



Short Communication

# The Dark Tetrad: Identifying personality profiles in high-school students



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## ARTICLE INFO

### Article history:

Received 15 December 2014

Received in revised form 26 March 2015

Accepted 28 March 2015

Available online 11 April 2015

### Keywords:

Dark Tetrad

Dark Triad

High-school students

Personality traits

Profiles

## ABSTRACT

Psychopathic, narcissistic, Machiavellian, and sadistic traits constitute the Dark Tetrad of personality traits. While this construct has received increasing attention, to our knowledge, there is no typological study aiming to identify homogeneous groups of high-school students based on these traits. The aim of this study was (a) to identify a typology of high-school students based on the Dark Tetrad traits in a community sample and (b) to examine whether these profiles differ on psychopathological variables known to be associated with personality traits. Participants were 615 high-school students who completed self-report questionnaires. Psychopathic, narcissistic, Machiavellian, and sadistic traits were moderately correlated suggesting they may be overlapping but distinct constructs. Cluster analysis yielded four groups: a Low Traits group, a Sadistic–Machiavellian group, a Psychopathic–Narcissistic group, and a high traits group called the Dark Tetrad cluster which was high on all traits. The Dark Tetrad cluster constituted 15% of the total sample and was characterized by the highest levels of antisocial behaviors and suicidal ideations. This study suggests that a significant minority of non-clinical high-school students is characterized by the presence of high levels of the Dark Tetrad traits and self and other-aggression.

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## 1. Introduction

For the last decade, many studies have been conducted on the Dark Triad (e.g., Glenn & Sellbom, 2014; Hodson, Hogg, & MacInnis, 2009; Lee & Ashton, 2005; Paulhus & Williams, 2002). Indeed, in a recent literature review, it has been reported more than 300 Dark Triad assessments in independent samples (Furnham, Richards, & Paulhus, 2013). Sadistic traits were added to the Dark Triad and the association of psychopathic, narcissistic, Machiavellian, and sadistic traits was termed the Dark Tetrad of personality traits (Chabrol, Van Leeuwen, Rodgers, & Séjourné, 2009). They showed that sadistic traits contributed significantly to the variance of antisocial behaviors in high-school students above and beyond the Dark Triad traits. The Dark Tetrad has gained popularity, confirming its usefulness in the understanding of socially aversive behaviors (Buckels, Jones, & Paulhus, 2013; Buckels, Trapnell, & Paulhus, 2014; Furnham et al., 2013; Paulhus, 2014). Thus, the Dark Tetrad has been reported to be associated not only with antisocial behaviors (Buckels et al., 2014; Chabrol et al., 2009) but also with other type of disruptive behaviors such as online trolling (Buckels et al., 2014) and experiences of

schadenfreude – that is pleasure derived from the misfortunes of others (Porter, Bhanwer, Woodworth, & Black, 2014).

While the Dark Triad and the Dark Tetrad traits have received increasing attention and have been extensively investigated in many variable-centered studies, to our knowledge, no person-centered studies aimed at identifying homogeneous groups based on these traits have been conducted. It may be that the variable-centered approach underestimates the heterogeneity of individuals and proposes general findings and theoretical elaborations that might be somewhat artificial and inaccurate as resulting from the examination of samples combining dissimilar and disparate groups of individuals. The person-centered approach, unraveling homogeneous groups of individuals, may reveal group-specific relations between variables that are obscured or masked by a globalizing variable-centered approach.

Cluster analyses are useful for determining the presence of subgroups of individuals with specific profiles of psychopathic, narcissistic, Machiavellian and sadistic traits. In addition, these analyses are helpful in assessing whether these subgroups are varying in their levels of antisocial behaviors and emotional distress. At the theoretical level, cluster analyses may contribute to clarifying the relationships between the Dark Tetrad traits. In terms of clinical implications, a better definition of psychopathological profiles might contribute to the understanding of antisocial behavior and

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to the identification of specific needs concerning further prevention or treatment.

The aims of this study were (a) to identify a typology of high-school students based on the Dark Tetrad traits in a community sample and (b) to examine whether these profiles differed in levels of antisocial behaviors, depressive symptoms, suicidal ideations, and frequency of cannabis use. We expected clusters characterized by higher levels of the Dark Tetrad traits to be associated with higher levels of psychopathology.

## 2. Method

### 2.1. Participants

The sample consisted of 615 high-school students (382 boys (62%); 233 girls (38%); mean (*SD*) age of boys = 16.79 (1.30); mean age of girls = 16.96 (1.31); age range = 14–21 years old) attending eight randomly selected high schools in Toulouse, South of France. This sample was previously examined in Chabrol et al. (2009). Questionnaires were administered in the classroom by a Master's level psychology student who presented the study and collected the anonymous questionnaires. Students were informed that participation was voluntary and signed a consent form. None of the students declined to participate in the study and no compensation was offered. The study followed the ethical guidelines of the Helsinki declaration and the ethical issues of the current research were explored at a research meeting.

### 2.2. Measures

Psychopathic traits were assessed using the French version of the Youth Psychopathic traits Inventory, a 50-item self-report questionnaire developed for youths aged 12 and older (Andershed, Hodgins, & Tengström, 2007; d'Acremont, Van der Linden, Axelson, Flykt, & Vonèche, 2002). We used only the 15-item Affective subscale measuring callous-unemotional traits (e.g., I have the ability not to feel guilt and regret about things that I think other people would feel guilty about), which is the core features of psychopathic traits. Items are rated on a 5-point scale with a total score ranging from 15 to 60. Higher scores indicate high levels of psychopathic traits. In the current study, the Cronbach's alpha for the Affective subscale was .72.

Narcissistic traits were measured using the 16-item self-report Narcissistic Personality Inventory (Ames, Rose, & Anderson, 2006), which was designed to measure narcissism in nonclinical populations. As no validated French version of this scale exists, back-translations were conducted by fluent researchers. It contains 16 pairs of items, each consisting of two conflicting proposals between which the participant must choose (e.g., I like to be the centre of the attention vs. I prefer to blend in with the crowd). Total scores range from 0 to 16 with higher scores indicating high levels of narcissistic traits. In the current study, Cronbach's alpha was .79.

Machiavellian traits were assessed using the French version of the 20-item self-report Machiavellianism Inventory (Christie & Geis, 1970; Romney, 1979) (e.g., It is safest to assume that all people have a vicious streak and it will come out when they are given a choice). Items are rated on 6-point scale. Total scores range from 20 to 120. In the current study, Cronbach's alpha was .51. Even though the Cronbach's alpha is low, .51 is sufficient for research as it was demonstrated that relatively low level of criterion reliability do not attenuate validity coefficients (Schmitt, 1996).

Sadistic traits were measured using the French version of the Short Sadistic Impulse Scale (Chabrol, Van Leeuwen, & Rodgers, 2011; O'Meara, Davies, & Hammond, 2011), a 10-item self-report

inventory relating to hurting behaviors or attitudes (e.g., I enjoy seeing people hurt; I have humiliated others to keep them in line). The measure is scored on a 4-point scale, with total scores ranging from 11 to 44. The SSIS showed strong construct and discriminant validity. In the current study, Cronbach's alpha was .81.

Antisocial behaviors were assessed using the French version of Antisocial Behavior Scales (Chabrol & Saint-Martin, 2009; Schwab-Stone et al., 1999). In this study, only the two subscales assessing moderate delinquency and severe antisocial behavior were used. The respondents were asked to report on a 5-point scale how many times they had been involved in the described behaviors during the past year. Scores range from 0 (0 times) to 5 (5 times or more) and total scores range from 0 to 50.

Depressive symptoms were assessed using the French version of the short version of the Center for Epidemiologic Studies-Depression Scale (Andresen, Malmgren, Carter, & Patrick, 1994; Cartierre, Coulon, & Demerval, 2011). The answers are rated on a 4-point scale ranging from 0 (Rarely or none of the time) to 3 (Most or all of the time). A total score can be calculated by summing the scores for each of the 10 items, with higher scores indicating higher levels of depressive symptoms. This is a well-validated self-report questionnaire that has been widely used in non-clinical samples. In the current study, Cronbach's alpha was .74.

Suicidal ideation and behavior were measured using the French-version of the item 4-item self-report Suicidal Behaviors Questionnaire-Revised, a brief measure of past suicidal ideation and behavior (Chabrol, Chauchard, & Girabet, 2008; Osman et al., 2001). The answers were rated on 5-point scale ranging from 0 to 3. A total score ranging from 0 to 12 can be calculated by summing the scores for each of the 4 items, with higher scores indicating higher levels of suicidality. In the current study, Cronbach's alpha was .60.

Frequency of cannabis use in the past 6 months was assessed with the scale used by Simons, Correia, Carey, and Borsari (1998). Respondents were asked to report on a 9-point rating scale ranging from 0 (no use) to 8 (more than once a day) the number of times they had used cannabis in the last 6 months.

## 3. Results

### 3.1. Self-reported antisocial behaviors

Seventy percent of participants reported at least one antisocial behavior during the past year (77% boys vs. 59% girls). Boys reported a greater number of antisocial behaviors than girls ( $6.28 \pm 7.32$  vs.  $3.25 \pm 5.15$ ,  $t = 5.51$ ,  $p < 0.0001$ ).

### 3.2. Intercorrelations between psychopathic, narcissistic, Machiavellian, and sadistic traits

Psychopathic, narcissistic, Machiavellian and sadistic traits were moderately correlated, with Pearson's  $r$  ranging from 0.32 to .48 for boys and .23 to .31 for girls.

### 3.3. Cluster analysis

Cluster analysis was conducted in two steps to generate personality profiles based on the Dark Tetrad traits converted to z-scores. In the first step, a hierarchical cluster analysis was conducted. Based on the dendrogram and the agglomeration schedule, a four-cluster solution was identified. In the second step, K-means clustering was used to examine the four-cluster structure. Findings revealed a first group that was well below the mean on all traits, which was termed the Low Traits cluster ( $n = 172$  [28%]; girls,

44%; boys, 66%); a second group that was a half standard deviation above the mean in Machiavellian traits but low in all other three traits termed the Sadistic–Machiavellian cluster ( $n = 176$  [29%; girls, 31%; boys, 69%]; a third group that was a half standard deviation above the mean in narcissistic traits, slightly above the mean on psychopathic traits that was named the Psychopathic–Narcissistic cluster ( $n = 173$  [28%; girls, 58%; boys, 42%]; and, finally, a fourth group that was at least one standard deviation above the mean on all traits which we named the Dark Tetrad cluster ( $n = 92$  girls [15%; 22%; boys, 78%).

The proportion of males in the Dark Tetrad cluster was higher than in the total sample of users (Fischer exact test,  $p = .003$ ), lower in the Psychopathic–Narcissistic cluster ( $p < .0001$ ), and similar in the Low Traits and Sadistic–Machiavellian clusters ( $p = .33$  and  $p = .09$ ). A discriminant analysis showed clear discriminations among the four clusters, Wilks'  $\lambda = .11$ , approximate  $F(12,1603) = 170.5$ ,  $p < .0001$ , with 97.4% of the original grouped cases correctly classified.

Group differences in levels of personality traits between the clusters were tested using an analysis of variance. The overall  $F$ -tests indicated significant group differences. Table 1 shows the results of post hoc tests (Tukey's Honestly Significance Difference test) comparing the four clusters on the four personality traits. All clusters differed significantly from each other on all traits ( $p < .0001$ ) with the exception of the Sadistic–Machiavellian and Psychopathic–Narcissistic clusters which did not differ significantly in levels of sadistic traits (Fig. 1).

Group differences in number of antisocial behaviors and in frequency of cannabis use between clusters were tested using analyses of variance. The overall  $F$ -tests indicated significant group differences. Table 1 shows the results of Tukey's post hoc tests comparing the four cluster means for antisocial behaviors, cannabis use, depressive symptoms and suicidal ideation and behavior. The Dark Tetrad cluster had the highest levels of antisocial behaviors, suicidal ideation and behavior, which significantly differed from the three other clusters ( $p < .0001$ ). Results are provided in Fig. 2. These high levels of suicidal ideation and behavior contrasted with the level of depressive symptoms, which differed significantly only from the Psychopathic–Narcissistic cluster ( $p < .0001$ ). The Dark Tetrad cluster also had a significantly higher level of cannabis use than the Low Traits cluster and the Sadistic–Machiavellian cluster ( $p < .0001$ ). The Sadistic–Machiavellian and the Psychopathic–Narcissistic clusters were only different from each other regarding levels of depressive symptoms ( $p < .0001$ ), which were significantly lower in the Psychopathic–Narcissistic cluster. The Low Traits cluster had the lowest level of antisocial behavior, and significantly differed from the three other clusters ( $p < .0001$ ). It did not differ from the Sadistic–Machiavellian and

the Psychopathic–Narcissistic clusters on depressive symptoms and suicidal ideation and behavior.

#### 4. Discussion

The aim of this study was to identify a typology of adolescents based on the Dark Tetrad traits in a non-clinical sample of adolescents. Cluster analysis based on the Dark Tetrad traits yielded four groups: a Low Traits group, a Sadistic–Machiavellian traits group, a Psychopathic–Narcissistic group, and a group characterized by high levels of all traits, call the Dark Tetrad group, constituting 15% of the total sample. Although the Dark Tetrad traits were moderately related in the total sample, cluster analysis revealed that these traits could co-occur in a significant proportion of adolescents. The highest levels of antisocial behaviors, identified in the Dark Tetrad cluster suggested that the concurrent presence of the Dark Tetrad traits might characterize a group of high-school students at high risk of antisocial behaviors.

The highest level of suicidal ideation and behaviors found in the Dark Tetrad cluster contrasted with the levels of depressive symptoms, which did not differ from the other clusters with the exception of the Psychopathic–Narcissistic cluster. This discrepancy between the levels of suicidal ideations and depressive symptoms, which are the main determinant of suicidal ideations and behaviors, may be explained by the finding that psychopathic and sadistic traits are independent predictors of suicidal ideation after adjustment for depressive symptoms (Chabrol & Saint-Martin, 2009; Chabrol et al., 2011). So, the main differences between the Dark Tetrad cluster and the others clusters were the high levels of antisocial and suicidal behavior whereas the differences in depressive symptomatology were weaker. As suicidal behavior was associated to externalizing behavior (e.g., Verona, Sachs-Ericsson, & Joiner, 2004), the main link of the Dark Tetrad cluster is clearly externalizing behavior.

This study should be considered as exploratory and descriptive and has several limitations. Firstly, the study is based on the assumption that Dark Tetrad traits are overlapping but distinct personality traits. Nevertheless, in a growing body of research, it has been attempted to extract a common core to the Dark Triad (Jonason, Kavanagh, Webster, & Fitzgerald, 2011; Jones & Figueredo, 2013). While this work needs to be extended to the Dark Tetrad, some researchers still consider the Dark Triad and the Dark Tetrad components as independent (Buckels et al., 2014; Jonason, Lyons, Baughman, & Vernon, 2014). However, we could not control for the influence of spurious correlations between the Dark Tetrad traits in our findings. Secondly, the results may not apply outside of high school age samples. Moreover, replication studies in high-school samples are needed

**Table 1**  
Comparison of Dark Tetrad traits and external variables between clusters.

Trait	Low traits cluster ( $n = 172$ ) $M$ ( $SD$ )	Machiavellian traits cluster ( $n = 176$ ) $M$ ( $SD$ )	Narcissistic traits cluster ( $n = 173$ ) $M$ ( $SD$ )	Dark Tetrad traits cluster ( $n = 92$ ) $M$ ( $SD$ )	$F$
Psychopathic	25.68 (5.29)	30.43 (4.96)	33.86 (5.78)	38.81 (8.02)	116.79 <sup>*</sup>
Machiavellian	56.79 (7.81)	70.8 (6.38)	64.52 (6.76)	79.81 (11.24)	200.33 <sup>*</sup>
Narcissistic	2.39 (1.74)	2.95 (1.63)	6.73 (1.93)	8.49 (2.97)	291.12 <sup>*</sup>
Sadistic	15.23 (2.97)	19.6 (4.67) <sup>a</sup>	18.21 (3.95) <sup>a</sup>	28.84 (6.07)	204.77 <sup>*</sup>
<i>External variable</i>					
Antisocial behaviors	2.35 (3.86)	5.01 (5.98) <sup>a</sup>	5.15 (6.06) <sup>a</sup>	10.51 (9.78)	34.08 <sup>*</sup>
Cannabis use	0.78 (1.87) <sup>b</sup>	1.01 (1.91) <sup>abc</sup>	1.41 (2.43) <sup>ac</sup>	2.15 (3.07) <sup>c</sup>	8.28 <sup>*</sup>
Depressive symptoms	10.79 (4.87) <sup>acd</sup>	11.41 (5.70) <sup>ab</sup>	9.27 (5.36) <sup>c</sup>	11.61 (6.34) <sup>bd</sup>	5.79 <sup>*</sup>
Suicidal ideations	4.75 (3.19) <sup>bc</sup>	4.79 (3.37) <sup>ab</sup>	4.27 (2.80) <sup>ac</sup>	6.16 (4.64)	6.29 <sup>*</sup>

Note. Means with the same superscript are not significantly different from each other (Tukey's post hoc tests).

<sup>\*</sup> Main effects significant at  $p < .001$ .

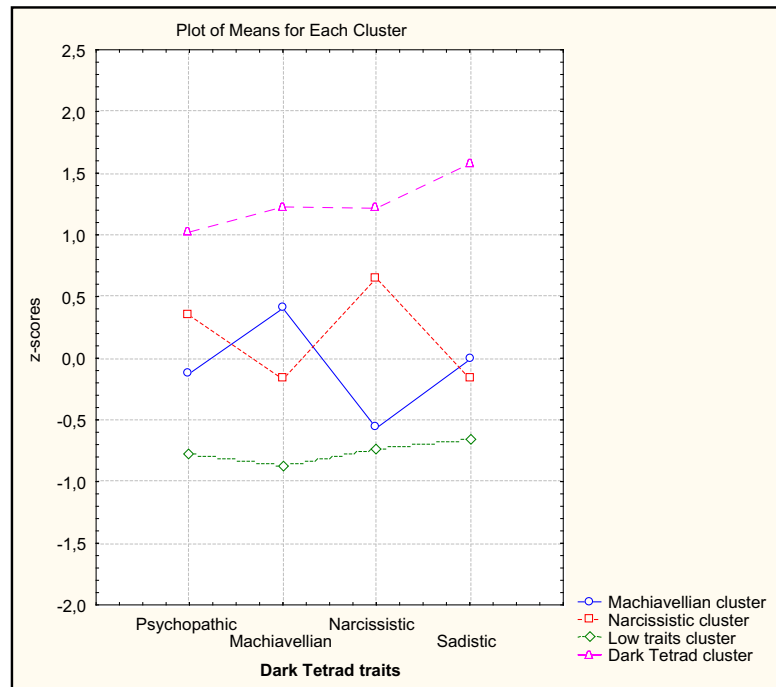


Fig. 1. Cluster solution based on z-scores for Dark Tetrad traits.

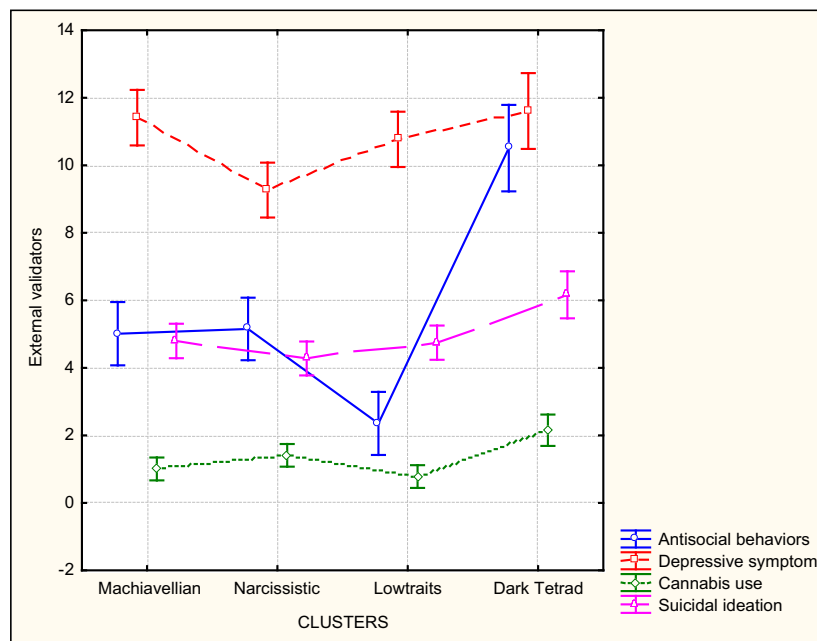


Fig. 2. Comparison of external validators between clusters. Vertical bars denote 0.95 confidence intervals.

to test the confidence of the results. In addition, as this study was conducted among a community sample of adolescents, further clinical studies focusing on these variables are warranted.

However, an identifiable minority of non-clinical adolescents may present high levels of the Dark Tetrad traits and self and other-aggression. The finding of a distinct Dark Tetrad cluster – a particularly malevolent group of individuals also characterized by a high level of suicidal ideation and behavior – is noteworthy. It suggests that, despite the utility of separating the tetrad, special attention to this subgroup is warranted. Taking this group into account could increase our understanding of antisocial and/or

suicidal behaviors and inform prevention efforts. Clinicians treating adolescents with antisocial behaviors and/or suicidal behavior should be aware of the possible presence of this constellation of traits that are difficult to explore, in particular because Machiavellian and narcissistic traits may lead the adolescent to hide socially aversive traits for giving a positive image of himself/herself, whereas these traits may compromise the therapeutic alliance and the therapy process.

Further studies on the role of the Dark Tetrad traits in antisocial and suicidal behaviors are warranted.

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