages, that some youth may outgrow (Anderson & Kiehl, 2014). As personality is not fully structured and defined in adolescence and as it is in the process of development, the question arises whether we can speak of psychopathy as a fully structured personality disorder in adolescence.

The researchers' interest in adolescent psychopathy focus on developing measures that will be dimensional instead of categorical (Markus, 2017; da Silva et al., 2012), and thus growing interest in the possibility of conceptualizing psychopathy within basic personality models, mostly within Big Five Model (Simões & Conçalves, 2017). Since some psychopathic traits have a neurobiological basis, we believe that attempts to conceptualize psychopathy within psychobiological personality models, such as Cloninger's psychobiological model, may be useful. Personality traits within this model refer to developmental constructs.

We can conclude that the concept of psychopathy in children and adolescents is still the subject of numerous controversies and disagreements. There is a danger of labeling children and adolescents as psychopaths, due to possible stigmatization and adverse impact on court decisions and the availability of treatment and other social measures (Murrie et al., 2005; Simões & Conçalves, 2017; Viding & McCrory, 2018). There are numerous problems in the field of conceptualization and measurement of psychopathy in adolescence and they concern the stability of psychopathic traits in the developmental period and dimensional versus categorical nature of psychopathy (Cauffman et al., 2016; Simões & Conçalves, 2017; Markus, 2017). According to some authors, future research should broaden its focus from CU traits to other dimensions of the

construct (grandiose-manipulative and daring-impulsive) and interactions of dimensions, as well as to enhance measurement precision (Andershed et al., 2018; Salekin, 2017). Despite these problems, isolation of the subgroup of children and adolescents with psychopathic traits would be important for prevention, prediction of outcomes and construction of appropriate treatments (Frick et al., 2014; Pisano et al., 2017; Viding & McCrory, 2018; Wilkinson et al., 2016).

Cloninger's model of personality

Cloninger's psychobiological model of personality is intended primarily for the assessment of normal personality, but it also has a special application in the diagnosis and differentiation of personality disorders, including APD and/or psychopathy (Cloninger, 2005, 2008; Svrakic et al., 2002). According to Cloninger, personality is a complex neurobiological and neurogenetically based adaptive system composed of different but interactive domains of temperament and character (Cloninger, 2005). Cloninger's model is called the Seven-Factor because it encompasses four dimensions of temperament: Harm Avoidance, Novelty Seeking, Reward Dependence, and Persistence, and three-character dimensions: Self-Directedness, Cooperativeness and Self-Transcendence. The dimensions of temperament are universal and independent of culture or ethnicity. They are genetically based, reflect individual differences in the strength of associative learning, manifest in early childhood and are relatively stable throughout life, while character dimensions appear later in life, influenced by socio-cultural factors and maturation (Svrakic et al., 2002; Zohar, 2007). Harm Avoidance refers to the tendency to inhibit behavior in response to adverse stimuli and danger/punishment; Novelty Seeking refers to the tendency to initiate exploratory behavior in response to novelty and to react impulsively; Reward Dependence represents a bias to respond to reward and social approval strongly; and Persistence represents the tendency to persevere despite frustration or fatigue. In terms of character dimensions, Self-Directedness refers to a person's degree of responsibility, independence, self-esteem, and goal-oriented behavior; Cooperativeness refers to the level of empathy and compassion for other people, and the degree to which an individual sees himself

as part of the community; finally, Self-Transcendence implies the extent to which a person sees himself/herself as part of the universe and the extent to which they are religious.

Within the Cloninger's model, all personality disorders, regardless of type, are characterized by lower levels of character development, especially the dimensions of Self-Directedness and Cooperativeness (Cloninger, 2005; Cloninger & Svrakic, 2008; Snowden & Gray, 2010), while individual temperament types can be distinguished based on temperament dimension configurations (Cloninger & Svrakic, 2008; Richter & Brändström, 2009). APD is characterized by low Harm Avoidance, and Reward Dependence dimensions, as well as a high Novelty Seeking dimension (Cloninger, 2005; Martínez-López et al., 2019; Snowden & Gray, 2010; Svrakic et al., 2002). Basoglu with associates (2011) partially confirmed this model in the group of 68 young adults male with APD and the control group of 65 healthy male, showing that PCL-R Factor 1, Factor 2 and Total scores were positively correlated with Novelty Seeking and unexpectedly with Harm Avoidance, and were negatively correlated with Reward Dependence, Persistence, Self-Directedness and Cooperativeness in the whole sample, but when each group was analyzed separately, the correlations were not significant. The authors believe that reduced variance of PCL-R scores in each group might lead to nonsignificant associations within groups. Lenox and Dolan (2014) state that they conducted the first study of the relationship between Temperament and Character Inventory (TCI) and the PCL-YV in juveniles. In a sample of 121 incarcerated juvenile male offenders, they found that PCL-YV total score was positively correlated with Novelty Seeking but negatively correlated with Cooperativeness and Harm Avoidance.

Cloninger's model of personality, which in addition to relatively hereditary and stable temperament traits includes character aspects, which may be influenced by learning and environment, may provide the theoretical grounds for intervention in prevention and treatment of antisocial behavior and psychopathy in children and adolescents (Lee et al., 2018).

Aims of the Study

In this study, we were interested in determining whether antisocial adolescents formed a homogeneous group or whether a psychopathic subtype could be distinguished according to Hare's model of psychopathy, and whether the concept of psychopathic traits could be extended to the age below eighteen. Also, the subject of the present research was the relationship between psychopathic characteristics and personality dimensions within the Seven-Factor model in adolescence. We investigated whether antisocial adolescent of different subtypes (psychopathic and non-psychopathic) and different ages (younger – 13 to 17 years and older – 18 to 25 years) differ in temperament and character dimensions, bearing in mind the developmental changes during adolescence that may be reflected in the manifestation of psychopathic traits.

In accordance with the objectives of the research, the following hypotheses were formulated:

Hypothesis 1.

We expect that a psychopathic subtype of adolescents can be singled out, which will include adolescents younger than 18 and adolescents aged 18 and older based on the severity of Hare's psychopathy factors. The psychopathic subgroup of adolescents will show significantly higher scores on the four facets of psychopathy compared to the members of the non-psychopathic group of adolescents.

Hypothesis 2.

a) In the case of isolating the psychopathic type among adolescents under the age of 18, we expect that this subtype will not differ significantly from the group of older psychopathic adolescents in relation to Cloninger's personality dimensions.

b) The psychopathic group of younger adolescents will differ significantly from the group of non-psychopathic adolescents from the same age group in relation to Cloninger's personality dimensions.

Method

Participants

101 male antisocial adolescents were examined in a cross-sectional study. Participants were divided into two age groups: 71 subjects in the 13-17 age group met the DSM-IV diagnostic criteria for conduct disorder (CD) based on clinical or criminal personal files, and 30 subjects in the 18-25 age group met diagnostic criteria for APD based on criminal personal files and achieved T score ≥ 70 on MMPI-202 Psychopathic Deviation subscale (Pd, MMPI-202, Biro, 2001). We decided to include respondents with CD and APD diagnostic categories depending on age, since psychopathy is a subgroup within these diagnostic categories, so it is expected that respondents with pronounced psychopathic characteristics according to Hare's criteria can be identified within the population with these diagnoses. An additional criterion for inclusion in the sample was that the respondents completed a minimum sixth grade of elementary school, in order to have sufficient reading skills to complete the questionnaires. The age of the respondents in the younger group varied in the range of 13 to 17 years ($AS = 16.27$; $SD = .985$), and in the older group from 18 to 25 years ($AS = 22.17$; $SD = 1.780$).

Instruments

Psychopathy Assessment Questionnaire (PAQ; Novović et al., 2006)

PAQ questionnaire (Biro et al., 2008) is based on Hare's model of psychopathy (PCL-R, Hare, 1991). It comprises 4 subscales that correspond to the facets of Hare's model of psychopathy (Interpersonal Relationships, Psychopathic Affect, Lifestyle and Antisocial Behavior). It contains 40 items with a binary response form (Yes/No), and it is intended for use with an adult population. According to the authors of the instrument, the questionnaire shows satisfactory metric characteristics (Biro et al., 2008). In order to check the latent structure of the PAQ subscale measurement space, the questionnaire is modified and shortened (consisting of 24 items) for the purpose of this study, based on

the principal component analysis with Oblimin-Kaiser rotation, because it has not been used in adolescents so far. In the modified version, the subscale Antisocial Behavior (4 items) includes items that indicated tendency for criminal behavior, problems at school or work, and breaking the rules. Subscale Lifestyle (6 items) includes items indicating increased need for stimulation, irresponsibility, proneness to abuse of psychoactive drugs, and promiscuous behavior. Subscale Interpersonal Relationships (8 items) includes items corresponding with impulsivity, lack of scruples, callous belief in personal charm, and being manipulative, while subscale Psychopathic Affect (6 items) includes items of superficial affect and lack of empathy, remorse, and guilt. The reliability of the modified scale is presented by Cronbach's alpha coefficient in the study sample ranged from .534 for Psychopathic Affect to .739 for Antisocial Behavior. The less satisfactory reliability of the Psychopathic Affect subscale results from the lower reliability of this subscale in the initial version of the questionnaire and possible limitations in terms of the construct validity measurement (modification of the questionnaire improved the reliability of the subscale). Also, the modified subscale contains 4 items that have a socially desirable connotation (reverse scoring), which may have influenced the way respondents chose the answer to this subscale.

Temperament and Character Inventory (TCI-5) (Cloninger, 1999) (Serbian version by Knežević & Džamonja-Ignjatović, 2005)

TCI-5 consists of 7 scales describing the 4 dimensions of temperament (Novelty Seeking, Harm Avoidance, Reward Dependence, and Persistence) and 3 dimensions of character (Self-Directedness, Cooperativeness, and Self-Transcendence), intended for ages 18 and older. The questionnaire contains a total of 240 items, which are assessed on a five-point Likert scale (from 1-Strongly disagree to 5-Strongly agree). Studies confirmed construct validity, reliability and the cross-cultural applicability of the TCI-5 in Serbia (Džamonja-Ignjatović & Knežević, 2005; Džamonja-Ignjatović et al., 2010). The reliability of the TCI-5 questionnaire scales in the study sample is relatively satisfactory and ranges from Cronbach's alpha .57 for the Novelty Seeking scale to .86 for the Persistence and Self-Directedness scales. The slightly lower reliability of the

Novelty Seeking scale possibly results from sample selection (antisocial adolescents male), since TCI-5 was validated on a representative sample from the normal population.

Adolescent Temperament and Character Inventory (ATCI-84) (Dukanac & Džamonja-Ignjatović, 2008)

ATCI-84 is intended to assess adolescents aged 14-18 years. It contains 84 items grouped into four temperament scales (Novelty Seeking, Harm Avoidance, Reward Dependence, and Persistence) and three-character scales (Self-Directedness, Cooperativeness, and Self-Transcendence), which correspond to Cloninger's personality dimensions. All scales have 12 items that are assessed on a five-point Likert-type scale (1-Strongly disagree to 5-Strongly agree). There are no published data on the metric characteristics of this questionnaire, while the reliability of the scales for the ATCI-80 version of the questionnaire indicates moderate reliability, ranges from .69 to .79, estimated by the alpha coefficient of internal consistency. The scales show acceptable validity (Dukanac et al., 2011). ATCI-84 reliability expressed by Cronbach's alpha coefficient in this study ranges from .62 for Cooperativeness to .74 for Self-Transcendence scale and .76 for Harm Avoidance.

The MMPI-202 Psychopathic Deviation (Pd) subscale (Biro, 2001)

Pd subscale (MMPI-202) which was used to assess the clinically significant severity of psychopathic deviation, has a binary response form (Yes/No) and satisfactory metric characteristics.

Procedure

The sample was collected within youth offender correctional and clinic facilities (Juvenile Penitentiary-Correctional Facility Valjevo, Juvenile Detention Facility Kruševac, District Prison in Novi Sad, and Clinic for Psychiatry, Department for Child and Adolescent Psychiatry, Novi Sad). Objective assessment of subjects for selection in the sample was performed over a period of six months, by two authors of this study (clinicians who specialized in mental health). The assessment was based on insight into patients' medical records

(medical history) in clinical settings, and into personal criminal records for those respondents residing in youth offender correctional facilities. After selection, the respondents filled out self-assessment questionnaires, and the examination was conducted in small groups within correctional institutions, and individually in a clinical setting. Participants in the 13- to 17-year-old age group filled out PAQ and ATCI-84, while participants in the 18- to 25-year-old age group filled out PAQ, TCI-5 and MMPI-202 Pd subscale.

The research was conducted voluntarily, in the presence of a one or two authors, and in a presence of prison officers in correctional settings in accordance with the rules of those institutions. All participants and parent/guardian of a minor signed the informed consent, including the anonymity and confidentiality of the data agreement.

Data analysis

A model-based clustering (MBC) (Banfield & Raftery, 1993) was used from the R (R Core Team) Mclust software package (Scrucca et al., 2016) in order to isolate clusters based on the configuration and severity of scores on psychopathic factors. The MBC goes beyond the limitations of traditional explorative cluster analysis related to cluster number selection and grouping procedures. The likelihood-based Bayesian Information Criterion (BIC) were used to determine the best fitting model to the data, which allows models to be compared with different cluster numbers and sizes. If the BIC value is higher, the support for a given model is greater. A multivariate analysis of variance (MANOVA) was conducted in order to compare the clusters on the four variables used for their derivation. Wilks Lambda test statistics and post hoc tests of inter-subject effects were used. Differences in temperament and character dimensions for participants belonging to different clusters, and different age groups within the cluster were examined by linear discriminant analysis with bootstrap procedures in order to calculate parameters and confidence intervals. Basic assumption testing was conducted for homogeneity of covariance matrices. Since the younger and older respondents filled out a parallel form of questionnaire (ATCI and TCI-5) the scores on the scales were converted to

standardized values based on the norms, and then expressed on the T scale ($AS = 50$, $SD = 10$). Self-Transcendence scale was not used in the analysis, because in ATCI form was modified and shortened, and could not be compared with normative data.

Results

Subtypes of antisocial adolescents

Based on the scores of the total sample of antisocial adolescents, a model-based cluster analysis on four factors of psychopathy assessed on the PAQ questionnaire (Antisocial Behavior, Lifestyle, Psychopathic Affect, and Interpersonal Relationships), singled out the best fit model representing the solution with 2 clusters and with the highest B/C value = -15551.843. This model was chosen among the four best models, all with 2 cluster solutions, because it has the best suitability index and it is more stable across data subsamples and variable sets. The selected clusters are diagonal, with equal volume and shape.

The first cluster is called non-psychopathic, due to the low expression of Antisocial Behavior and Lifestyle factors, relatively low pronounced Interpersonal Relationships factor, and the more moderately pronounced Psychopathic Affect factor. The second cluster has highly pronounced scores on the Antisocial Behavior, Lifestyle and Interpersonal Relationships scales and more moderate score on the Psychopathic Affect scale of the PAQ questionnaire and it is called the psychopathic type. In the first cluster there were 29 (28.71%), and in the second 72 (71.29%) respondents. All respondents from the older group (except one) were classified in the psychopathic cluster, while respondents from the younger group were classified in both clusters (28 respondents in the first cluster and 43 in the second cluster). Figure 1 shows the means of the isolated subtypes on psychopathy factors. The subsequent multivariate analysis of variance (MANOVA) to compare one subtype with another on psychopathy factors, found a significant multivariate effect, $F = 66.083$, $p = .001$, $Wilks' Lambda = .266$. There was a significant effect of cluster affiliation on PAQ subscales, except on the Psychopathic Affect scale (Interpersonal Relationships, ($F(1) =$

130.250, $p = .000$, Antisocial Behavior, ($F(1) = 124.791$, $p = .000$, Lifestyle, ($F(1) = 60.131$, $p = .000$, and Psychopathic Affect, ($F(1) = .495$, $p = .483$).

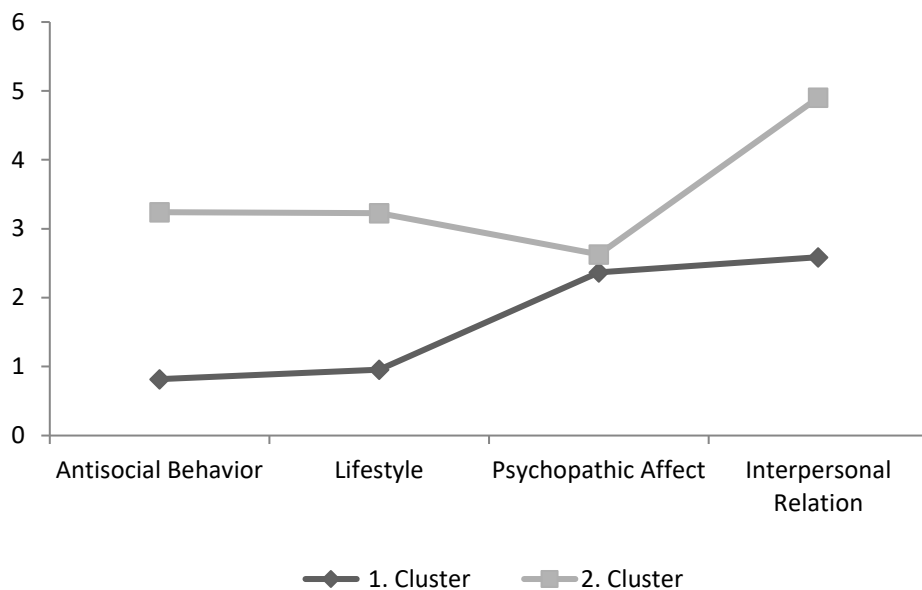


Figure 1. Means of clusters on psychopathy factors

Difference between older and younger psychopathic types by dimensions of character and temperament

We were interested in learning whether within the isolated psychopathic type we could differentiate between older (18-25) and younger (13-17) offenders who belong to this type regarding the dimensions of temperament and character.

The discriminant analysis highlights one significant discriminant function (*Wilks' Lambda* = .093, $\chi^2 = 154.499$, $df = 6$, $p = .000$). The structure of the discriminant function of temperament and character dimensions are given in Table 1. The discriminant function is predominantly determined by the Cooperativeness, Self-Directedness and Persistence dimensions. According to

the bootstrapping procedure, only the character dimensions of Cooperativeness and Self-Directedness are important for the discrimination of younger and older psychopaths, because the 95% confidence interval of the standardized coefficient does not include 0 (Table 1). Younger psychopaths have higher scores on the discriminatory function, which means that they are more cooperative and self-directed compared to older adolescent psychopaths.

Table 1

Matrix structure of discriminant function of temperament and character dimensions for younger and older psychopaths

| Personality dimensions (Cloninger)* | Standardized canonical discriminant coefficients | Bootstrapping | | | | Structure of discriminant function |
|-------------------------------------|--|---------------|----------------|-------------------------|-------|------------------------------------|
| | | Bias | Standard error | 95% confidence interval | | |
| | | | | lower | upper | |
| Cooperativeness | .594 | .083 | .186 | .340 | 1.102 | .749 |
| Self-Directedness | .682 | -.014 | .301 | .042 | 1.221 | .738 |
| Persistence | .064 | -.034 | .317 | -.615 | .617 | .675 |
| Harm Avoidance | .257 | -.003 | .164 | -.069 | .578 | .048 |
| Reward Dependance | -.171 | -.028 | .203 | -.629 | .175 | .027 |
| Novelty Seeking | -.069 | .012 | .219 | -.493 | .381 | .001 |

Note. Self-Transcendence scale was not used in the analysis

Distinguishing between members of the psychopathic and non-psychopathic type within the younger age group by dimensions of character and temperament

We conducted a discriminatory analysis of "bootstrapping" to determine whether juvenile offenders (13-17 years) belonging to the psychopathic and non-psychopathic subtypes differ based on personality dimensions (ATCI). The results

show that there were no significant differences between younger psychopaths and non-psychopaths in the degree of expression of temperament and character dimensions, i.e., that no significant discriminant function was singled out (*Wilks' Lambda* = .908, $\chi^2 = 6.215$, *df* = 7, *p* = .515). Table 2 shows the descriptive characteristics of the selected types of younger adolescents on the dimensions of temperament and character.

Table 2
Descriptive values on temperament and character dimensions for psychopathic and non-psychopathic younger adolescents

| Cluster | Personality dimensions | <i>M</i> | <i>SD</i> |
|--------------------|------------------------|-----------------|-----------|
| Non-psychopathic | Novelty Seeking | 39.85 | 9.48 |
| | Harm Avoidance | 38.93 | 7.76 |
| | Reward Dependence | 39.07 | 6.37 |
| | Persistence | 44.26 | 7.14 |
| | Self-Directedness | 40.67 | 5.86 |
| | Cooperativeness | 42.07 | 7.50 |
| | Self-Transcendence | 18.48 | 5.55 |
| | Psychopathic | Novelty Seeking | 43.14 |
| Harm Avoidance | | 36.25 | 9.44 |
| Reward Dependence | | 37.93 | 7.94 |
| Persistence | | 45.65 | 7.55 |
| Self-Directedness | | 42.05 | 7.99 |
| Cooperativeness | | 40.93 | 6.17 |
| Self-Transcendence | | 19.30 | 6.01 |

Note. *M*- mean; *SD*- standard deviation.

Discussion

This study singled out the psychopathic type in the group of juveniles (under 18), which was grouped together with the older psychopathic group of adolescents (18 years and older), which suggests that the concept of psychopathic traits can be extended to juvenile delinquents. This is in line with empirical evidence from numerous studies (Andershed et al., 2018; Byrd et al., 2018; González Moraga et al., 2019; Frick, 2009; Frick et al., 2014; Luo et al., 2021; Ronchety et al., 2014).

The isolated psychopathic type was characterized by a significantly higher expression of scores on the three facets: Antisocial Behavior (disrespect of rules and norms, and diverse and chronic crime) and Lifestyle (impulsivity, irresponsibility, seeking excitement, substance abuse, promiscuous behavior), as well as on the personal facet of Interpersonal Relationships (grandiosity, superficial charm, manipulativeness, tendencies to lie and exploit other people), while there are no significantly more pronounced scores on the Psychopathic Affect facet (superficial affect, decreased empathy, lack of remorse and guilt, callousness). The first hypothesis was partially confirmed. It was confirmed that the psychopathic subgroup compared to the non-psychopathic group of adolescents showed significantly higher scores on Antisocial Behavior, Lifestyle and Interpersonal Relationships factors, while the hypothesis was not confirmed in part that the psychopathic subtype had significantly higher scores on Psychopathic Affect factor. The isolated psychopathic subtype of adolescents corresponds to the secondary type of psychopathy, with pronounced features of impulsivity and reactive aggression, but without highly pronounced callous-unemotional (CU) traits, i.e., affective features of psychopathy (Dochery et al., 2016; Yildirim et al., 2015). CU traits are considered a key factor in psychopathy in youth and were constructed as “primary” psychopathy (Baskin-Somers et al., 2015; Dochery et al., 2016; Squillaci & Benoit, 2021). The prevalence of primary psychopathy is relatively low compared to secondary psychopathy (Hare & Neuman, 2010), which is probably why there is no distinction between the subtypes in psychopathic affect found in this study.

In relation to the Cloninger's personality model, it was found that older adolescents (18-25 years) with more pronounced psychopathic scores compared to younger psychopaths (13-17 years) show a significantly lower expression of two-character dimensions, Self-Directedness and Cooperativeness, with Self-Directedness having the highest contribution to the distinction between younger and older psychopaths, while there are no significant differences in temperament dimensions. The second hypothesis (H2a) was partially confirmed. The hypothesis was confirmed in the part that younger and older members of the psychopathic subtype did not differ significantly in temperament dimensions, while it was not confirmed that they did not differ significantly in character dimensions. The Self-Directedness dimension is the most important in determining all PDs (Cloninger, 2005; Snowden & Grey, 2010). Although there were no significant differences in temperament dimensions, older adolescents with psychopathic scores had less pronounced Harm Avoidance dimensions than younger psychopaths, which is associated with a lack of fear and inhibition in responding to aversive stimuli and is consistent with Cloninger's APD. Compared to younger ones, older psychopaths were also characterized by lower Persistence expression, i.e., less ambition, perseverance, and tolerance to frustration, and these differences show a trend towards statistical significance. Persistence was not related to a specific neurotransmitter system, which has led some authors to question its temperamental basis (Gillespie et al., 2003) and link it to character dimensions (Dukanac & Džamonja-Ignjatović, 2008).

It is interesting that younger psychopaths show higher levels of Novelty Seeking and Reward Dependence dimensions compared to older ones, which indicates that they are characterized by greater impulsiveness, curiosity, risk-taking, search for rewards and approval, and weaker self-control of behavior. This is in line with the results of the previous studies (Asch et al., 2009; Chang et al., 2007; Ha & Kwon, 2016; Hemphälä et al., 2012; Kim et al., 2006; Lee et al., 2018; Lenox & Dolan, 2014; Schmeck et al., 2006). It is possible that the typical developmental features of adolescence in the form of emotional and cognitive immaturity and reduced self-control (Icengole et al., 2019) have a greater impact on scores on these two dimensions than the psychopathic features themselves.

This is supported by the findings that adolescents with CD did not differ from the non-clinical population of adolescents in Novelty Seeking (Atarhouch et al., 2004) and Harm Avoidance (Schmeck & Poustka, 2001). The described developmental features have a biological basis in the incomplete development of the prefrontal lobe, which is responsible for executive functions, and the dominance of the amygdala, responsible for processing emotional information, especially up to 18 years of age (Popma & Raine, 2006; Romer et al., 2017; Rudolph et al., 2017). With the psychobiological maturation of adolescents, it is possible to achieve better levels of self-control at a later age and to alleviate these temperament traits.

The comparison of members of psychopathic and non-psychopathic subtypes within the group of younger adolescents, by dimensions of temperament and character, showed that there were no significant differences between the two types of young adolescents. The second hypothesis (2b) was not confirmed. This can be explained by the fact that the entire sample of younger respondents consisted of adolescents with CD, or juvenile offenders with diverse and severe antisocial behavior, so it was expected that they would all show a similar antisocial temperament configuration. It is also possible that character dimensions were not completely formed at a younger age, as in older respondents, which could have had an impact on the registered absence of differences in the expression of character dimensions between juvenile offenders' subtypes. Character is based on individual differences in self-concept and higher cognitive processes which are not fully developed in adolescence (Icengole et al., 2019; Popma & Raine, 2006). Personality and cognitive functions are considered the most important in the occurrence and maintenance of aggressive antisocial behaviors, and character maturity could be an important protective factor against these behaviors (Crescentini et al., 2018; Dukanac et al., 2016; Nilson et al., 2016; Seidl et al., 2020).

Older adolescents with pronounced psychopathic traits show temperament and character traits that correspond to Cloninger's theoretical model for antisocial and/or psychopathic personality disorder. The configuration of personality dimensions shown by adolescent psychopaths from the younger

age group does not fit into the existing Cloninger's theoretical model, except for the pronounced Novelty Seeking dimension.

The inability to distinguish between younger psychopaths and non-psychopaths by character and temperament dimensions in this study suggests that juvenile offenders are in the process of developing personality traits, especially character dimensions. Among adolescents with high psychopathic scores, the final outcomes of personality development, i.e., the formation of psychopathy and/or APD, cannot be predicted with certainty. Incomplete formation of personality and character traits suggests greater susceptibility of young people to treatment and interventions, and the possibility of a more positive outcome in young people with high psychopathic scores. According to Cloninger's model, character develops under the influence of social environment and learning. Temperament and character are in constant interaction during a person's life, so temperament affects character and vice versa. The results of this research on the incomplete formation of character traits in younger antisocial adolescents indicate the possibility of developing treatments that would be aimed at encouraging the development of character and prosocial characteristics in these adolescents. These treatments could include promoting prosocial goals and values, developing self-esteem and self-acceptance, fostering personal responsibility, developing problem-solving and decision-making skills, improving connection with others and self-efficacy in the social environment (Lee et al., 2018). Character strengths interventions, described in the literature, should be conducted from childhood and in different contexts (school, home, peer group, local community) in order to prevent behavioral problems in children and adolescents (Coppley & Niemiec, 2021; Lee et al., 2018). Assessment instruments and interventions which focus on psychopathic traits in adolescents are of special importance, as adolescence represents a period of hopeful positive changes (Pauli et al., 2020; Ray et al., 2018; Ronchetti et al., 2014; Waller et al., 2016). High psychopathic scores on psychopathy assessment questionnaires can give a false positive picture of the existence of psychopathy in young people, because inflation of psychopathic scores may occur due to impulsiveness, irresponsibility, risky behavior in adolescents that can be developmentally expected and

transient (Simões & Gonçalves, 2017). Studies show that increases in psychosocial maturity over time predicted decreases in psychopathic scores for adolescents (Cauffman et al., 2016), and a decline in criminal activity of youths with psychopathic traits as they approach early adulthood (Dick et al., 2013; McCuish & Lussier, 2018). These results call into question the reliability of reliance on psychopathy measures in making decisions about youthful offenders that will have long-term consequences (Cauffman et al., 2016). These data indicate the need to be careful in assessing antisocial youth only based on psychopathic measures and need to include assessment based on basic personality models. Treatment in adolescent offender populations could be more effective if it was individualized and if it considered personality dimensions (Seidl et al., 2020, Snowden & Gray, 2010).

Conclusion

We can conclude that younger adolescent psychopaths do not show complete age continuity and homogeneity with older adolescent psychopaths. It cannot be argued that adolescent psychopathy exists as a stabilized PD and assumes the same or sufficiently similar development to adult psychopathy (Simões & Gonçalves, 2017). The results of the present study indicate that caution is needed in assessing and predicting the outcome of psychopathic traits in adolescents, especially juvenile delinquents, given the possible false-positive recognition rate, greater susceptibility to change and treatment in adolescents, and a greater possibility of a more positive outcome.

The limitations of this research concern the characteristics of the sample, the method of self-assessment, the metric characteristics of measuring instruments and the transverse method of testing. The study lacked a comparison with a group of non-delinquent adolescents, and it is possible that the same types would stand out in that population, so that these types are not specific to delinquents. Guidelines for further research include the need to replicate the study on a larger sample, and on the general adolescent population. Longitudinal follow-up research and studies of psychopathic

adolescents are important in order to gain more reliable knowledge about the course and outcomes of antisocial behavior of these adolescents.

Conflict of Interest

We have no conflicts of interest to disclose.

Data availability statement

For further details on data, contact the corresponding author of the manuscript.

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Razlike u temperamentu i karakteru kod psihopatskih i nepsihopatskih adolescentnih delinkvenata

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REZIME

U ovoj studiji ispitivana je mogućnost izdvajanja tipova antisocijalnih adolescenata na osnovu psihopatskih obeležja, i međusobne razlike antisocijalnih adolescenata različitog uzrasta i suptipova u odnosu na Klondžerove dimenzije ličnosti. Uzorak je obuhvatao 101-og antisocijalnog adolescenta muškog pola, podeljenih u dve uzrasne grupe (71 ispitanika u grupi od 13-17 godina i 30 u grupi od 18-25 godina). Na celokupnom uzorku, na osnovu klaster analize zasnovane na modelu, izdvojeni su nepsihopatski tip, bez izraženih obeležja psihopatije i psihopatski tip, sa izraženom antisocijalnom, interpersonalnom i facetom životnog stila (Herov model), u koji su se svrstali i mlađi i stariji adolescenti. U okviru psihopatskog tipa, stariji adolescenti u odnosu na maloletne adolescente pokazuju značajno nižu izraženost dimenzija karaktera, Samousmerenost i Kooperativnost, ključnih u određenju svih poremećaja ličnosti. U okviru grupe maloletnih adolescenata, pripadnici psihopatskog suptipa u odnosu na nepsihopate se nisu značajno razlikovali po temperamentu i karakteru, što ukazuje da se adolescenti mlađi od 18 godina nalaze u procesu razvoja ličnosti, posebno karaktera, pa su podložniji tretmanu i kod njih su krajnji ishodi neizvesni. Rezultati sugerišu da kod mlađih od 18 godina moguće dolazi do inflacije psihopatskih skorova usled identifikovanja razvojnih obeležja adolescencije (impulsivnost, nezrelost) kao psihopatskih, što

implicira nužnost primene bazičnih modela ličnosti u proceni adolescentnih delinkvenata.

Ključne reči: antisocijalno ponašanje, crte ličnosti, adolescentna psihopatija, maloletni delinkventi, procena psihopatije

